

**DANGERS OF ESTROGEN DEFICIT IN MEN**

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June 2014

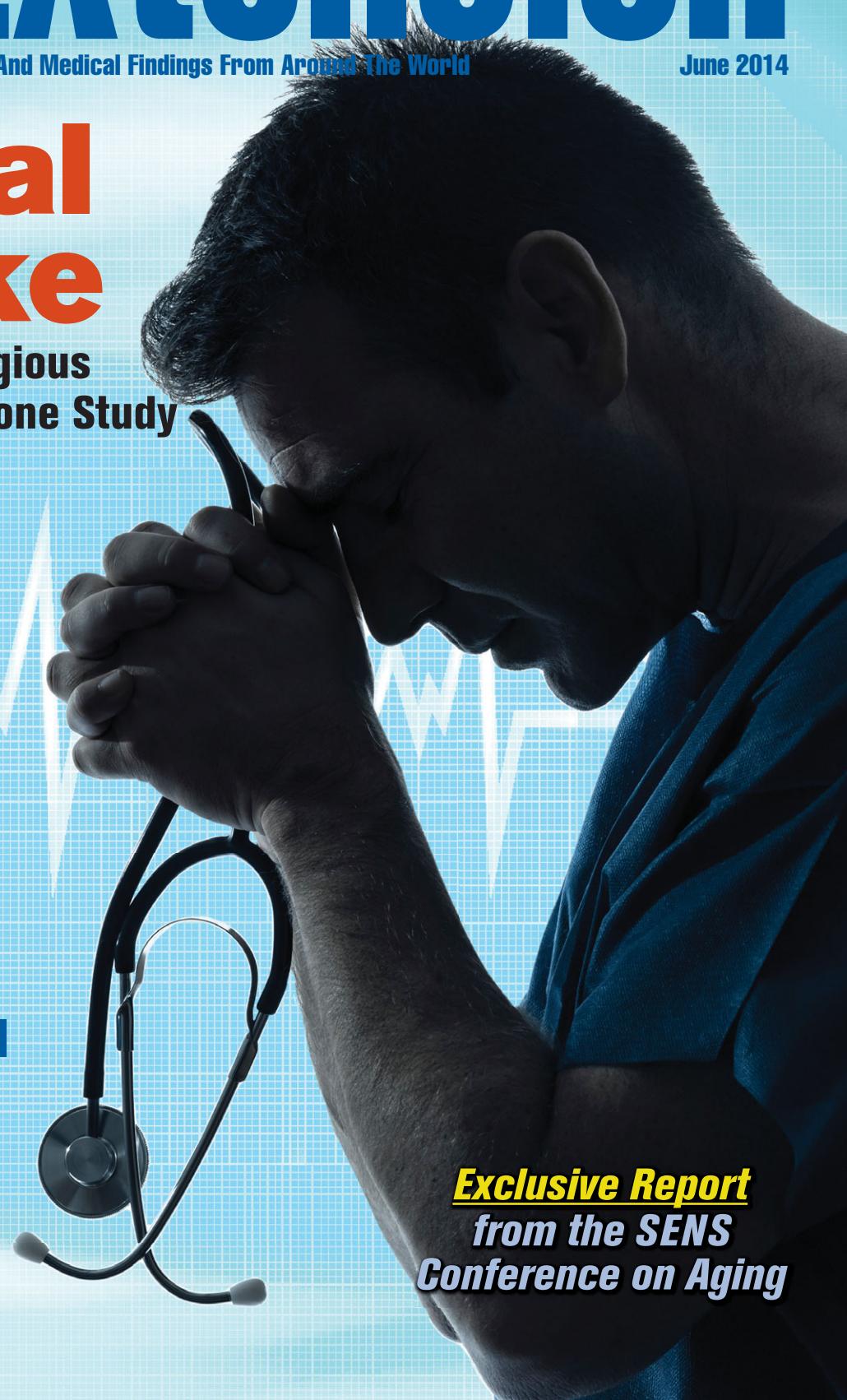
## Medical Mistake

Doctors Commit Egregious Error In Human Hormone Study

**Curcumin  
Improves  
Depression  
Scores**

**Pycnogenol  
Reverses  
Endothelial  
Dysfunction**

**Benefits of Krill  
and Fish Oil**



\$4.99



***Exclusive Report  
from the SENS  
Conference on Aging***

# Super Potent Multi-Nutrient Formula

## Compare CENTRUM® to TWO-PER-DAY:

Sample Ingredient Comparison	Life Extension® Two-Per-Day	Centrum® Silver® Adults 50+
Vitamin C	500 mg	60 mg
Vitamin D3	2,000 IU	500 IU
Vitamin B1	75 mg	1.5 mg
Vitamin B2	50 mg	1.7 mg
Vitamin B6	75 mg	3 mg
Vitamin B12 (as methylcobalamin)	300 mcg	25 mcg
Niacin (as niacinamide)	50 mg	20 mg
Pantothenic acid	100 mg	10 mg
Vitamin E	100 IU (natural)	50 IU (synthetic)
Natural Folate	400 mcg	400 mcg (synthetic)
Zinc	30 mg	11 mg
Selenium	200 mcg	55 mcg
Lutein	5,000 mcg	250 mcg
Lycopene	2,000 mcg	300 mcg
Biotin	300 mcg	30 mcg
Boron	3,000 mcg	150 mcg
Chromium	200 mcg	45 mcg
Molybdenum	100 mcg	45 mcg
Magnesium	100 mg	50 mg
Manganese	2 mg	2.3 mg
Iodine	150 mcg	150 mcg
Potassium	25 mg	80 mg
Vitamin A (as beta-carotene)	4,500 IU	1,000 IU
Vitamin A (preformed)	500 IU	1,500 IU
Choline (as bitartrate)	20 mg	(none)
Inositol	50 mg	(none)
Calcium	12 mg	220 mg
Alpha Lipoic Acid	25 mg	(none)
Natural Mixed Tocopherols (providing gamma, delta, alpha, and beta tocopherols)	20 mg	(none)

Commercial "one-a-day" supplements provide very low potencies.

The chart to the left reveals how much more **potent Two-Per-Day** is compared to the leading commercial multi-vitamin.

When compared to conventional "one-a-day" products, Life Extension Two-Per-Day contains up to 50 times more potency of specific nutrients.

Commercial supplements often contain the cheapest form of nutrients that fail to provide optimal benefits. For example, the 50 IU of synthetic vitamin E contained in **Centrum® Silver® Adults 50+** may provide relatively little vitamin E to the bloodstream compared to the 100 IU of natural vitamin E in **Two-Per-Day**.

**Two-Per-Day** provides the three most effective forms of **selenium** which are sodium selenite, L-selenomethionine, and Se-methyl L-selenocysteine, plus **alpha lipoic acid**.



Item# 01814  
Capsules

Item# 01815  
Tablets

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

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

A bottle containing 120 tablets of **Two-Per-Day Tablets** retails for \$20. If a member buys four bottles, the price is reduced to **\$13.50** per bottle. (Item #01815)

A bottle containing 120 capsules of **Two-Per-Day Capsules** retails for \$22. If a member buys four bottles, the price is reduced to **\$15** per bottle. (Item #01814)

Each bottle of **Two-Per-Day** lasts **60 days**, so members can obtain the benefits of this high-potency formula for as little as **\$6.75 per month**.

**To order Life Extension Two-Per-Day Tablets or Two-Per-Day Capsules,  
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-hydroxy vitamin D measurement. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

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



Ratings based on results of the 2013 ConsumerLab.com Survey of Supplement Users. More information at [www.consumerlab.com](http://www.consumerlab.com).

Contains soybeans. Due to the source of the kelp, this product may contain fish and shellfish.

# LifeExtension®

VOLUME TWENTY / NUMBER SIX ■ June 2014

## REPORTS



### 28 LONGEVITY BENEFITS OF PYCNOGENOL

Discovered in Europe, a standardized French Maritime pine extract improves congestive heart failure, reduces markers of metabolic syndrome, and protects against neurological disorders.

### 38 DRUG-FREE WAY TO MANAGE DEPRESSION

A 2013 study found that **curcumin** fights depression by attacking multiple underlying targets without harmful side effects. The study showed **curcumin** is as effective as an anti-depressant medication—and that curcumin promoted the creation of new hippocampal brain cells!

### 50 ANTI-AGING CONFERENCE REPORT

The **SENS Foundation's** mission is to reverse the seven causes of aging. At the recent SENS conference, several scientists credited the **Life Extension Foundation®** for funding their research. Topics included rejuvenating gene therapy, calorie restriction, improved resuscitation technologies, tissue regeneration, and the role of sirtuin enzymes in aging.

### 62 MAXIMIZE OMEGA-3 HEALTH BENEFITS

Cellular uptake of omega-3 fatty acids from **fish** and **krill oil** occurs at different rates in the body. The combination of **fish oil** and **krill oil** supplies a *spectrum* of fatty acids to a variety of cellular targets, further enhancing the effects of omega-3s in preventing brain shrinkage, boosting heart health, and improving endothelial function.

### 76 SUPPORT HEALTHY HAIR THROUGH SCALP REGENERATION

Optimal scalp health is a key to healthy hair. **Argan tree extract** targets the origins of hair loss by stimulating self-renewal of dermal stem cells—alleviating dry scalp and improving hair growth.

### 84 PREVENTING URINARY TRACT INFECTIONS WITHOUT ANTIBIOTICS

Of the more than 11 million people who visited the doctor last year for a urinary tract infection, almost all were treated with antibiotics. What researchers have found is that **cranberries** effectively *block* bacteria from sticking to the urinary tract lining, thereby preventing UTI infection without the use of antibiotics.

## DEPARTMENTS



### 21 IN THE NEWS

Vitamin D reduces mortality in cancer patients; omega-3 improves cardiac factors; vitamin D deficiency compromises immunity; grape seed reduces chemo damage; vitamin A helps block tuberculosis; calcium and vitamin D are linked to lower LDL, higher HDL; vitamin D helps prevent autism; and more.

### 95 WELLNESS PROFILE

Black belt, bodybuilder, and Masters Heavyweight National Physique Committee finalist for *five consecutive years*, Warren Honeycutt, age 60, attributes his excellent health and physique to solid nutrition, sugar avoidance, exercise, his supplement regime, and his long association with **Life Extension**.



### 7 ON THE COVER

#### MISGUIDED MEDICINE

A study published in the **New England Journal of Medicine** confirms the ability of **testosterone** to **reverse** common aging factors in men. The problem with this study is that one arm was **overdosed** on an **estrogen-suppressing** drug. The result was serious side effects. Our concern is that physicians will use this data as an excuse to **avoid** prescribing these drugs to aging men who need them, which will result in tragedies as **estrogen overload** is a serious condition in aging men, as is estrogen deficit.





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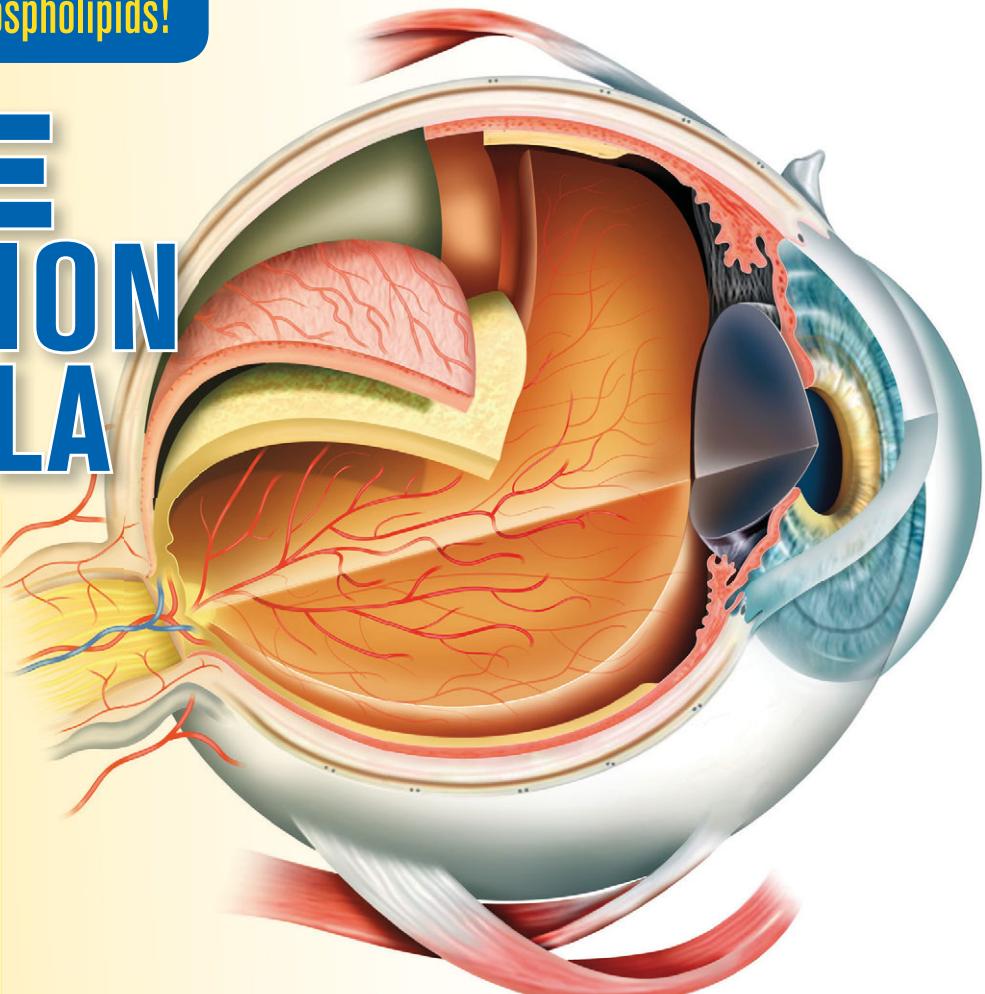
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Enhanced Absorption With Phospholipids!

# EYE PROTECTION FORMULA



Item # 01885



## Ocular Circulation Support

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

**MacuGuard™ Ocular Support** contains **phospholipids**, which are an integral part of the cell membrane. In addition to mixing well with other important fat-soluble components of the eye such as **lutein**, **phospholipids** have been shown to help support efficient **absorption** of dietary lutein in the blood stream as well.<sup>2-7</sup>

**Phospholipids** have been shown in scientific research to improve systemic circulation and accumulations of lutein in the retina of the eyes, making them a potent all-around weapon in your arsenal for eye health.<sup>6,7</sup>

## MacuGuard™ Ocular Support offers TRIPLE EYE PROTECTION:

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

## Comprehensive Ocular Protection in One Daily Softgel

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

**MacuGuard™ Carotenoid Phospholipid Blend** 145 mg  
Phospholipids, marigold extract (flower)

[providing 10 mg free lutein, 4 mg *meso*-zeaxanthin & *trans*-zeaxanthin]

**C3G** (cyanidin-3-glucoside) 2.2 mg

[from European black currant extract (fruit)]

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

Contains soybeans.

LuteinPlus® and MZ® are registered trademarks of Nutriproducts Ltd., UK, licensed under US Patents 6,218,436 & 6,329,432.

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To order **MacuGuard™ Ocular Support** call  
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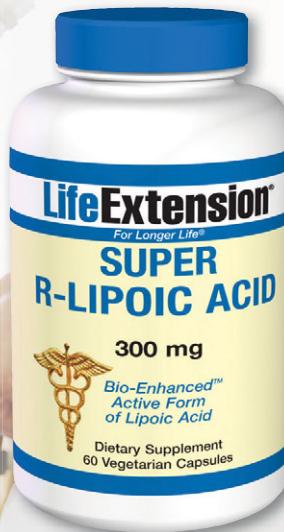
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# Misguided Medicine



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 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>

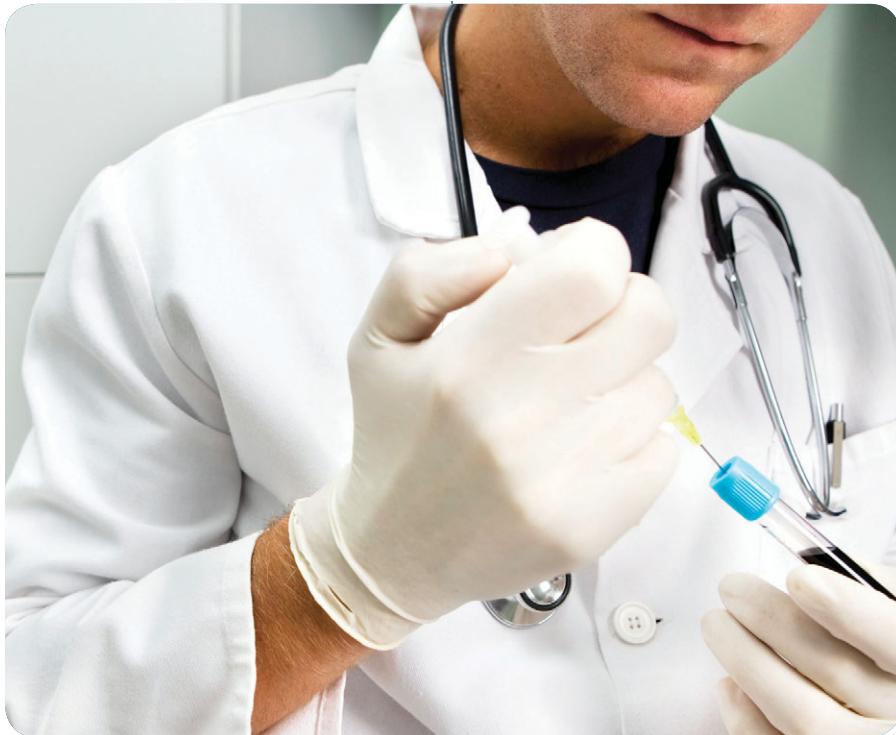
This study also helped corroborate the **adverse impact** when **estrogen** levels are out of range in **men**.

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?**

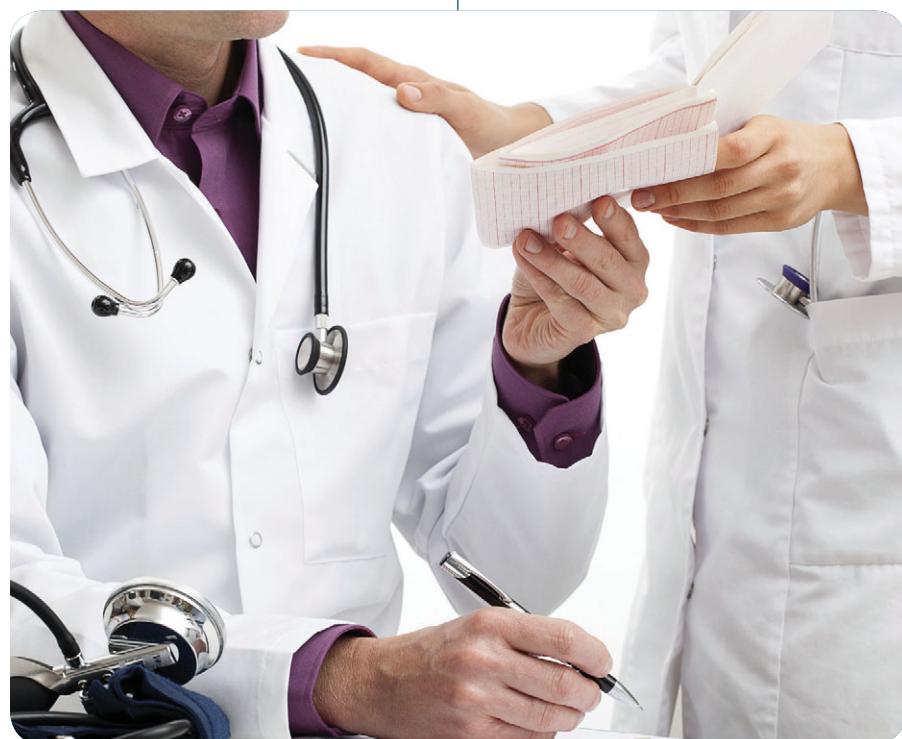
There is no question that men require a certain amount of **estrogen**, as they do **testosterone**, to sustain life. Most estrogen in men is produced through the aromatization (conversion) of testosterone to estrogen in the body. This transformation occurs in response to the enzyme **aromatase**.

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.

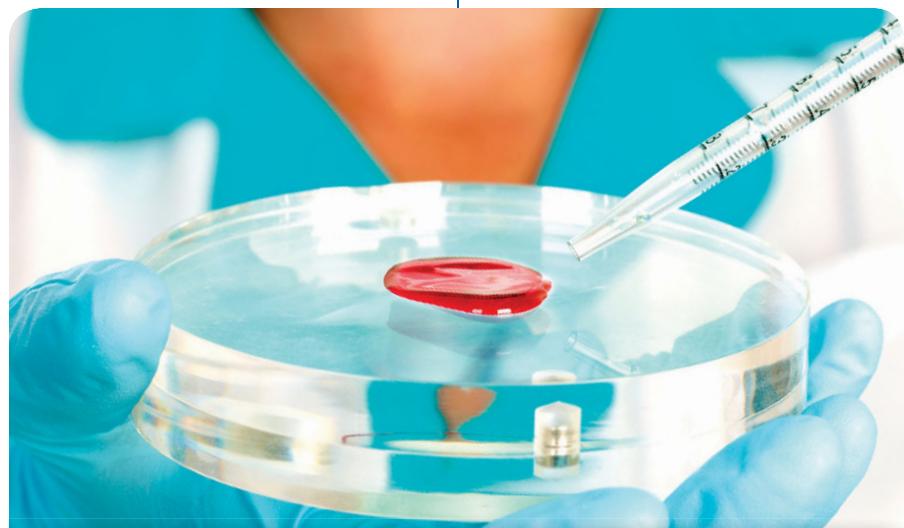
The long-term effect of testosterone deprivation was demonstrated later in this study at **Massachusetts General Hospital** when men whose testosterone was restored to the higher ranges did not fully recover **sexual function** lost by this intentional suppression of testosterone.

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**.



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 “*medieval*” manner.

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

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

### **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>65</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**.

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.

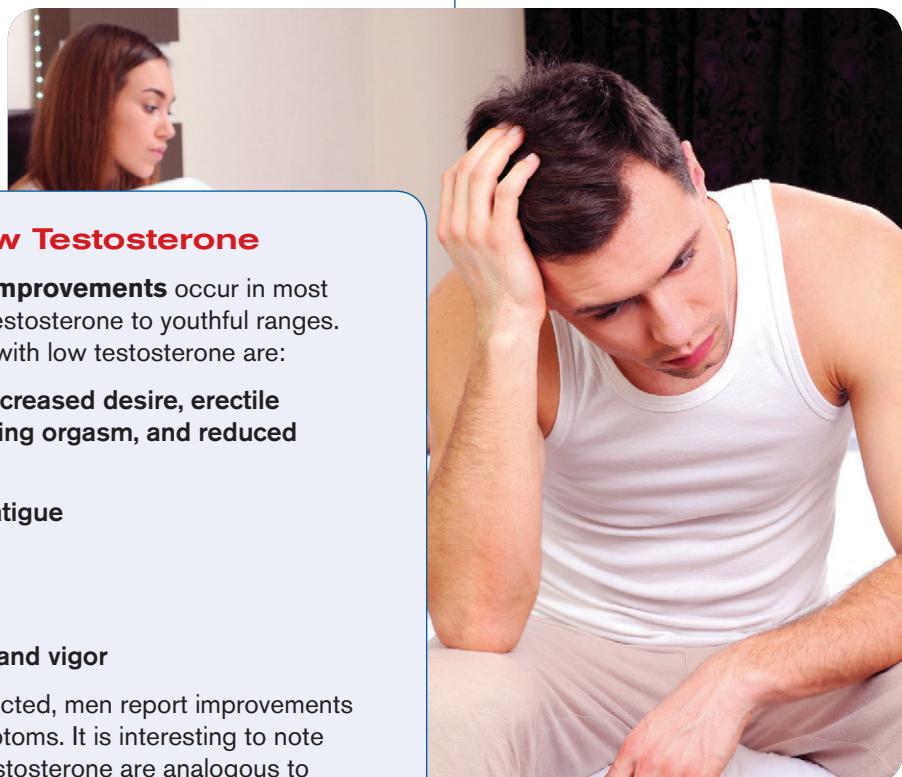
**Life Extension** has long recommended that aging men maintain **total testosterone** at an optimal range of **700-900 ng/mL**. This **Massachusetts General Hospital** study helps confirm that the greatest benefits occur when **total testosterone** and **estradiol** levels are in ranges that can easily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



to levels not seen in the real world. It thus 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

## 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.

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.

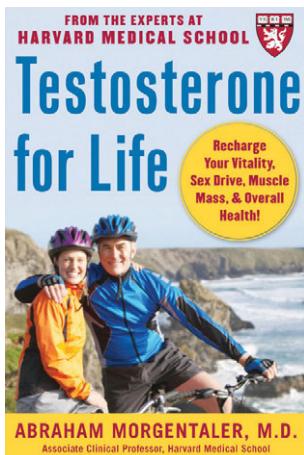
### Low Testosterone Increases Prostate Cancer Risk

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** or **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 2, 2014**, 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**.

For longer life,

A handwritten signature in black ink, appearing to read "William Faloon".

William Faloon

References for this article begin on page 16.

## 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

#### 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)**

#### 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

#### 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)**

#### 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**

Non-member retail price: \$400 • Special Member Discount Price: **\$199**

**Blood Test Super Sale – March 31<sup>st</sup> through June 2, 2014.**

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

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

### References

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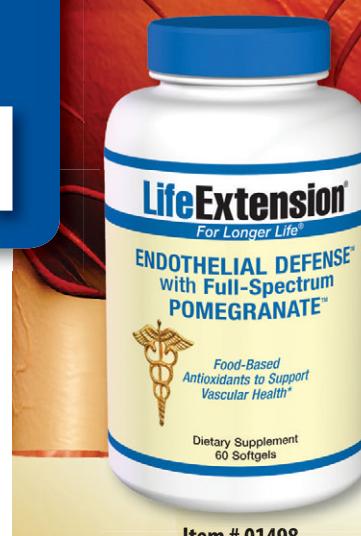
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<b>Superoxide Dismutase/Gliadin Complex</b> (GlisODin®) [SOD (Superoxide Dismutase)]	<b>500 mg</b>
Enzyme Activity = 500 IU	
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<b>Pomegranate 5:1 Extract (fruit)</b>	<b>100 mg</b>
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## IN THE NEWS

### "Prehypertension" Associated With Greater Stroke Risk

The results of a meta-analysis published in *Neurology*<sup>®</sup> reveal that any **blood pressure** reading above what is currently considered normal is associated with an increased risk of stroke.\*

Dingli Xu, MD, of Southern Medical University in Guangzhou, China, and colleagues selected 19 cohort studies including a total of over 760,000 men and women for their analysis. They compared individuals who had normal blood pressure with those considered to have prehypertension, defined as a reading between **120/80** and **140/90 mmHg**. The prehypertension group, who comprised up to **54%** of the studies' participants, was further divided into groups who had blood pressure higher and lower than **130/85 mmHg**.

The team found that subjects in the high range of prehypertension had a **95%** greater risk of developing a stroke over follow-up periods ranging from four to 36 years in comparison with those who had normal blood pressure.

Those in the low prehypertension group (between **120/80** and **130/85**)

had a **44%** greater risk. The take-home message from this meta-analysis is that any **blood pressure** reading higher than **120/80** presents a significant increased risk for stroke.

**Editor's Note:** Blood pressure is classified as normal if the systolic reading is **120** and the diastolic is **80 mmHg**. However, many authorities believe that a blood pressure lower than **120/80** is optimal.

—D. Dye

\* *Neurology*. 2014 Mar 12.



### Meta-Analysis Finds Reduced Mortality Among Breast Cancer Patients With Sufficient Vitamin D Levels

*Anticancer Research* published the results of a meta-analysis conducted by a team from the Naval Health Research Center and the University of California, San Diego. The research reveals a protective effect for higher levels of vitamin D against the risk of dying from breast cancer.\*

Cedric F. Garland and associates selected five observational studies conducted between 2009 and 2013 that included a total of 4,443 women, among whom there were 471 cases of breast cancer. For women whose serum 25-hydroxyvitamin D levels were among the highest categories, a lower risk of dying from breast cancer was observed. In a pooled analysis of all participants, subjects whose vitamin D levels were classified as high at an average of **30 nanograms per milliliter** experienced a **44%** reduction in breast cancer mortality risk when compared to those whose levels were low at **17 nanograms per milliliter**.

**Editor's Note:** Dr. Garland stated that, "There is no compelling reason to wait for further studies to incorporate vitamin D supplements into standard care regimens since a safe dose of vitamin D needed to achieve high serum levels above **30 nanograms per milliliter** has already been established."

—D. Dye

\* *Anticancer Res*. 2014 Mar;34(3):1163-6.



## Grape Seed Protects Against Damaging Effects Of Chemo While Boosting Its Effectiveness

Results published in the journal *PLoS One* by researchers at the University of Adelaide in Australia found a protective benefit for grape seed extract against mucositis, one of the most damaging effects of chemotherapy.\* The condition is characterized by inflammation and ulceration of the gastrointestinal tract that particularly affects the mouth and small intestine.

Dr. Ker Yeaw Cheah and colleagues divided 64 rats into groups that received one of three doses of grape seed extract or water for a period of eight days. During this time, all animals were injected with either the chemotherapy drug 5-fluorouracil or saline. On the day after treatment ended, the animals were examined for the presence of intestinal damage and inflammation.

In comparison with rats that received 5-fluorouracil alone, those that received grape seed had less intestinal damage and up to 55% less inflammation.

**Editor's Note:** When grape seed was administered with 5-fluorouracil to cultured human colon cancer cells, the drug's ability to inhibit cancer growth was boosted by 26% in comparison to drug treatment alone.

—D. Dye

\* *PLoS One*. 2014 Jan 21;9(1):e85184.



## Increased Vitamin K Intake Associated With Lower Risk Of Dying Over 4.8-Year Median

A study reported in the *Journal of Nutrition* links a higher intake of vitamin K with a lower risk of dying from any cause over a median follow-up of 4.8 years.\*

The study included 7,216 participants in the PREDIMED study, which sought to evaluate the protective effect of a Mediterranean diet against the risk of cardiovascular disease in older men and women. Annual dietary questionnaire responses completed by the participants were analyzed for the intake of vitamin K1 and vitamin K2. Over a 4.8-year median, there were 323 deaths, including 81 deaths from cardiovascular disease and 130 cancer deaths.

Adjusted analysis uncovered a 36% lower risk of dying from any cause and a 46% lower risk of dying from cancer over follow-up among those whose vitamin K1 intake was among the top 25% of participants compared to the lowest 25%.

**Editor's Note:** For those who increased their intake of vitamin K1 over follow-up, the risk of death was 43% lower and for vitamin K2, the risk was 45% less than subjects whose intake was reduced or unchanged. Improvement of vitamin K1 and K2 intake was also associated with a 36 and 59% lower risk of dying from cancer during the follow-up period.

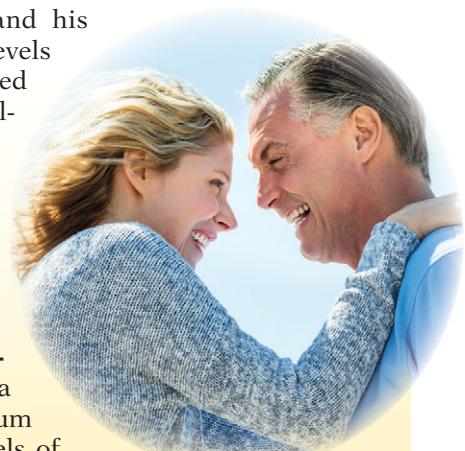
—D. Dye

\* *J Nutr*. 2014 Mar 19.

## Calcium, Vitamin D Supplementation Associated With Improved Lipid Levels

An article published in a recent issue of *Menopause* reported findings gleaned from the Women's Health Initiative CaD trial of improved lipid levels among participants supplemented with calcium and vitamin D.\*

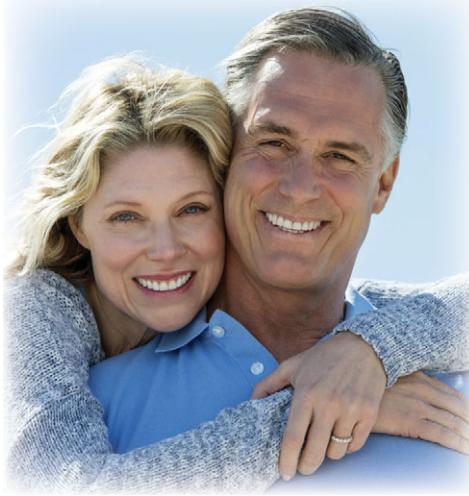
Peter F. Schnatz, DO, NCMP, and his colleagues compared serum lipid levels of over 600 participants who received a placebo or 1,000 milligrams of calcium plus 400 IU of vitamin D3 over the course of the trial. In addition to being twice as likely to have vitamin D levels of 30 nanograms per milliliter or more, women who received calcium and vitamin D had levels of low-density lipoprotein (LDL) that averaged 4 to 5 milligrams per deciliter lower than those who received a placebo. Subjects who received calcium plus vitamin D also had greater levels of beneficial high-density lipoprotein (HDL) cholesterol levels than the placebo group.



**Editor's Note:** Furthermore, among those whose vitamin D levels were 15 nanograms per milliliter or higher, calcium and vitamin D supplementation was associated with lower levels of triglycerides.

—D. Dye

\* *Menopause*. 2014 Mar 3.



### High-Fiber Diet Associated With Lower Risk Of Prostate Cancer

An article published in the online version of the *Journal of Nutrition* reveals the finding of French researchers of a reduction in the risk of prostate cancer over a 12.6 year median among men with a high intake of insoluble fiber.\*

The analysis included 3,313 men who enrolled in the *Supplémentation en Vitamines et Minéraux Antioxydants* (SU.VI.MAX) study in 1994. Dietary records completed on at least three occasions from 1994 to 2002 were analyzed for the quantity, source, and type of fiber consumed. The subjects were followed until 2007, during which 139 men developed a first primary prostate cancer.

Among participants whose intake of fiber was among the top 25% of participants, there was a 53% lower risk of developing prostate cancer in comparison with those in the lowest 25%.

**Editor's Note:** When fiber was analyzed by type, insoluble fiber emerged as protective; when analyzed by source, fiber from legumes had a significant protective effect.

—D. Dye

\* *J Nutr.* 2014 Feb 19.

### Mechanism Proposed That Links Decreased Levels Of Vitamin D And Serotonin In Autism Patients

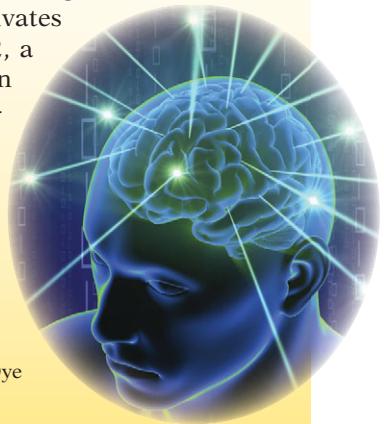
The *FASEB Journal* reported the finding of a mechanism for vitamin D in maintaining adequate brain hormones that are needed to prevent autism spectrum disorders. Levels of 25-hydroxyvitamin D3, the precursor to the hormonally active form of the vitamin known as calcitriol, have been found to be lower in autistic individuals compared with those who do not have the condition.\*

The hormone serotonin, which is reduced in autistic brains, promotes normal social behavior and facilitates accurate assessment of emotional social cues—abilities that are lacking in autism. It was discovered that calcitriol activates the transcription of tryptophan hydroxylase 2, a gene that converts the amino acid tryptophan to serotonin in the brain. Calcitriol simultaneously inhibits the gene responsible for another enzyme, tryptophan hydroxylase 1, resulting in a decrease in the production of serotonin in the gut and other locations where it can promote inflammation.

**Editor's Note:** The finding could explain the "serotonin anomaly" observed in autism, characterized by reduced brain serotonin and elevated blood levels of the hormone.

—D. Dye

\* *FASEB J.* 2014 Feb 20.



### Greater Lycopene Intake Associated With Lower Prostate Cancer Risk

Research reported in the *Journal of the National Cancer Institute* adds more evidence to a protective effect for lycopene, a carotenoid occurring in tomatoes and other red-pigmented plant foods against the risk of developing prostate cancer.\*

For the current study, Harvard researchers evaluated data from 49,898 male health professionals. Dietary questionnaires completed at different time points were analyzed for lycopene intake. Prostate cancer cases and deaths from the disease were determined for the period from 1986 to 2010.

Among men whose lycopene intake was among the top one-fifth of participants, there was a 28% lower risk of prostate cancer in comparison with those whose intake was among the lowest fifth. When the risk of lethal prostate cancer was examined, those in the highest intake group experienced a 44% lower risk. In an analysis of early versus recent intake, early intake proved to be protective.



**Editor's Note:** Having a high intake of lycopene was additionally associated with cancer biomarkers that were indicative of a reduced potential for angiogenesis (the formation of new blood vessels by a tumor that facilitates its spread).

—D. Dye

\* *J Natl Cancer Inst.* 2014 Feb 1;106(2):dj430.



## Omega-3 Fatty Acids Improve Myocardial Function, Oxidative Stress In Rett Syndrome

An article that appeared in *Mediators of Inflammation* reports a benefit for supplementation with omega-3 fatty acids in Rett syndrome, a neurodevelopmental disorder that is associated with a **300-fold** increased risk of sudden cardiac death in comparison with that of the general population.\*

The study included 66 Rett syndrome patients. Half of the participants received supplements containing the omega-3 fatty acids EPA and DHA for one year, while the remainder received no supplementation. Echocardiography evaluated myocardial function before and after the treatment period, and blood samples collected at the beginning of the study and at six and 12 months were analyzed for plasma free isoprostanes (markers of oxidative stress) and other factors.

Omega-3-supplemented subjects experienced a reduction in oxidative stress markers, whereas the control group had no significant changes. Myocardial dysfunction and clinical severity also improved among those who received omega-3.

**Editor's Note:** The researchers additionally observed significant improvements in attention, breathing abnormalities, muscle tone, movement, autonomic dysfunction, and growth in supplemented subjects.

—D. Dye

\* *Mediators Inflamm.* 2014 Jan 12.

## DHA Improves Children's Sleep

The results of a study described in an article published in the *Journal of Sleep Research* reveal an association between higher levels of the omega-3 polyunsaturated fatty acid docosahexaenoic acid (DHA) and better sleep in children.\*

In a pilot study of 362 students aged seven to nine years, Professor Paul Montgomery of Oxford University and his colleagues found that supplementation with **600 milligrams** DHA per day for 16 weeks improved sleep in a sampling of participants who were rated by their parents as sleeping poorly. Those who received DHA experienced seven fewer waking episodes and nearly an hour more sleep than those who received placebos.

When blood fatty acid levels were evaluated, the researchers found an association with higher levels of DHA and less bedtime resistance, parasomnias, and total sleep disturbances. Having a higher ratio of DHA to arachidonic acid was also associated with better sleep.

**Editor's Note:** "This randomized controlled trial does suggest that children's sleep can be improved by DHA supplements and indicates yet another benefit of higher levels of omega-3 in the diet," co-author Dr. Alex Richardson concluded.

—D. Dye

\* *J Sleep Res.* 2014 Mar 8.



## Deficient Levels Of Vitamin D Associated With Compromised Immune Function

An article appearing in the *Journal of Clinical Endocrinology & Metabolism* associates vitamin D deficiency with elevated markers of inflammation in older men and women, indicating immune dysfunction.\*



The study included 481 men and 476 women who were subjects in the Trinity Ulster Department of Agriculture aging cohort study, which investigated nutritional and other factors in the development of chronic diseases in adults 60 years of age and older. Blood samples were analyzed for serum 25-hydroxyvitamin D, the inflammatory markers serum C-reactive protein (CRP), tumor necrosis factor-alpha and interleukin-6 (IL-6), and the anti-inflammatory cytokine interleukin-10 (IL-10).

The researchers observed a decrease in IL-6, CRP, the ratio of IL-6 to IL-10, and the ratio of CRP to IL-10 in association with rising levels of vitamin D. "Our data suggest vitamin D may be involved in maintaining the health of the immune system as well as the skeletal system," Dr. Ward remarked.

**Editor's Note:** Dr. Ward added that, "Ensuring older individuals have optimal vitamin D levels may be a way to boost immune function in this population, but this needs to be confirmed through additional studies."

—D. Dye

\* *J Clin Endocrinol Metab.* 2014 Feb 25.



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**PrimaVie® shilajit** has been shown to **double** levels of **CoQ10** in mitochondria!<sup>11</sup> Combining CoQ10 and shilajit produced a **56% increase** in energy production in the brain—**40% better** than CoQ10 alone. And in muscle, there was a **144% increase** in energy production—**27% better** than CoQ10 alone.<sup>2</sup>

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- **PQQ** activates genes that promote the formation of *fresh mitochondria*.<sup>3</sup>
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The optimal dose of **PQQ** is **20 mg** each day. Members taking **Mitochondrial Energy Optimizer**, **Mitochondrial Basics**, or **PQQ 10 mg caps** obtain this optimal PQQ dose when taking the new **Super Ubiquinol CoQ10 with PQQ**.



ITEM # 01733

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Ubiquinol (as Kaneka QH Ubiquinol®)	100 mg
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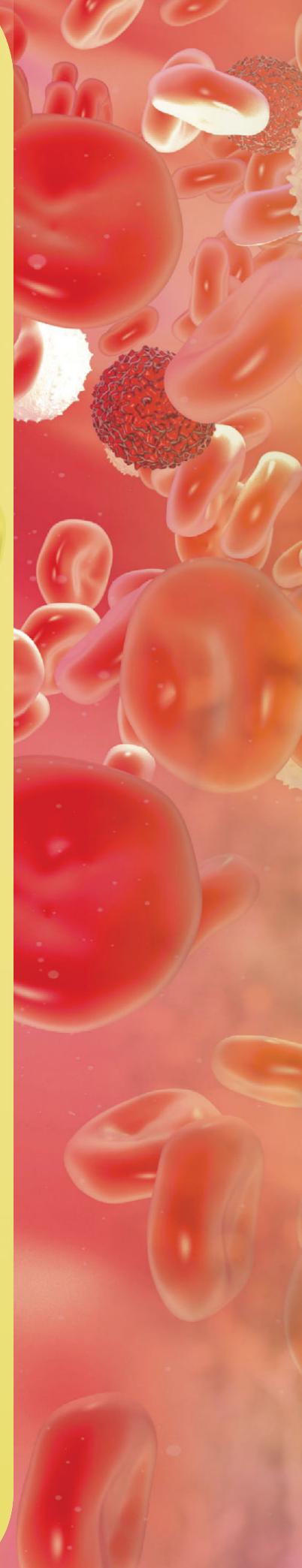
BY SARAH BRIGHTON

# Wide-Ranging Longevity Benefits Of Pycnogenol

After 40 years of research and being the subject of over 300 publications, **Pycnogenol** (French Maritime pine extract) continues to astonish scientists with its longevity applications. First developed in a European laboratory, Pycnogenol is a patented mixture of plant flavonoids with abundant beneficial effects.<sup>1</sup>

New studies show Pycnogenol can prevent or reverse the oxidative damage that produces blood vessel disease, metabolic syndrome, diabetes, and neurodegenerative disorders. This plant extract also shows promise in such far-flung conditions as traumatic brain injury, skin problems, pain syndromes, and even tinnitus.

In this article, you will learn the latest clinical research about this European discovery. >





### Pycnogenol And Cardiovascular Disease

Despite all the advances in cholesterol-lowering medications and surgical interventions, atherosclerosis, coronary artery disease, heart attack, heart failure, stroke, and peripheral vascular disease remain the leading causes of death and disability in the United States.<sup>2,3</sup>

Pycnogenol, long touted for its powerful antioxidant effects, has shown remarkable results in preventing and reversing cardiovascular disease.

For example, a recent study of patients with stable coronary artery disease (people with chest pain, or angina, or those who have survived a heart attack) demonstrated a **32%** improvement in ***endothelial function*** after eight weeks of Pycnogenol supplementation.<sup>4</sup> No change was seen in placebo recipients. At the same time, levels of *isoprostane*, an index of oxidative stress, were reduced by about **8.5%** in the supplemented group, again with no change in placebo subjects.

Further demonstration of Pycnogenol's ability to slow or prevent the progression of cardiovascular disease comes from a **2014** study of people with atherosclerosis of the femoral (leg) or carotid (neck) arteries.<sup>5</sup> Although these patients had not yet developed symptoms, they all had atherosclerotic plaques visible on ultrasound examination of their vessels. The patients were divided into several groups that included low-dose Pycnogenol (**50 mg/day**), higher-dose Pycnogenol (**100 mg/day**), aspirin, or a combination of Pycnogenol (**100 mg/day**) and aspirin.

In the groups that received either no Pycnogenol or just **50 mg/day**, ultrasound evidence of progression (larger or more frequent plaques) was visible. In all groups receiving **100 mg/day** Pycnogenol, progression was almost completely halted. The percentage of individual plaques that progressed to the dangerous and irreversible stage called "fibroatheroma" was less than **6%** in subjects taking **100 mg/day** Pycnogenol, but rose to **16.6%** in those receiving aspirin-only, and went up to **21.3%** in controls (receiving neither aspirin or Pycnogenol).<sup>5</sup>

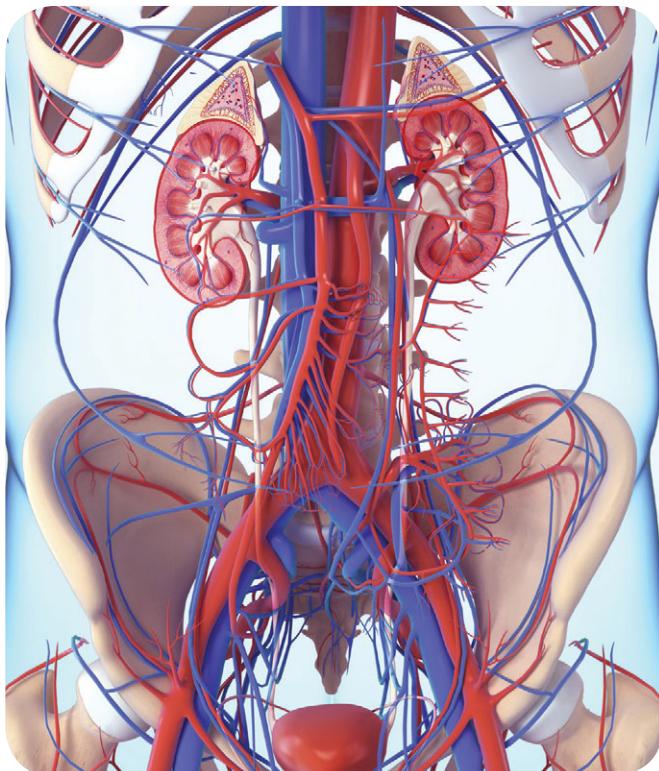
Another human study demonstrated similar effects in a group of patients with mild to moderate congestive heart failure (class II or III, which often follows a heart attack or a lifetime of high blood pressure). Researchers treated these patients with placebo or **Pycnogenol plus coenzyme Q10**.<sup>6</sup> After 12 weeks, the results showed:

- **28%** of Pycnogenol/CoQ10-supplemented patients improved by at least one heart failure class compared to **14%** of placebo recipients. (Heart failure classes are based on patients' ability to function, so improvement by one class represents substantial improvement in quality of life.)
- Blood pressures (systolic and diastolic) fell significantly in the supplemented group as compared to controls.
- A measure of blood pumped per heartbeat (ejection fraction) shot up by **22.4%** in the supplemented group, while rising just **4%** in controls.
- Supplemented patients increased their walking distance on a treadmill more than **3-fold**, compared to only slightly in the placebo group.
- Leg swelling, a major heart failure symptom, decreased significantly in the supplemented group, but only slightly in placebo patients.<sup>6</sup>

## Three Ways Pycnogenol Protects The Heart

Laboratory studies demonstrate at least three ways Pycnogenol produces such dramatic improvements to heart health:

1. Studies show that whole segments of major arteries undergo relaxation when treated with Pycnogenol, in part by stimulation of *eNOS*, the enzyme system that produces nitric oxide, the artery-relaxation signal.<sup>12,13</sup> Indeed, treatment of whole arteries with Pycnogenol not only produces immediate relaxation, but it also reduces arterial wall content of the stiffening protein collagen, which contributes to elevated blood pressure and endothelial damage.<sup>13</sup>
2. Pycnogenol helps to minimize inflammatory changes that occur in response to oxidative stress in blood vessels. Studies show a sharp reduction in activation of *NF-kappaB*, a master inflammatory regulator largely responsible for the release of inflammatory cytokines.<sup>14,15</sup>
3. Pycnogenol inhibits the expression of specialized "adhesion molecules" that make arterial walls "sticky," causing platelets and white blood cells to clump along the walls in early stages of plaque formation.<sup>14</sup>



## The Battle Against Metabolic Syndrome

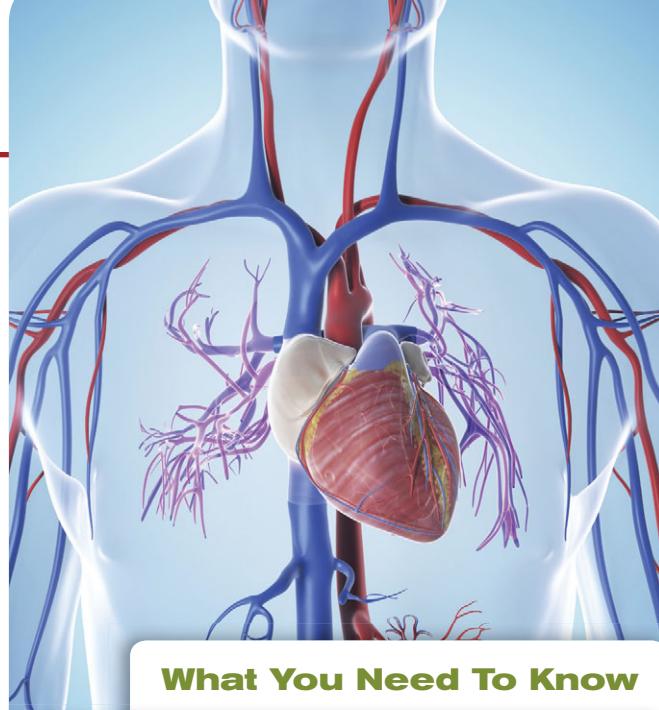
As a result of excessive calorie consumption and inadequate physical activity, thousands of Americans are suffering from metabolic syndrome, a cluster of conditions consisting of abdominal obesity, high blood pressure, low HDL (good) cholesterol, elevated triglyceride levels, and insulin resistance. In general, the more components of metabolic syndrome you have, the higher your risk of cardiovascular disease, cancer, and diabetes, among many other “age-related” disorders.<sup>16,17</sup>

Because signs and symptoms of metabolic syndrome often relate to oxidative stress and subsequent inflammation,<sup>18,19</sup> it’s natural that researchers in the field would be interested in the potent antioxidant flavonoids found in Pycnogenol. Two excellent human studies tell most of the story.

A group of 64 adults with all five components of metabolic syndrome received **150 mg** of Pycnogenol a day for six months; a comparable group of 66 people served as unsupplemented controls.<sup>20</sup> At the end of the study, the supplemented patients had significantly lower triglycerides and blood pressure, and significantly higher HDL cholesterol compared to controls. In addition, fasting glucose fell significantly by **14.4%**, waist circumference dropped **3.11** inches (**7.4%**) in men and **2.9** inches (**8%**) in women, and plasma free radicals fell by **34.6%** in the supplemented group.

The second important study involved patients with metabolic syndrome who were showing early signs of kidney damage (protein in urine) from high blood pressure.<sup>21</sup> All patients were treated with ramipril (Altace<sup>®</sup>), an angiotensin-converting enzyme (ACE) inhibitor drug used in hypertension, while a subgroup was supplemented with Pycnogenol as well. After six months, the Pycnogenol group experienced a number of improvements over the Ramipril-only group:

- Urinary protein fell **52.7%** in supplemented subjects compared to **22.4%** in the drug-only group.
- Blood flow in the kidneys (an essential measure of kidney damage) in the Pycnogenol group improved by **139%** compared to less than **100%** with Ramipril alone (measured by diastolic flow).
- C-reactive protein (an important measure of inflammation) dropped by **25.3%** in Pycnogenol subjects, but decreased only slightly in the drug-only group.
- Body mass index (BMI) was lowered in Pycnogenol subjects (**5.7%**), while the drug-only group did not show any significant changes after treatment.



### What You Need To Know

## Pycnogenol Protects Against Oxidative Damage

- Oxidative stress accelerates aging and brings on most chronic and many acute conditions.
- Pycnogenol, a standardized preparation extracted from French Maritime pine, is rich in procyanidin flavonoid molecules and contains some of the most potent antioxidant properties known.
- Originally used in Europe for patients with chronic venous insufficiency (veins do not pump enough blood back to the heart), Pycnogenol is finding multiple targets in a world filled with oxidative stress.
- Studies now show that Pycnogenol can protect heart and blood vessel tissues against the oxidation that can lead to heart attacks, strokes, and other vascular disorders.
- Pycnogenol is also finding a role fighting metabolic syndrome and diabetes, and in protecting brain cells from neurodegenerative diseases.
- Further studies are beginning to reveal Pycnogenol’s preventive capabilities in fighting skin aging, traumatic brain injury, pain syndromes, and even persistent tinnitus.

These two studies showed convincingly that Pycnogenol is capable of remedying all five of the classic risk factors for metabolic syndrome, and demonstrated the underlying impact on oxidative stress and inflammation.

## Diabetes

Not surprisingly, similarly compelling results are now being seen in human and laboratory studies of diabetes, one of the unfortunate potential outcomes of metabolic syndrome.

In one study, patients with type II diabetes took either a placebo or **100 mg** of Pycnogenol for 12 weeks while continuing their standard anti-diabetic treatment.<sup>22</sup> The fasting plasma glucose levels fell significantly in the Pycnogenol group compared with placebo recipients. The Pycnogenol group also experienced lower hemoglobin *A1c* levels (a measure of long-term glucose control) in the first month. Importantly, the Pycnogenol group also had a significant reduction in *endothelin-1*, a protein that promotes blood vessel constriction and hence, higher blood pressure.

In a second human study of diabetics with early *microangiopathy* (small vessel disease that precedes development of skin ulcers as well as kidney and eye complications), patients took either no additional medication, or **50 mg** of Pycnogenol three times daily for four weeks.<sup>23</sup> After that time, no significant changes were seen in control subjects, but in the supplemented group there was a progressive decrease in measures

of microangiopathy and of capillary leakiness, with a significant improvement in blood perfusion (delivery of blood to a tissue).<sup>23</sup> Together, these results mean a reduced risk for developing the kind of diabetic ulcers that can lead to amputation.<sup>23</sup>

Diabetics often suffer from microvascular damage to their nerves, which may produce excruciating and dangerous diabetic neuropathy. Lab studies now show that blood sugar reductions in Pycnogenol-supplemented animals are accompanied by improvements in the impaired nerve conduction velocity seen in diabetic neuropathy.<sup>24</sup>

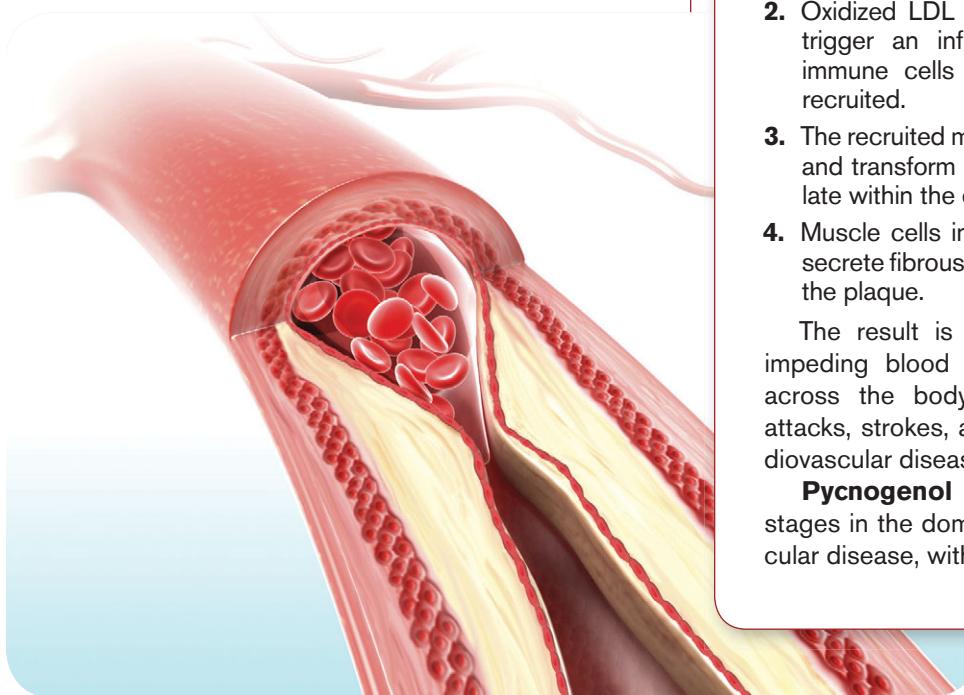
Pycnogenol can directly oppose the excessive oxidative stress produced by diabetes, which is responsible for so much of that disease's age-accelerating damage. Multiple animal studies demonstrate that Pycnogenol restores to normal the elevated markers of oxidation seen in tissues and organs of diabetic animals, while also restoring normal levels of protective intracellular antioxidant systems.<sup>25-27</sup> This has now been shown to lead directly to reductions in inflammatory molecules, including *thromboxane*, a protein that triggers platelets to clump together with the potential for a dangerous clot to form.<sup>28</sup>

## Four-Step Creation Of Harmful Plaque<sup>7-11</sup>

1. Oxidative stress leads to the oxidation of LDL particles that have accumulated within the inner lining of the arterial wall (*endothelium*).
2. Oxidized LDL and damaged endothelial cells trigger an inflammatory response in which immune cells (*monocytes/macrophages*) are recruited.
3. The recruited macrophages ingest oxidized LDL and transform into "foam cells," which accumulate within the endothelium to form plaque.
4. Muscle cells in the artery then proliferate and secrete fibrous elements to form a "cap" around the plaque.

The result is stiffening of the arteries and impeding blood delivery to vulnerable tissues across the body, potentially producing heart attacks, strokes, and other manifestations of cardiovascular disease.

**Pycnogenol** acts to slow or stop multiple stages in the domino effect leading to cardiovascular disease, with impressive clinical results.<sup>4-6</sup>



## Emerging Roles For Pycnogenol

As we continue to learn about the essential role of oxidative damage in so many disease processes, we discover the multiple procyanidins in Pycnogenol offer outstanding antioxidant support in a growing number of disorders. Here are a few to watch for in the coming years:

- **Skin Health:** Animal studies reveal that when Pycnogenol is applied topically, it can protect skin from the inflammation, immune suppression, and cancer risk caused by ultraviolet radiation.<sup>36</sup> A recent human study demonstrated that oral Pycnogenol supplementation improved skin hydration and elasticity in post-menopausal women, with the most prominent effect seen in those with dry skin conditions.<sup>37</sup>
- **Pain:** Pycnogenol supplements prevent cramps, muscle pain at rest, and pain during and after exercise in normal individuals, in athletes, in those with venous disease and claudication, and in diabetics with microangiopathy (small vessel disease).<sup>38</sup> In addition, women with endometriosis achieved significantly more pain relief when Pycnogenol was added to their oral contraceptive, compared with the contraceptive alone.<sup>39</sup>
- **Traumatic Brain Injury:** This type of injury is increasingly common, occurring not only in active young people and military personnel, but also in

older adults who suffer from falls. Brain damage following trauma results in massive oxidative damage as blood flows to the injured area. Animal studies show that Pycnogenol, even administered up to four hours after a brain injury, significantly reduces oxidative stress and damage to proteins in the delicate synapses, where nerve cells communicate with one another. This is accompanied by a similarly marked reduction in inflammatory markers in brain areas vital for memory and cognition.<sup>40,41</sup>

- **Tinnitus:** Tinnitus is a maddening, distressing, and distracting condition in which continuous sound is perceived in one or both ears, without any actual sound being present. It has multiple causes, including poor blood flow and high oxidative stress,<sup>42</sup> but no convincing cure has yet been discovered. Risk factors for developing tinnitus include exposure to loud noise, obesity, smoking, excess alcohol consumption, previous head injuries, history of arthritis, and hypertension.<sup>43</sup> In a study of 82 patients with mild-to-moderate tinnitus who had decreased blood flow in the cochlea (sound-sensing portion of the ear), Pycnogenol at both **100 and 150 mg/day** improved blood flow velocity in the cochlea, with significant relief of symptoms in an average of 34 days.<sup>44</sup>



Finally, Pycnogenol has been shown to inhibit *alpha-glucosidase*, a key intestinal enzyme that breaks down simple starch into sugars.<sup>29</sup> Blocking *alpha-glucosidase* is an effective way of slowing absorption of glucose into the bloodstream.<sup>30</sup>

### Pycnogenol Offers Neuroprotection

Human studies have not yet been conducted, but exciting basic science is being done in laboratories around the world on the potential for Pycnogenol to improve some of the most heartbreaking diseases of aging, the neurodegenerative conditions that include Alzheimer's and Parkinson's diseases. Studies are showing that Pycnogenol's powerful antioxidant properties can intercept ongoing oxidant damage that leads to these disorders.

Studies reveal sharp drops in markers of both oxidation and inflammation when Pycnogenol is provided in animal models of Alzheimer's and Parkinson's diseases, as well as of diabetes, which is a leading cause

of neurodegeneration.<sup>31-33</sup> Pycnogenol protects brain cells and their supporting structures from premature cell death, and mitigates the decline in cognitive performance seen in an animal model of Alzheimer's.<sup>31,33,34</sup> Pycnogenol also boosts brain cells' own natural cellular antioxidant systems, helping them resist chronic damage.<sup>35</sup>

## Summary

Pycnogenol, a standardized mixture of pine bark-derived flavonoids, has long been used in Europe to treat cardiovascular disease, metabolic syndrome, diabetes, and neurodegenerative conditions.

Emerging research reveals that Pycnogenol is valuable in skin inflammation, the management of pain, traumatic brain injury, and tinnitus.<sup>36-40</sup>

It's regrettable that so few physicians in the United States recommend Pycnogenol considering its clinical utility has been demonstrated in over 300 scientific publications. ●

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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Next-Generation Formula . . .

# ARTHROMAX® ADVANCED WITH UC-II® AND APRÈSFLEX®



Item # 01618

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

## Better Absorption for Optimum Benefit

AprèsFlex® 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 B4**, 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® boswellia absorbs into the blood **52%** **better** than previously available forms of boswellia, for superior effectiveness.

## ArthroMax® Advanced with UC-II® and AprèsFlex®

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

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

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

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

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

# ANTI-AGING EFFECTS OF PYCNOGENOL®

Life Extension® Pycnogenol® French Maritime Pine Bark Extract is a natural botanical extract containing procyandins, bioflavonoids, and other health-giving molecules that synergistically support the body's natural defenses against 5 major processes that characterize premature aging. Its effectiveness is backed by 40 years of study.

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

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

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

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

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

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

Unlike other forms of pine bark extract, Pycnogenol® is a superior patented and standardized ingredient that has undergone extensive human clinical research to substantiate its numerous anti-aging properties. A bottle of Life Extension® Pycnogenol® French Maritime Pine Bark Extract containing 60 vegetarian capsules retails for \$64. If a member buys four bottles, the price is reduced to **\$45** per bottle. The dose for most people is one capsule daily, so each bottle lasts **two months**.

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

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

To order Pycnogenol® French Maritime Pine Bark Extract, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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



Item # 01637

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BY MICHAEL DOWNEY

# *A New Way To Manage Depression *Without Drugs**

**One in 10** American adults suffers from **depression**.<sup>1</sup>

Standard care is prescription drugs that are laden with side effects.<sup>2-7</sup> For many patients, the effectiveness of these drugs can diminish over the course of treatment,<sup>8</sup> forcing depressed individuals to learn to live with their mood disorder.

Researchers have found that a specialized complex of **curcumin** fights the crippling effects of depression<sup>9</sup> by attacking multiple underlying targets.<sup>10</sup>

A team of internationally recognized scientists has published an impressive clinical trial on the antidepressant benefits of a superior-absorbing curcumin that **Life Extension®** members have used for many years.<sup>9</sup>





In this **2013** study of depressed human subjects, curcumin's effectiveness was similar to that of a standard antidepressant medication. However, curcumin contains none of the side effects associated with commonly used drug therapies<sup>9</sup> and provides additional health benefits as well.

These results are in keeping with earlier research showing that curcumin increases levels of "feel good" neurotransmitters such as **serotonin** and **dopamine**.<sup>10</sup> >

## Landmark Clinical Trial On Curcumin

A breakthrough clinical study recently published in *Phytotherapy Research* should be welcome news to anyone afflicted with depression, which by 2020 is expected to become the world's second-leading cause of disability.<sup>11</sup>

Depression continues to escalate despite "more than half a century of modern psychopharmacology, with billions of dollars spent on antidepressants annually world-wide."<sup>12</sup> And about **63%** of patients who take antidepressants experience at least one of the numerous potential side effects,<sup>2</sup> which include anxiety, thoughts of suicide, insomnia, weight gain, and sexual dysfunction.<sup>2-7</sup> And the payoff for all these risks? Many depressed patients do not respond ***at all*** to drug antidepressants and most patients fail to achieve complete remission!<sup>13</sup> Some evidence indicates response rates as low as **17%** after taking specific antidepressants.<sup>14</sup>



Scientists have been seeking safer and effective alternatives to pharmaceutical medications.

The antidepressant activity of curcumin was initially suggested by various animal models of depression.<sup>10,15-19</sup> But no evidence had been found on the ***clinical*** effectiveness of curcumin against depression.

So researchers designed a clinical experiment that was randomized and *observer-masked*. This means the observers were not told what treatment had been allotted to the patients, and the patients were instructed not to discuss their treatment regimens with the observers.<sup>9</sup>

The researchers randomly divided volunteers diagnosed with major depressive disorder into three study groups of 20 patients each. The first group took **20 mg** of the antidepressant **Prozac® (fluoxetine)** every morning. The second group took a total of **1,000 mg** of absorption-enhanced curcumin in two divided doses of **500 mg** each. And the third group took **both** the once-daily fluoxetine and the twice-daily curcumin.<sup>9</sup>

The results were measured using the Hamilton Rating Scale for Depression (HAM-D scale).<sup>20</sup> This scale provides a way to rate the severity of depression by assessing mood, anxiety, feelings of guilt, suicidal ideation, insomnia, agitation or motor retardation, weight loss, and other body symptoms.<sup>9</sup>

Efficacy and safety were evaluated after two, four, and six weeks. The HAM-D scale showed that the proportion of patients responding well to treatment was **62.5%** in the curcumin group of the study, **64.7%** in the fluoxetine group, and **77.8%** in the combination group.<sup>9</sup>

The study team concluded that there was no statistically significant difference in the improvements among the three treatment arms.<sup>9</sup> In other words, there was no difference in the effectiveness of the enhanced curcumin formulation compared to the prescription antidepressant fluoxetine in improving symptoms of depression between baseline and six weeks of treatment.<sup>9</sup>

The study team concluded that this "is the first randomized clinical trial that clearly highlights that curcumin may be an effective and safe agent when used as a modality of treatment in patients of MDD [major depressive disorder]."<sup>9</sup>

The advantage of curcumin as an antidepressant is its benign profile of adverse events as compared to other antidepressants.<sup>9</sup> Curcumin is known to be safe—even in a *huge* dose of **8 grams (8,000 mg)** a day.<sup>9</sup>

This remarkable clinical trial used a unique formulation—as we'll learn next—one that overcomes a long-standing problem with curcumin: ***limited absorption***.

## Increasing Curcumin's Absorption

The form of curcumin used to achieve the impressive results in this human study was an enhanced-absorption formulation—known as **BCM-95®**—now considered the gold standard of curcumin. Its absorption in the body is far superior to that of other curcumin extracts.<sup>21</sup>

Development of curcumin as a human nutraceutical has been hampered by a major obstacle. As one study report put it, “The use of curcumin in clinics for the treatment of major depression is limited due to its poor gastrointestinal absorption.”<sup>13</sup> In addition, curcumin appears to be rapidly broken down both in the intestine and after absorption into the bloodstream.<sup>21-23</sup>

To overcome this problem, very large doses of curcumin have been needed—doses so large that in some cases, people have balked at the size and number of capsules required to achieve a good effect.<sup>21,24,25</sup> Doses as high as **12,000 mg**—that’s **12 grams** or more than a **third of an ounce**—have been used in efforts to get significant amounts of curcumin into the bloodstream.<sup>24</sup> At such high doses, curcumin can produce uncomfortable symptoms such as abdominal fullness, although no true toxicity has been demonstrated.<sup>25</sup>

In 2008, researchers showed that curcumin’s absorption (bioavailability) could be enhanced through a very simple process.<sup>21</sup> Curcumin is first extracted from the turmeric root. Next, it is highly purified, and then reconstituted with certain other compounds from the original turmeric plant. These constituents are thought to increase intestinal absorption of curcumin in the body.<sup>21</sup> The reconstituted curcumin mixture is called **BCM-95®**, which was the form of curcumin used in this study.

Clinical studies of **BCM-95®** in human volunteers have shown that its bioavailability is nearly **seven times** greater than that of a standard extract of curcumin.<sup>21,26</sup> **BCM-95®** was also more than **six times** as bioavailable as a leading mixture of curcumin that was combined with two other natural products, *lecitin* and *piperine*.<sup>21</sup> Not only is the **BCM-95®** formulation better absorbed, it achieves significant blood levels and remains in the blood longer<sup>26</sup> so that the body reaps the beneficial effects of curcumin for considerably more time.

This enhanced-absorption advantage has been shown to apply to *other* conditions in the past, such as rheumatoid arthritis<sup>27</sup>—and now to depression.<sup>9</sup>

But how exactly is curcumin able to so effectively target depression? Let’s take a look at the apparent mechanisms.



### What You Need To Know

#### Curcumin Safely Targets Depression As Effectively As Drugs

- **Depression now afflicts 1 in 10 US adults.** Drug antidepressants are now taken regularly, and the majority of patients who take them suffer at least one of the numerous, serious adverse effects.
- **By employing a special curcumin formulation called BCM-95®—with nearly seven times greater bioavailability than that of a standard curcumin—scientists conducted a clinical study demonstrating that it specifically targets the multiple underlying pathways of depression.**
- **This newly published human trial found that this superior-absorbing curcumin complex has similar efficacy to standard antidepressant medication. These potent results were achieved *without* the side effects that consistently accompany drug therapy.**
- **This high-absorption curcumin works against depression by promoting neurogenesis, increasing serotonin, norepinephrine, and dopamine levels—and inhibiting inflammation.**



### Promotes Neurogenesis

The progressive loss of the function of brain neurons—*neurodegeneration*—often occurs simultaneously with depression.<sup>28</sup> This condition is more common in aging individuals.<sup>28</sup> *Neuroinflammation* is considered a major contributing factor in both diseases.<sup>28</sup> Sustained stress and elevated levels of a class of steroid hormones called *glucocorticoids* reduce the creation of new brain neurons (*neurogenesis*).<sup>29</sup>

Despite all their negative side effects, chronic treatment with antidepressants such as *fluoxetine* and *imipramine* may increase *neurogenesis*.<sup>13,29,30</sup>

Similarly, the curcumin molecule has been shown in animal studies to boost the neurogenesis process by increasing the number of newly generated cells in a particular area (*dentate gyrus*) in a brain region known as the hippocampus.<sup>19,31</sup> Curcumin is believed to prevent—and even reverse—stress-induced decreases in levels of *brain-derived neurotrophic factor* (BDNF), a protein that supports the survival of existing neurons and encourages the growth and differentiation of new neurons.<sup>13</sup>

### Modulates Neurotransmitter Levels

High-risk antidepressants called *monoamine oxidase inhibitors* (MAOIs) work by inhibiting the activity of *monoamine oxidase*, a family of enzymes that supports the breakdown of neurotransmitters such as *serotonin*, *norepinephrine*, and *dopamine*.<sup>32</sup>

Other antidepressants known as selective *serotonin reuptake inhibitors* (SSRIs) specifically increase the extracellular level of *serotonin* by inhibiting its reabsorption (reuptake) after it has been released in areas of the brain known as synapses.<sup>33</sup> Altering serotonin levels is believed to assist brain cells in the sending and receiving of chemical messages—which in turn boosts mood.<sup>33</sup>

Safely mimicking the mechanisms of both of these types of antidepressants, curcumin has been shown to modestly inhibit two types of *monoamine oxidase enzyme* (MAO-A and MAO-B)<sup>13</sup> and to also modulate the levels of norepinephrine, dopamine, and serotonin in the brain.<sup>10,13</sup>

By boosting norepinephrine, curcumin may improve attentiveness, emotions, sleeping, dreaming, and learning. Higher levels of dopamine may improve pleasure, emotion, and locomotion. And enhancement of serotonin can play a key role in mood, appetite, sleep, memory, learning, sexual behavior, temperature regulation, and other functions.<sup>13</sup>

### Inhibits Inflammation

Inflammation plays a major role in depression. Chronic inflammation has been shown to influence almost every pathway involved in the development of depression, including neurotransmitter metabolism.<sup>34</sup>

Curcumin is a potent anti-inflammatory compound. It is known to inhibit multiple compounds that help produce inflammation in the body.<sup>13,35</sup> Studies demonstrate that curcumin:<sup>13</sup>

- Inhibits the enzyme *cyclooxygenase-2* (COX-2), in turn reducing inflammation.
- Inhibits *nuclear factor-kappa B* (NF-*kappa B*), a protein complex that controls many genes involved in inflammation.
- Blocks the synthesis of an enzyme called *inducible nitric oxide synthase* (iNOS), in turn decreasing the release of inflammatory nitric oxide (NO).
- Lowers, by about **60%**, levels of *interleukin-1*, a group of cytokines that plays a central role in the regulation of inflammation.
- Reduces the expression of inflammatory markers of *astrocytes*, cells that support and protect brain neurons.<sup>36</sup>

Scientists believe that these anti-inflammatory mechanisms contribute to curcumin's antidepressant activity.

It is curcumin's remarkable capacity to modulate all of these antidepressant pathways—neurogenesis, neurotransmitter levels, and inflammation—that explains the impressive results of the newly published clinical findings.

However, it is curcumin's anti-inflammatory activity that underlies a host of other health benefits that go far beyond curcumin's antidepressant impact. Let's review some of these broader effects.

### Curcumin And Osteoarthritis

**Osteoarthritis**, long thought to be a purely “degenerative” disease, is now recognized to have multiple inflammatory components. The breakdown of joint-lining cartilage is triggered by pro-inflammatory signaling molecules.<sup>37</sup>

In the joint-lining membranes, curcumin suppresses the growth of the inflammatory cells that are responsible for cartilage destruction<sup>38,39</sup> and even

inhibits the “cartilage-eating” compounds that carry out the destructive process itself.<sup>40,41</sup>

Human studies show that joint pain decreased and joint function improved in patients taking an enhanced-bioavailability curcumin complex<sup>42</sup> and they show improvements in blood tests measuring inflammation.<sup>42</sup>

### Curcumin And Rheumatoid Arthritis

A team of scientists conducted a 2012 study of rheumatoid arthritis patients who suffered from high levels of inflammation.<sup>27</sup>

Superior-absorbing curcumin beat the standard arthritis drug *diclofenac* on most measures of effectiveness, but was free of the side effects that so often accompany drug therapy.<sup>27</sup>

Curcumin directly attacks the source of the problem—*inflammation*—rather than simply masking pain and other symptoms.<sup>27,42</sup>

### Side Effects Of Pharmaceutical Antidepressants

There have been at least 119 published studies from 12 countries, as well as 99 drug regulatory agency warnings from 10 countries *plus* the European Union, together indicating that antidepressants are involved in the following adverse effects:<sup>3-7,98-102</sup>

Abnormal bleeding or bruising	Fainting	Paranoia
Abnormal thoughts	Hallucinations	Premature births
Aggression	Headaches	Priapism
Agitation	Heart attacks	Psychotic episodes
Akathisia (severe restlessness)	Heart rate decreases	Restlessness
Anxiety	Homicidal ideation or action	Risk of breast cancer
Birth defects	Hostility	Risk of falls
Black tongue	Hyperactivity	Sedation
Blurred vision or vision changes	Hypomania	Seizures
Coma	Impaired driving	Self-harm
Confusion	Insomnia	Serotonin syndrome
Constipation	Lethargy	Severe headache
Convulsions	Liver problems	Severe muscle stiffness
Crushing chest pain	Low white blood cell count	Sexual dysfunction
Death	Mania or manic reactions	Shakiness
Decreased memory or concentration	Memory lapses	Shuffling walk
Delirium	Mood swings	Slow or difficult speech
Delusional thinking	Muscle spasms	Spontaneous abortion
Depression	Nausea	Stroke
Diabetes	Nervousness	Suicidal thoughts or behavior
Diarrhea	Neuroleptic malignant syndrome	Tremors
Difficulty breathing or swallowing	Night sweats	Violent behavior
Dizziness or faintness	Nightmares	Weight gain
Dry mouth	Numbness in extremities	Withdrawal symptoms
Emotional numbing	Panic attacks	Yellowing of skin or eyes



## Curcumin And Cancer

Inflammation can contribute to the proliferation, survival, and migration of cancer cells.<sup>43</sup>

Fortunately, curcumin has emerged as a potent cancer-preventing agent. It intervenes at each stage in the complex sequence of events that must occur in order for a cancer to develop and ultimately metastasize to healthy tissue.

The multi-targeted mechanisms of curcumin have yielded compelling results in combating a remarkably broad array of cancers—including cancers of the breast,<sup>44,45</sup> uterus,<sup>46</sup> cervix,<sup>47,48</sup> prostate,<sup>49-55</sup> and gastrointestinal tract.<sup>56-70</sup>

Rapidly accumulating research also demonstrates curcumin's potential to counter cancers of the blood,<sup>71-73</sup> brain,<sup>74</sup> lung,<sup>75,76</sup> bladder,<sup>77-80</sup> head,<sup>81-83</sup> throat,<sup>84,85</sup> and pancreas<sup>86-90</sup> (one of the most lethal forms of cancer).

Also, curcumin may have special benefits for individuals undergoing radiation cancer treatment. Radiation therapy is often limited due to its side effects.<sup>91</sup> For example, prostate cancer patients undergoing *external beam radiotherapy* suffer, among other effects, urinary tract problems such as painful urination.<sup>92</sup> Since curcumin's radioprotective effects had earlier been suggested,<sup>93-95</sup> scientists conducted a pilot clinical study on 40 prostate cancer patients undergoing *external beam radiotherapy*.<sup>96</sup>

They randomly assigned half of the patients to receive **3 grams** daily of the enhanced curcumin formulation BCM-95® while the rest took a placebo. After three months of radiotherapy, the curcumin group experienced much milder urinary problems than

the placebo patients, especially reduced urination frequency.<sup>96</sup> It has been suggested these results stem partly from curcumin's ability to reduce radiation-induced inflammation.<sup>96</sup>

These results have implications for radiotherapy for other cancers. Similar results were found in a 2013 study finding that curcumin—using the non-enhanced extract, but in larger doses of **6 grams** daily—reduced the severity of radiation dermatitis, or radiation-induced skin inflammation, in breast cancer patients.<sup>97</sup>

## Summary

Depression afflicts **one in 10** American adults.<sup>1</sup> The majority of patients prescribed antidepressant drugs experience at least one of their serious side effects.<sup>2,8</sup>

A highly specialized complex of curcumin known as **BCM-95®**—with bioavailability nearly **seven times** greater than that of standard curcumin—fights the crippling effects of depression<sup>9</sup> by attacking multiple underlying targets.

A study published in 2013 showed remarkable outcomes in depressed individuals using a highly absorbable curcumin complex. Curcumin targets depression by promoting *neurogenesis*, increasing levels of key neurotransmitters—*serotonin*, *norepinephrine*, and *dopamine*—and inhibiting **inflammation**. ●

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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# BRAIN SHIELD™



## SUPPORT for COGNITIVE FUNCTION with AGING

Your brain is under constant onslaught from environmental and stress-related challenges, as well as normal aging processes.<sup>1,2</sup>

Fortunately, our brain cells have built-in, **self-healing** systems that provide natural defenses against these ongoing threats.<sup>3</sup> Even more remarkable, molecular science is revealing that the human brain has the capacity to **preserve** the neurons involved in brain remodeling (*plasticity*).<sup>3</sup>

Scientists in China and Singapore have found that **gastrodin**, a compound typically derived from a traditional Chinese orchid (*Gastrodia elata*), provides powerful support for the brain's normal defenses and regenerative mechanisms.<sup>4-7</sup>

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

### MULTI-FACTORIAL BENEFITS!

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

- To retain normal function, the aging brain relies on adequate **blood flow** to get sufficient oxygen and fuel.<sup>8</sup> It has been repeatedly shown that formulas containing **gastrodin** beneficially support normal, healthy levels of brain blood flow in both animals and in humans.<sup>6,7</sup>
- The body maintains a delicate balance of **neurotransmitters**, such as GABA, which is of tremendous importance to healthy brain function. Studies show that alone or in combination the active compound **gastrodin** helps maintain healthy levels of vital neurotransmitters in those whose levels are already within the normal range.<sup>9-11</sup>

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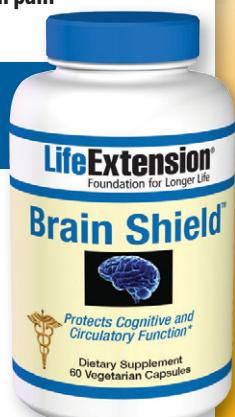
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- With aging, short-term **memory** function is often impaired. Studies show that **gastrodin** helps support the healthy body's normal defenses against the mild memory problems associated with aging.<sup>12</sup>
- Scientists have shown that the breakdown metabolites of **gastrodin** help provide support against the normal stress and tension of daily life.<sup>13,14</sup>
- And **Brain Shield™** helps alleviate the occasional **cranial pain** associated with daily life.<sup>15</sup>

**Brain Shield™ supports healthy cognitive and circulatory function in aging individuals.**

Those seeking maximum benefit should start with **one 300 mg** capsule of **Brain Shield™** taken **twice daily**.<sup>16</sup> After thirty days, **one Brain Shield™** (gastrodin) capsule daily may be sufficient based upon the experience of gastrodin as an over-the-counter (OTC) pharmaceutical agent. Those taking Cognitex® are obtaining **50 mg** of gastrodin in the daily dose along with complementary nutrients. As additional research continues on gastrodin, better clarification on optimal dosing for a wide range of neurovascular and neuro-inflammatory conditions should be available.

A bottle of 60 **300 mg** vegetarian capsules of **Brain Shield™** retails for \$33. If a member buys four bottles, the price is reduced to **\$22.50** per bottle.



Item # 01802

To order **Life Extension® Brain Shield™**, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)



# How Much Curcumin Are You Absorbing?

**Curcumin** is an active compound derived from the Indian spice **turmeric**. It has been widely acclaimed for its diverse health-promoting effects on nearly every organ system in the body,<sup>1-6</sup> including its support for the body's natural inflammatory response system.<sup>7</sup> But most curcumin is neither absorbed well nor retained well in the blood—posing a challenge to those who wish to maximize its benefits.<sup>8</sup>

**Life Extension®** took the lead in resolving this issue several years ago by introducing **Super Bio-Curcumin®** containing **BCM-95®**, a patented, *bioenhanced* preparation of curcumin that has been shown to reach up to **7 times higher concentration** in the blood than standard curcumin.<sup>8</sup>

Now, an exciting **next generation** curcumin formula has become available! The **Advanced Bio-Curcumin® with Ginger & Turmerones** provides additional compounds that **further** boost absorption of curcumin's highly beneficial phytonutrients!<sup>9,10</sup>

## UNRIValed POTENCY AND ABSORBABILITY

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

**1. Turmerones:** After curcumin is extracted from turmeric, what remains is **turmeric oil** rich in compounds called **turmerones**.<sup>11,12</sup> Combining **BCM-95®** with a high content of **turmerones** provides health consumers with **more** beneficial **turmeric** compounds that further multiply absorption.<sup>9</sup> Scientists have shown that these potent **turmerones** not only support curcumin absorption, but significantly increase the amount of curcumin **inside** the cell as well!<sup>9</sup>

**2. Ginger:** Curcumin and **ginger** are close botanical relatives. Research demonstrates that they have overlapping and complementary health benefits,<sup>13</sup> and scientists are focusing on the therapeutic effects of *combining* these two plants.<sup>14,15</sup>

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

**3. Phospholipids:** This new curcumin formula also contains **phospholipids**, a type of emulsifying molecule known to greatly enhance absorption of poorly soluble active compounds.<sup>10</sup>

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

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

<b>Turmeric Phospholipid Blend</b>	<b>630 mg</b>
BCM-95® Bio-Curcumin Turmeric 25:1 extract (rhizome) [total curcuminooids complex with essential oils (380 mg)], Turmeric oil (rhizome) [providing 60 mg total turmerones], Phospholipids	
<b>Ginger CO<sub>2</sub> extract (root)</b>	<b>200 mg</b>

[providing 60 mg gingerols]

Each softgel of **Advanced Bio-Curcumin® with Ginger & Turmerones** provides **400 mg** of **BCM-95® Super Bio-Curcumin** plus an array of turmerones and phospholipids.

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

**Contains soybeans.**

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

To order **Life Extension® Advanced Bio-Curcumin® with Ginger & Turmerones**, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)



Item# 01808

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

# THE 2013 *SENS FOUNDATION* CONFERENCE

There is probably no conference in the world that attracts so many scientists devoted to human rejuvenation as the SENS (Strategies for Engineered Negligible Senescence) Foundation conference, which is held every two years at Cambridge University in England. As described in the July 2013 issue of **Life Extension®** magazine, the SENS Foundation is attempting to implement strategies to reverse the seven causes of aging they have identified. Dr. Aubrey de Grey, who is on the Scientific Advisory Board of **Life Extension®**, co-founded SENS, the SENS Foundation, and the SENS conferences. The September 3-7, 2013 SENS Foundation conference was the sixth SENS conference (SENS6). >





## Keynote Presentation On Gene Therapy For Rejuvenation

George Church, PhD, (Professor of Genetics, Harvard Medical School, Boston, Massachusetts) was the keynote speaker at SENS6. As described in the



Church

May, 2013 issue of ***Life Extension***, Dr. Church is the lead Scientific Advisor in a study of centenarians funded by the **Life Extension Foundation®**. He is one of the most prominent geneticists in the world.

Dr. Church noted that from the year 1870 to the present, the annual increase in life expectancy has been about **0.28** years per year.<sup>1</sup> This falls

short of the one-year gain in life expectancy per year that would be required for unlimited life spans. As a hopeful sign that the long-term trend will be exceeded, he cited the recent fall in cost of sequencing the human genome. DNA sequencing costs had been declining by a steady **1.5-fold** per year between years 1965 to 2005. After 2005, DNA sequencing costs plummeted dramatically and they are soon expected to drop to a few hundred dollars per genome.

Moreover, genome sequencing has become faster and more accurate—a **10-fold** reduction in point errors (one per million) in the last five years. He is anticipating less than one error per genome in the future.

Dr. Church identified several genes that he believes contributes to extreme health and longevity, including one that protects against HIV and another that delays Alzheimer's disease by a decade. He is hopeful that gene therapy can be used to make such genes available to everyone. The newest and most effective technology for modifying genes is *CRISPR* (Clustered

Regularly Interspersed Short Palindrome Repeats), a means that bacteria use to protect themselves against viruses. Only in 2013 has the application of CRISPR to gene therapy been appreciated.

Dr. Church has been at the forefront of this technological revolution.<sup>2-4</sup> His lecture described testing the function of gene-modified heart cells using organ-on-a-chip technology.<sup>5</sup>

## Longevity Benefits Of Calorie Restriction In Humans

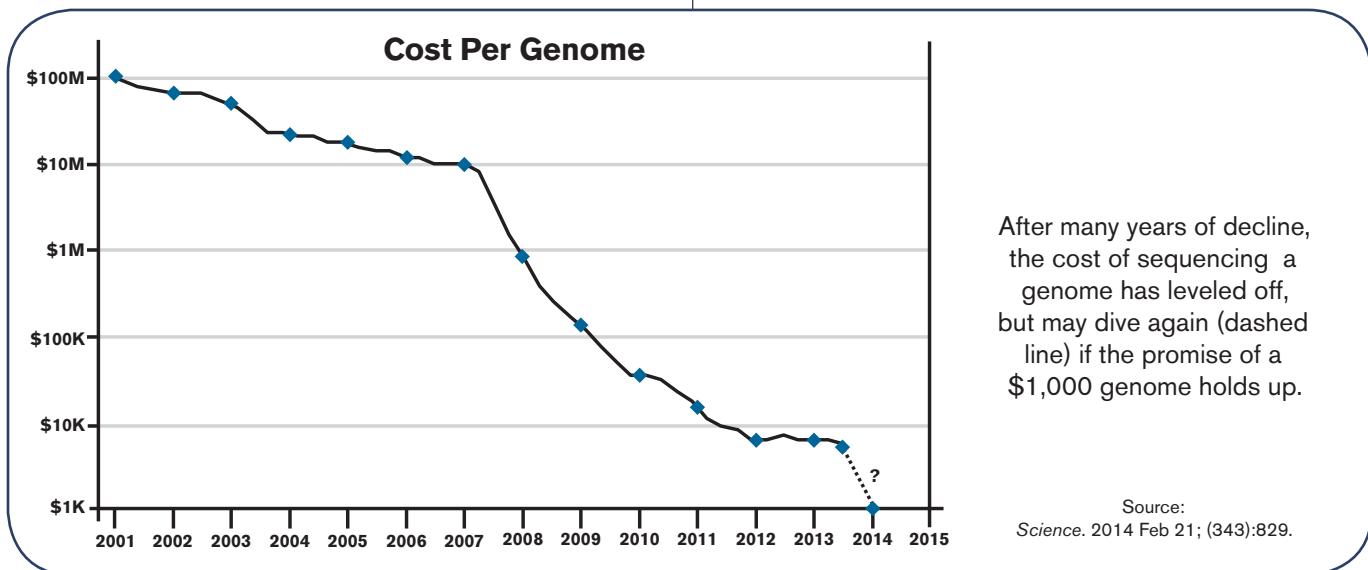
Luigi Fontana, MD, PhD, (Research Associate Professor of Medicine and Co-Director of the Longevity Research Program, Washington University, St. Louis, Missouri) has been looking for evidence that calorie restriction with adequate nutrition will extend life and improve health in humans. Life span studies have shown extended life span from calorie restriction in yeast, worms, flies, rodents, and many other organisms.<sup>6</sup>



Fontana

Lifetime studies are not feasible in humans because the studies would require a human lifetime to conduct. Calorie restriction with a vegetarian diet was practiced somewhat involuntarily by the eight participants in Biosphere 2 for two years. Those subjects showed reduced risk factors for atherosclerosis, including large reductions in blood cholesterol, blood pressure, and serum triglycerides.<sup>7,8</sup>

The number of people who have chosen to practice calorie restriction for extended periods is small, but many of them have cooperated in being subjects for



Dr. Fontana's investigations. Eighteen individuals who had been practicing calorie restriction for an average of six years were compared with 18 individuals on a typical American diet. The calorie restriction group showed reduced triglycerides, reduced blood pressure, and reduced inflammation (extremely low C-reactive protein).<sup>9</sup>

Another study of 25 calorie-restriction subjects found a reduced age-related decline in heart function (diastolic function).<sup>10</sup> A study of 28 calorie-restriction subjects compared to 28 exercisers and 28 controls looked at insulin resistance (measured by *HOMA-IR, Homeostasis Model Assessment*). The calorie-restriction group showed **34% less** insulin resistance compared to the exercisers, and **82% less** insulin resistance compared to the controls.<sup>11</sup> Low insulin resistance is associated with low risk of diabetes and age-related diseases. High heart rate variability indicated flexible adaptive control of the body (especially the heart) by the brain.<sup>12</sup> Heart rate variability normally declines with age, but Dr. Fontana found that subjects practicing calorie restriction had heart rate variability values comparable to healthy adults who were 20 years younger.<sup>13</sup> Although there is no direct proof that maximum lifespan will be extended by humans practicing calorie restriction, the risk factors for age-related diseases among these low-calorie consumers are very low.

### Improved Survival From Heart Attack

Sam Parnia, MD, PhD, (Assistant Professor of Medicine and Director of Cardiopulmonary Resuscitation Research, State University of New York,



Parnia

Stony Brook, New York) discussed the changing view of death since the discovery of cardio-pulmonary resuscitation (CPR) in the 1960s.

Death is reversible if the heart can be restarted soon after cardiac arrest. He said most physicians still have the outdated idea that brain cells die five minutes after the heart stops. Viable stem cells have been cultured from

human brain tissue as long as 20 hours after death.<sup>14</sup> There is a much higher survival of out-of-hospital cardiac arrest victims in Seattle than in Alabama, likely due to regional differences in the availability of emergency cardiac care (e.g., bystander CPR, EMS quality, etc.)<sup>15</sup>

Dr. Parnia is concerned that resuscitation efforts in hospitals are too often done improperly. Resuscitation guidelines often recommend use of **100%** oxygen, despite the fact that excessive oxygen exposure during

resuscitation nearly doubles the likelihood of death.<sup>16</sup> Manual CPR is frequently attempted in hospitals, despite the fact that mechanical chest compression devices give better organ perfusion.<sup>17</sup>

There is a large variation in the amount of time hospitals will spend attempting resuscitation of a cardiac arrest victim. Patients are much more likely to be revived in hospitals if they are in the highest quartile of time spent attempting resuscitation (25 minutes) rather than in the lowest quartile (16 minutes).<sup>18</sup> Dr. Parnia said that most physicians will stop CPR efforts after 20 minutes, even though the survival curve does not flatten until 40 minutes. He also said that despite the fact that a few degrees of lowered temperature has been shown to reduce six month mortality from **55** to **41%** in resuscitation survivors,<sup>19</sup> *hypothermia* is rarely used or is inefficiently applied in hospitals.<sup>20</sup>

### Tissue Regeneration From Salamanders

Malcolm Maden, PhD, (Professor, Department of Biology, University of Florida, Gainesville, Florida) studies tissue regeneration in axolotls (Mexican salamanders). His presentation was entitled, "*Regeneration in the adult organism—a cure for aging?*"



Maden

To justify the title, he quoted the renowned regeneration biologist Richard J. Goss, who said: "*If everything rejuvenated, there would be no death.*"

Dr. Maden said that some animals (such as hydra, planarians, and jellyfish) avoid aging or age-related death due to the ability to regenerate all organs. A study of the newt salamander showed no loss of regenerative capacity over a period of 16 years.<sup>21</sup> And the Mexican salamander, the axolotl, has the greatest regenerative capacity of any vertebrate animal.<sup>22</sup> The axolotl can regenerate every organ in its body: limbs, heart, and large portions of brain tissue without scarring. This regenerative capacity does not decline with age.<sup>21</sup>

When the limb of an axolotl is severed, a collection of stem cells known as a *blastema* forms. The blastema cells have de-differentiated, but only to the extent of being a collection of stem cells having different potentials for differentiating into specific tissue types such as skin, muscle, bone, nerve, blood vessels, etc.<sup>23</sup> Dr. Maden has demonstrated regeneration of major portions of injured brain in axolotls.<sup>24</sup> He has determined that **retinoic acid** the vitamin-A metabolite that facilitates growth and development plays a key role in regeneration.<sup>25</sup> He commented that a human child has

an ability to regrow amputated fingertips, and that retinoic acid contributes to this process.

Dr. Maden has shown that applying retinoic acid to the spinal cord of a rodent causes nerve fibers to regrow.<sup>26</sup> He explained that depriving rats of vitamin A (retinoic acid) results in symptoms of Alzheimer's disease. Restoring the retinoic acid reversed the symptoms. Dr. Maden hopes that understanding the process of regeneration in axolotls will lead to the ability to induce wound-healing and tissue regeneration in people without scar formation.



### **Speakers Receiving Funding From The Life Extension Foundation**

Three of the researchers presenting at SENS6 acknowledged the **Life Extension Foundation** as a source of funding, two of these researchers were featured in the January 2014 issue of *Life Extension*.

Joao Pedro de Magalhaes, PhD, (Senior Lecturer/Associate Professor, Institute of Integrative Biology,



Magalhaes

Liverpool University, Liverpool, United Kingdom) has been using funds from the **Life Extension Foundation** to sequence the genome of the bowhead whale, the longest-living mammal, which lives more than 200 years.<sup>27</sup> With more cells in their bodies, larger animals would be expected to have higher rates of cancer.<sup>28</sup> Even tall humans have a higher cancer risk than short humans, independent of all other risk factors.<sup>29</sup> But a variety of anti-cancer mechanisms allows larger animals to avoid the greater cancer risk that would otherwise accom-

pany their greater size.<sup>30</sup> Dr. Magalhaes's laboratory is uniquely equipped to analyze the genome of the bowhead whale to determine the means by which it achieves such longevity while avoiding cancer.<sup>31</sup> He said that such research cannot be funded through conventional funding sources. He expressed appreciation for the **Life Extension Foundation** grant he received to do this work.

John Furber, MSc, (CEO, Legendary Pharmaceuticals, Gainesville, Florida) attends many conferences dealing with the biology of aging every year, and he is therefore very well-known among biomedical gerontologists. He has designed a rejuvenation experiment which the **Life Extension Foundation** is funding. At the time he gave his presentation, he had not yet begun work on the project he was describing.

*Lysosomes* are the garbage disposal/recycling centers of biological cells. Lysosomes contain enzymes that digest cellular waste products into reusable components.<sup>32</sup> But with time, lysosomes accumulate enzyme-resistant age-pigment molecules known as *lipofuscin*.<sup>33</sup> Some neurons in the brain can contain up to 75% lipofuscin.<sup>34</sup> Lipofuscin emits toxic free radicals. Cells loaded with lipofuscin cannot be expected to function very well, so lipofuscin may contribute to the maladies of old age. Furber would like to rejuvenate cells by removing the lipofuscin. By doing an extensive search of scientific literature, he identified some chemicals which induce cells to export lysosomal lipofuscin out of the cell.<sup>35</sup>

During the question period, Furber was asked whether there would be harmful effects in transferring lipofuscin out of cells, such as causing macrophages to be engorged with undigestible lipofuscin. Furber did not know the answer, but because there is such a great potential benefit he said, "Let's do the experiment so we can find out." He is hopeful that if this process is done slowly and carefully, the macrophages will not be overloaded and the circulatory system will not become much more inflammatory.

Justin Rebo, MD, (Research Scientist, SENS Foundation, Mountain View, California) reported on work he had done at Dr. John Schloendorf's company ImmunePath. Dr. Rebo had been looking for the easiest problems that could be solved in regenerative medicine ("low hanging fruit").

Cancer victims subjected to chemotherapy or radiation experience severe loss of immune system



Furber



Rebo

blood cells that makes them very vulnerable to infection. Such patients can be treated by transplantation of umbilical cord blood stem cells,<sup>36</sup> but such cells are very limited in supply, and matching cells with patients to ensure compatibility can be difficult.<sup>37</sup> In some cases, stem cells have been multiplied in the laboratory before transplantation, a process that has proved somewhat successful.<sup>38,39</sup>

Dr. Rebo's work involved deriving blood cells from *pluripotent* stem cells in mice. By applying an appropriate cocktail of cell signaling proteins (*cytokines*), he was able to derive the needed immune system blood cells. Dr. Rebo was able to show that these derived cells would migrate to the bone marrow.

He gave mice sublethal doses of chemotherapy, and the mice treated with the derived immune system blood cells were much more likely to survive. Dr. Rebo will be using **Life Extension Foundation** funding to investigate in more detail why shared blood circulation between genetically identical mice of different ages rejuvenates the old mouse, and makes the young mouse biologically older.<sup>40,41</sup> Blood from a young mouse contains more functional white blood cells and stem cells<sup>42</sup> as well as fewer inflammatory proteins.<sup>43</sup>

Dr. Rebo's objective is to determine with precision all of the positive components of young blood and all of the negative components of old blood. With this information, he will develop strategies to enhance the positive components as well as to block or remove the negative components. He is hopeful that his results will be ready for clinical application in only a few years.

### Mitochondrial Sirtuin Promotes Health And Longevity

Danica Chen, PhD, (Assistant Professor, Nutritional Science and Technology, University of California, Berkeley, California) has been investigating the role of *sirtuins* in aging. There are seven sirtuin enzymes in mammals, identified by number: SIRT1 through SIRT7.<sup>44</sup> SIRT1, which is activated by *resveratrol*, is the most famous sirtuin,<sup>45</sup> but Dr. Chen studies SIRT3.

SIRT3 is found in *mitochondria*, the energy-producing organelles in cells. Removal of SIRT3 from mouse cells has been shown to increase free-radical production by the mitochondria and to increase cancer incidence.<sup>41</sup> Calorie restriction (the most generally accepted means to extend life and health) in mice normally reduces free-radical damage, but not when SIRT3 has been removed.<sup>46,47</sup> Calorie restriction has been shown to stimulate SIRT3 and thereby reduce free-radical production by mitochondria.<sup>48</sup>

Dr. Chen's team has shown that increased SIRT3 improves the regenerative capacity of blood stem cells.<sup>49</sup> Cancer cells normally bypass the use of mitochondria to generate energy, an effect that is opposed by SIRT3.<sup>50</sup> By bypassing the mitochondria as an energy source, cancer cells are also bypassing the capacity of mitochondria to kill them (by *apoptosis*, or cell death). SIRT3 activity declines with age, and long-lived humans have greater expression of SIRT3.<sup>51</sup> A compound to stimulate SIRT3 the way resveratrol stimulates SIRT1 or enhances expression of SIRT3 could improve human health and longevity as well as increase cancer resistance.

### An Amyloid That Kills The Oldest Old Humans

Brian O'Nuallain, PhD, (Assistant Professor of Neurology, Harvard Medical School, Boston, Massachusetts) is working on the SENS Foundation project to eliminate *amyloid protein aggregates*.



O'Nuallain

(Although aggregation of amyloid-beta protein is believed to cause Alzheimer's disease,<sup>52</sup> the SENS Foundation project is focused on aggregation of the amyloid protein *transthyretin* (TTR). Deposition of mutant TTR in the heart may lead to *cardiac amyloidosis*).<sup>53,54</sup> Increase in TTR oxidation due to aging might contribute to the onset of TTR amyloidosis. Heparin also leads to increased TTR aggregation.<sup>55</sup>

In the majority of cases, cardiac amyloidosis is a disease of elderly men.<sup>56</sup> Also, about 4% of African-Americans have a mutation that can lead to earlier



onset of the disease.<sup>57</sup> Among the oldest of the old (supercentenarians, or people over age 110), the effects of amyloidosis have been described as a leading cause of death.<sup>58</sup> Dr. O’Nuallain said that TTR disease is underdiagnosed because diagnosis is so difficult. He explained his efforts have been to develop antibodies that will bind to the TTR protein so that it can be seen as images in patient scans.<sup>59</sup> He is also looking for antibodies that will not only bind to TTR protein, but will enzymatically degrade aggregated TTR.

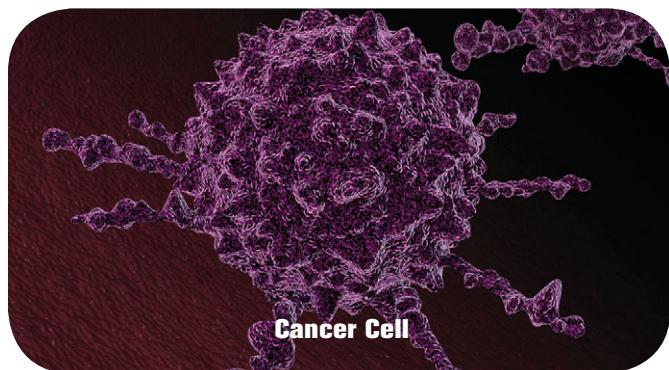
### An Alternate Method For Cancer Cell Survival

Haroldo Silva, PhD, (OncoSENS Research Scientist, SENS Foundation, Mountain View, California) is



working to prevent cancer. Cells normally stop dividing when the *telomeres* at the ends of their chromosomes become too short. Most cancer cells overcome this limitation by invoking an enzyme (*telomerase*) that lengthens the telomeres, allowing the cancer cells to divide indefinitely. About **10-15%** of cancer cells do not use telomerase, however, but use the *Alternate Lengthening of Telomeres* (ALT) method to lengthen telomeres.<sup>60</sup>

Because there are many more researchers studying telomerase than studying ALT, the SENS Foundation has devoted its anti-cancer efforts to ALT. Cells utilizing ALT to lengthen telomeres can be identified by ALT-associated bodies in the cell nucleus.<sup>61</sup> SENS Foundation is developing faster means to identify the number of these ALT-associated bodies per cell. ALT cells also contain high levels of telomere-like DNA sequences formed into circles apart from the chromosomes. Because the sequences begin with the nucleotide *cytosine*, these circles are called *C-circles*.<sup>62</sup> Telomere lengthening by ALT is believed to be in part the result of copying from C-circles.<sup>63</sup>



The SENS Foundation is building on work determining specific genes that are partially expressed in ALT cells.<sup>64</sup> David Halvorsen, a Research Associate working with Dr. Silva at the SENS Foundation, joined Dr. Silva on the stage to explain the role of specific genes and their role in the ALT pathway. The SENS Foundation plans to investigate more genes that are particularly active in ALT cells.

### Cryogenic Preservation Of Transplantable Organs

Stephen Van Sickle (Chief Scientific Officer, Arigos Biomedical, Mountain View, California) is part of a company that is taking a novel approach to preserving transplantable organs. Transplantable hearts, kidneys, pancreases, and livers can be preserved for longer times prior to transplant by replacing blood in the blood vessels with cold gas rather than a cold fluid.<sup>65</sup> The cold gas, like the cold fluid, has traditionally been above freezing temperature.

Instead of using a gas with high oxygen content above freezing temperature, Van Sickle’s company has been using helium gas that can cool down to cryogenic temperatures (below -130° Celsius). Although hypothermic cooling can maintain transplantable organs for hours above freezing temperature, cooling to cryogenic temperatures has the potential to preserve organs much longer.

Despite the shortage of transplantable kidneys, nearly a fifth of such kidneys are discarded because at the time of harvest a suitable patient or clinic is not available. Longer preservation times would prevent this waste. Substituting blood with a *vitrification* (glass-forming) solution that prevents ice formation has allowed for cooling of a rabbit kidney to -130°C with viability restored upon rewarming. However, vitrification and successful revival with the transplant of organs larger than a rabbit kidney has not yet occurred.<sup>66</sup>

Cooling an organ internally with cold helium gas provides another option. Van Sickle has been able to cool a pig kidney (which is comparable in size to a human kidney) down to -180°C without fracture. Van Sickle believes that perfusing organs with helium gas at higher pressures (20 atmospheres) could allow for cooling rates that are **100 times** faster than is possible with current methods. Hopefully, the cooling would be fast enough to prevent damaging the tissues by dehydration from the helium gas. Rewarming the organs with helium gas requires combining the warm helium gas with electrically-induced heat (radio frequency electromagnetic currents).

## Punting On The Cam

There were more than 70 speakers at the SENS6 conference, so the above sampling only gives a taste of the full program. On the final day of SENS6, the participants had an opportunity to go “punting on the Cam.” This is not a form of football. Punting means using a large pole to propel a boat on the Cambridge River. Many scientific discussions about the conference happen on the boats.

## Summary

The SENS (Strategies for Engineered Negligible Senescence) Foundation conference in Cambridge, England, attracts some of the world's top scientists devoted to human rejuvenation—and this year was no exception.

Dr. George Church, Professor of Genetics at Harvard Medical School, identified several genes he believes contribute to health and longevity, including one that delays Alzheimer's disease by 10 years. He is hopeful gene therapy can be used to make these genes available to everyone.

Dr. Luigi Fontana of the Longevity Research Program in Missouri is investigating how calorie restrictions promote a longer life and improve health, while Dr. Sam Parnia (Professor of Medicine and Director of CPR Research at State University of New York) discussed how CPR methods are all too often not done properly in hospitals and how lives can be saved if they were.

Tissue regeneration was Dr. Malcolm Maden's topic. He is studying the Mexican salamander, which has the ability to regenerate every organ in its body. Dr. Maden has shown that applying retinoic acid to the spinal cord of rodents causes nerve fibers to regrow. He hopes studying the regeneration of the salamanders will lead to tissue regeneration in humans. ●

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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# Probiotic Liquid Vegetarian Capsules

## The Most Advanced Probiotic Available

While people use **probiotics** for intestinal health, compelling new evidence indicates that they have a broad spectrum of health benefits.<sup>1-6</sup>

Scientists are finding that not having the proper balance of good to bad bacteria can wreak havoc throughout the body.<sup>7-11</sup>

**FlorAssist™** offers a new way to help maintain the proper balance of intestinal flora.

### Why Don't Probiotics Always Work?

One of the complications many commercial probiotics face is their inability to overcome hurdles in the digestive tract before hitting their target area—an aspect that can greatly limit their beneficial effects.<sup>12</sup>

**FlorAssist™ Probiotic Liquid Vegetarian Capsules** utilize a "**dual encapsulation**" technology to combat the shortcomings of many commercial probiotics, delivering unprecedented amounts of live bacterial colonies to where your body needs them.

### FlorAssist™ Probiotic Liquid Vegetarian Capsules...

- Contain probiotic strains that are **acid resistant**, protecting them from stomach acid that can destroy the viability of the strains;
- Have **dual encapsulation technology**, keeping the capsule intact longer, and ensuring that the probiotic reaches the small intestine,
- Provide a **high CFU†** (Colony Forming Units) of 15 billion per capsule!

### Dual Encapsulation Probiotic



### Choosing the Right Probiotic for You

While many supplements provide just **one** type of bacteria, taking a probiotic with **multiple** varieties of good bacteria can help better fight off bad bacteria.<sup>13</sup>

**FlorAssist™ Probiotic Liquid Vegetarian Capsules** provide a proprietary blend of **six** bacterial strains! Each FlorAssist™ dual capsule contains 15 Billion CFU (Colony Forming Units)† consisting of:

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

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

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

†Colony Forming Units.

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# What *Disease* Do Our Presidents Have In Common?

In 2013, doctors discovered that a vital coronary artery in George W. Bush was **95%** blocked. An emergency stent was inserted to restore blood flow. According to medical sources, this type of coronary artery blockage usually causes sudden death and the former president was lucky his doctors caught it in time.<sup>1</sup>



In 2004, **Bill Clinton** underwent open heart surgery to bypass multiple blocked arteries in his heart that would have likely killed him in a few months if not treated.<sup>2</sup> In 2010, Clinton was rushed to the hospital complaining of chest pains and had two stents implanted to open two new occluded coronary arteries.

## Vascular Disease Not Limited To Modern-Day Presidents



The second US president **John Adams (1797-1801)** purportedly suffered from heart failure.<sup>3,4</sup> **Vascular disease** is implicated in the deaths of many of our past presidents. From a historic perspective, vascular disease has killed virtually every president since around 1900.<sup>3,4</sup>



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# Comprehensive Blood Testing

The vascular system is clearly mankind's "Achilles heel." According to Harvard cardiologist Thomas H. Lee, "In 1950, heart attacks were 'bolts from the blue'-unpredictable, unpreventable, and untreatable"<sup>5</sup>. Dr. Lee points out the huge progress in heart attack prevention and treatment that has occurred in the decades that followed.<sup>5</sup> Yet heart disease still remains the number one killer, while mainstream medicine overlooks proven risk factors that can be detected with annual **blood testing**.<sup>6</sup> 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

### 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)**

### 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

### 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)**

### METABOLIC PROFILE

**Glucose**

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

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**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**

Non-member retail price: \$400 • Special Member Discount Price: **\$199**

**Blood Test Super Sale – March 31<sup>st</sup> through June 2, 2014.**

To obtain these comprehensive **Male** or **Female Panels** at these low prices,

**call 1-800-208-3444 to order your requisition forms.**

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

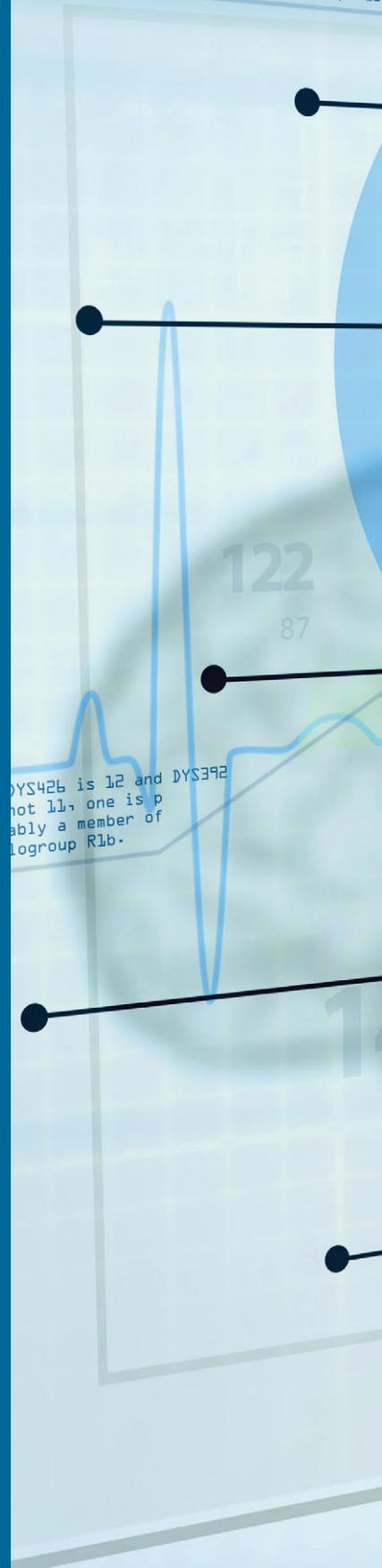
BY S.R. KNOWLTON

# Maximizing OMEGA-3 *Health Benefits*

There are now close to 20,000 published studies on the benefits of **omega-3 fatty acids**. As researchers continue to discover new longevity mechanisms such as reducing brain shrinkage, protecting memory and improving endothelial function, scientists have begun to analyze how different omega-3 **sources** affect the body.

Emerging evidence suggests that omega-3s from fish **oil** as well as **krill oil**, provide **complementary** effects upon different cellular targets.<sup>1</sup> In addition, scientists are finding that cellular uptake of omega-3 fatty acids from fish and krill oil occur at **different rates** depending on their destination.<sup>2</sup>

If DYS426 is 12 and DYS392 is not 11, one is probably a member of haplogroup R1b.





Intriguing data suggest that combining **fish oil** and **krill oil** may provide enhanced support for cardiovascular health and the nervous system, including the brain. This is due to the different levels and rates of uptake observed for omega-3 fatty acids from fish and krill oil in **plasma**, **platelets**, and **red blood cells**.

As scientists continue to study uptake of marine oils into various cells and tissue components in the body, the evidence suggests that by combining both **fish** and **krill** oil, you may optimize the protective benefits provided by these different sources of **omega-3** fatty acids.>



## Benefits Of Both Fish Oil And Krill Oil

Fish oil and krill oil share many important similarities, such as effectively reducing the ratio of omega-6 to omega-3 fatty acids in the body. This is an important biomarker associated with lower levels of chronic inflammation.<sup>2</sup> Both krill and fish oil also increase plasma and cell membrane concentrations of omega-3 fats.<sup>3,4</sup>

However, there are differences. What scientists have found is that the **uptake** of omega-3 fatty acids from fish oil and krill oil is different for the plasma, platelets, and red blood cells.<sup>5</sup>

For example, clinical data from human test subjects suggest that omega-3 fatty acids like DHA from **fish oil** result in a more rapid uptake into *plasma triglyceride* and *platelet phospholipids*,<sup>6</sup> which offers benefits given the effects of plasma triglycerides and platelet function on *endothelial function*, and cardiovascular health in general.

In comparison, the omega-3s found in **krill** appear to be more rapidly incorporated into **red blood cell phospholipids.**<sup>7</sup> This is important, because not only do scientists view the uptake of essential fatty acids in red blood cells as a biomarker for uptake into the brain,<sup>8</sup> but additional research suggests that when omega-3 fatty acids such as DHA are bound to phospholipids as they are with krill, it *increases* their uptake to the brain.<sup>9</sup> This is further supported by human clinical research, which suggests ingestion of phospholipid-bound EPA and DHA increase cognitive function scores to a greater degree compared with scores obtained when the fatty acids in the ingested oil were provided in the triglycerides storage form.<sup>10</sup>

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

Let's now look at how fish oil *and* krill oil work together to provide the broadest spectrum of coverage for brain health, heart health, and much more.

## Omega-3s And Brain Health

Both omega-3 fatty acids DHA and EPA are well known to provide systemic benefits throughout the body and reduce the risk of early death.<sup>11</sup>

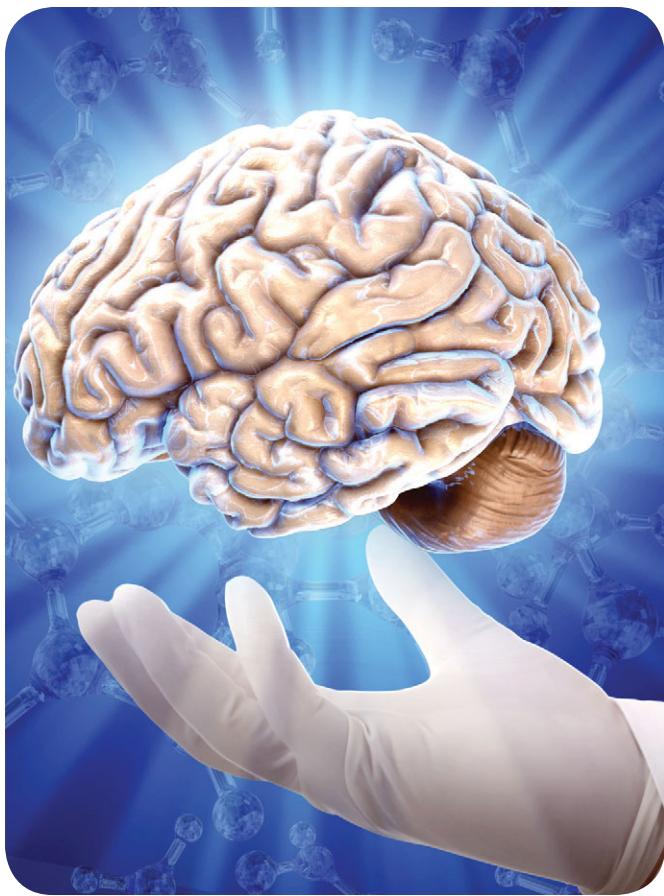
DHA is vital for early brain development and maintenance, while EPA seems to be closely related to behavior and mood. Together, both molecules provide critical neuroprotective benefits.<sup>11</sup> These neuroprotective effects are important for the prevention of age-related **brain shrinkage** (*cortical atrophy*). Aging adults with brain shrinkage often experience memory loss, cognitive decline, and an increase in depression.<sup>12-14</sup>

Studies show that people with higher levels of omega-3 fatty acids in their blood experience brain benefits such as better cognitive outcomes, larger gray matter volume for their age, fewer signs of brain blood flow disturbances, and lower rates of dementia, compared with those having lower omega-3 fatty acid levels.<sup>15-20</sup>

Those with lower DHA levels have poorer scores on cognitive testing, smaller brain volumes, and more "white matter hyperintensity" (also called **leukoaraiosis**), a condition that is associated with accelerated brain aging.<sup>21</sup>

One important way omega-3 fatty acids protect your brain is by shielding the chief memory processing area of your brain, the **hippocampus**. Studies show that people with lower total omega-3 levels have smaller hippocampus volumes.<sup>22</sup>

Because patients with depression experience rapid shrinking of their hippocampus, many strategies for relieving depression focus on increasing new brain cell growth in that specific area of the brain.<sup>23</sup> There's now evidence that increasing omega-3 intake, especially DHA, may be an effective way of treating or preventing depression, partly by protecting the hippocampus from further shrinkage.<sup>23</sup>



In addition to depression, chronic stress leads to loss of volume of the hippocampus—and also causes enlargement of the **amygdala**, the portion of the brain that regulates anxiety and anger.<sup>24</sup> When rats were supplemented with omega-3s during exposure to stress, they showed lower corticosterone levels (a marker of stress), and improved learning on a maze—indicating that the omega-3s helped preserve memory and reduce anxiety.<sup>24</sup>

Diabetes is a key factor in accelerated brain aging. Neuroprotective and cognition-improving effects have been shown in diabetic animals when they were supplemented with omega-3s.<sup>25</sup>

Omega-3s are also credited with slowing the rate of cognitive decline in patients with very mild early Alzheimer's disease. This study demonstrates the importance of early intervention with omega-3s for aging adults.<sup>26</sup>

### Krill Oil's Additional Brain Benefits

Both krill and fish oil are rich in the long-chain fatty acids EPA and DHA.

An important difference, however, is that EPA and DHA found in krill oil are bound to *phospholipids*, a form of fat that makes up the cell membrane. Phospholipids also enhance *cell signaling*, which is especially important for the healthy functioning of the nervous system and the brain.

Studies show that when omega-3 fatty acids such as DHA are bound to phospholipids as they are with krill, it increases their uptake to the brain.<sup>27</sup>

In lab experiments, animals given krill showed improved navigation skills. What this means is that they achieved higher levels of cognition and memory required to navigate complex territory.<sup>28</sup> In addition, research shows that animals supplemented with krill oil showed significantly fewer signs of depression and resignation. This improvement in mood was equivalent to the effect of the prescription anti-depressant drug *imipramine* (**Tofranil®**).<sup>29</sup>

Human studies also confirm cognition and memory improvement with omega-3 supplementation. For example, a study showed that both fish oil and krill oil enhanced cognitive function in a group of older men by increasing oxygen delivery to their brains. Interestingly, for those taking krill oil this effect was more prominent than those taking fish oil, though both groups were significantly better than placebo.<sup>30</sup> As we pointed out earlier, because the omega-3 DHA is bound to phospholipids in krill it may be more effectively incorporated into the critical cell membrane in brain cells.



Antarctic Krill

### What You Need To Know

#### The Health Benefits Of Krill Oil

- Omega-3-rich oils from deep-sea fish have long been known to provide outstanding anti-inflammatory benefits that can protect you from heart disease.
- New findings show that these marine oils can also prevent age-related brain shrinkage, protect cognitive function and memory, and prevent dementia and possibly depression.
- Another marine oil, extracted from tiny crustaceans called krill, provides additional benefits not found in fish oil alone.
- Emerging research suggests intriguing pharmacodynamics and pharmacokinetic differences for omega-3 fatty acids bound to phospholipids (such as in krill oil) as well as fish oil, which offer differential advantages to the cardiovascular and nervous system/brain.
- Krill oil has benefits that add to and amplify those from fish oil alone, in neuro-protection, cardiovascular health, diabetes, obesity, metabolic syndrome, and even osteoporosis and arthritis.

## Enhanced Cardio Protection With Fish And Krill Oil

It has long been known that higher levels of omega-3 fatty acids like EPA and DHA are strongly linked to improved cardiovascular health; while lower levels of omega-3s in the blood are linked to increased rates of hypertension and risk of heart attack. That association continues to grow stronger in a host of heart disease-related areas.

Ample evidence from animal studies supports regular supplementation with omega-3 oils as a means of lowering long-term cardiovascular risk. This may be due to omega-3 fatty acids' effects on reducing inflammation, lowering triglycerides, reducing blood pressure, improving endothelial function, inducing new blood vessel formation after heart attack or stroke, and favorable modification of obesity-related inflammatory molecules.<sup>35-39</sup>

Human clinical trials also abound demonstrating the benefits of omega-3s for heart health. Here are a few highlights:

- Taking **4 grams** per day of a prescription EPA supplement led to marked reductions in plasma triglyceride levels, especially in people with very high levels; reductions of **33** to **45%** have been reported.<sup>40-42</sup>
- Similarly, **4 grams** per day of prescription EPA led to significant reduction in triglycerides and other dangerous lipids in people already on statin-type lipid-lowering medications.<sup>43,44</sup>

- Taking **4 grams** per day of prescription EPA led to significant reduction in oxidized LDL-cholesterol and C-reactive protein (CRP), measures of oxidation and inflammation, respectively.<sup>45</sup>
- In patients with cardiac complications from metabolic syndrome, taking **1,440 mg/day** of omega-3 fatty acid supplements led to improvements in endothelial function, including improved blood flow resulting in vessel dilation.<sup>46</sup>
- Taking **520 mg/day** of DHA and **120 mg/day** of EPA led to decreased platelet aggregation (clot-forming).<sup>47</sup>
- In obese adults, **4 grams** per day of a **46% EPA, 38% DHA** supplement, and diet changes led to increases in both large and small artery elasticity.<sup>48</sup>

## Additional Heart Health With Fish Oil

Both fish oil and krill oil are rich sources of heart-healthy omega-3 fatty acids. However, **fish oil** may provide advantages for cardiovascular health beyond those found in krill oil.

An interesting human study directly compared the ingestion of phospholipid-bound DHA found in krill with the form of DHA naturally found in fish oil. The

**TABLE: Impact Of Omega-3 Status On Cardiovascular Risk**

Condition	Omega-3 Measure	Difference in Risk
Complex Coronary Lesion (high risk for heart attack)	Low ratio of EPA to arachidonic acid (Arachidonic acid is a source of inflammatory mediators)	<b>110%</b> higher risk with low EPA <sup>31</sup>
Hypertension	Higher phospholipid omega-3 level	<b>57%</b> lower risk with higher phospholipid omega-3 level <sup>32</sup>
Atrial Fibrillation (heart arrhythmia)	Higher total omega-3 level	<b>29%</b> lower risk with higher total omega-3 level <sup>33</sup>
Risk of hospitalization for heart failure after heart attack	Low EPA level	<b>140%</b> higher risk with low EPA level <sup>34</sup>



results showed that the DHA found in fish oil was absorbed much quicker than the phospholipid-bound DHA uptake into plasma from krill by almost **3-fold**.<sup>49</sup>

This data has important implications and suggests that the form of DHA found naturally in **fish oil** provides a more rapid uptake into plasma triglycerides, as well as platelet phospholipids, both of which are important considerations for optimizing cardiovascular health.

The omega-3 fatty acids found in krill oil and bound to phospholipids provide additional cardiovascular benefits, as you will see in the next section.

### Heart Benefits From Krill Oil

To these impressive heart health findings on fish oil, we can now add complementary cardiovascular benefits from krill oil.

Laboratory studies in rats showed that krill oil reduced harmful triglyceride concentrations in the liver more than the fish oil.<sup>50-53</sup>

Krill oil was able to reduce structural and molecular changes found in the hearts of rats after a heart attack. After the heart attack, only the rats supplemented with krill oil were observed to have a significant reduction in heart weight, inflammation, and left ventricle dilation as compared to controls.<sup>54</sup>

### Omega-3 Fights Metabolic Syndrome And Diabetes

People with **metabolic syndrome** (the combination of central obesity, high blood pressure, disturbed lipid profile, and impaired glucose tolerance) are at increased risk of death from cardiovascular disease, diabetes, cancer, and other apparently “age-related” disorders. Because metabolic syndrome is closely associated with chronic low-grade inflammation, the powerful anti-inflammatory effects of omega-3 fats are especially important as a means of slowing or stopping the progression of this deadly disorder.

Studies indicate that supplementing with omega-3s can reduce various factors involved in the metabolic syndrome. The following is a list of the benefits of supplementing with omega-3s to reduce the impact of metabolic syndrome:

- Reduces body weight<sup>55,56</sup>
- Lowers blood pressure<sup>55</sup>
- Normalizes lipid profiles (lowering LDL, total cholesterol, and triglycerides)<sup>55,57</sup>
- Reduces fasting and after-meal glucose and insulin levels while improving insulin sensitivity,<sup>38,56-60</sup> and
- Reduces total body inflammatory status, as measured by elevated cytokines and other markers of inflammation such as C-reactive protein.<sup>55,57,61,62</sup>

An exciting animal study recently showed that, in diabetic rats, DHA supplementation not only helped to prevent diabetic eye disease, but also increased the survival rate of animals by around **25%**, compared with the diabetic rats supplemented with soybean oil.<sup>63</sup>

### Krill Oil And Weight Loss

Animal studies show potent reduction of liver fat stores, glucose levels, and cholesterol levels in mice supplemented with krill oil while being fed a high fat diet.<sup>64,65</sup> While many of these effects are seen with fish oil as well, studies show that krill oil, with its unique phospholipid structure, had the added benefit of increasing fat-burning in mitochondria while reducing new glucose production in the liver.<sup>66,67</sup> As with so many other complex disease processes, utilizing multiple pathways to reduce disease is a highly effective strategy.<sup>67</sup>

## Synergy In Bone And Joint Health

People used to believe that osteoporosis and osteoarthritis were the result of aging and reduced intake of calcium and milk products. Science has now shown that these bone and joint disorders are, in part, due to inflammation. Because of this, bones and joints are prime targets for the anti-inflammatory properties of omega-3 oils from both fish and krill.

In both animal and human studies, omega-3s from fish oil have been found to reduce post-menopausal bone loss.<sup>68-71</sup> This effect appears to be related mainly to a decrease in the number and activity of bone-destroying cells, due to reduced inflammation because of increased levels of omega-3s.<sup>72-77</sup>

On the other hand, people with lower blood levels of omega-3s are more likely to experience arthritis-related cartilage loss, compared to those with higher levels.<sup>78</sup>

And in osteoarthritis, when a DHA/EPA formulation was added to chondroitin sulfate, people experienced more complete relief of symptoms such as stiffness and pain. One study found a significant increase in

walking speed in people who supplemented with fish oil versus those who did not.<sup>79,80</sup> As with the beneficial results seen in people with bone loss, these positive findings may have been the result of the decreased inflammatory destruction of joint cartilage.<sup>81</sup>

In arthritis-prone guinea pigs, omega-3 supplementation significantly reduced the occurrence of the disease. In addition, omega-3 supplementation in osteoarthritic dogs and cats led to increased levels of daily activity.<sup>82-84</sup>

Krill oil is joining the toolkit for fighting arthritis, thanks to its exceptional anti-inflammatory properties resulting from its phospholipid form of omega-3s. A study in mice with experimental arthritis showed that krill oil supplements reduced arthritis scores and markedly diminished joint swelling. When examined under a microscope, the animals' joints were remarkably free of inflammatory infiltrates of immune system cells.<sup>85</sup>

A study on humans has also shown the benefits of krill oil on arthritis.<sup>86</sup> In a double-blind, randomized, placebo-controlled study, 90 patients who had

## Do You Know Your Omega Score?

**Life Extension®** readers know that omega-3 fatty acids combat cardiovascular disease through a host of interrelated mechanisms, including the suppression of pro-inflammatory cytokines, and reduction of triglycerides. Less known is the importance of a novel analytic technology to assess how much omega-3 is in one's whole blood, serum, and red blood cells.<sup>87-92</sup>

This low-cost, in-home, personalized assessment, called the **Omega Score™** provides a clear picture of the percentage of EPA/DHA omega-3 fatty acids in your blood. The benefits of knowing this information can be the difference between life and death, as the ratio of omega-3 to omega-6 fatty acids in blood and cell membranes strongly influences cardiovascular disease risk factors.<sup>87,93</sup>

The test is based on the groundbreaking work of a team of Harvard researchers. They found that people with total omega-3 levels between **6.1** and **10.2%** in their blood had a compelling **90%** lower risk of sudden cardiac death compared with those whose omega-3s were **2.1** to **4.3%** or less of their total fatty acids.<sup>94</sup> People with omega-3 levels between **4.3** and **5.2%** attained some benefit, with a **48%** reduction in risk, while those whose scores were between **5.2** and **6.1%** had an **81%** risk reduction.<sup>94</sup> Knowing your omega-3 levels via the **Omega Score™** enables you

to establish several key indices of cardiovascular risk, including risk of sudden cardiac death,<sup>95</sup> risk for developing heart disease,<sup>95,96</sup> and risk of fatal ischemic heart disease.<sup>97</sup> This crucial information can then be used to create an omega-3 supplement regime with the appropriate amount of omega-3s to attain healthy blood levels that may prevent a lethal cardiac event.

Additionally, the **Omega Score™** is one of the only tests that can check the level of a special omega-7 fatty acid called *palmitoleic acid* that has recently been connected with reduced risk of metabolic syndrome, improving insulin sensitivity, and lowering triglycerides, glucose, and CRP levels. This omega-7 fat also has a profound effect on the body's response to energy intake and fat intake and it helps suppress production of new fat.<sup>98,99</sup>

For added convenience, the **Omega Score™** test does not require a trip to a blood-drawing lab. You can simply obtain the specimen yourself by a finger stick at home, and then send the sample to the lab for testing. Your results will be sent to you through the mail, with graphic illustrations for easier understanding.

To order the **Omega Score™** test, call **1-800-208-3444**. You will receive a test kit in the mail. All you have to do is collect a sample and return it in the pre-paid envelope. You will receive your test results by mail.



cardiovascular disease and/or rheumatoid or osteoarthritis along with high levels of **C-reactive protein** (CRP, an indicator of inflammation), received either **300 mg/day** of krill oil or placebo.

After just seven days, those supplementing with krill had their CRP levels reduced by **19.3%**, while in the placebo group, CRP levels rose by **15.7%**. Even more impressive, the krill benefit was long-lasting. The krill group's CRP levels continued to fall by **29.7%** at 14 days, and **30.9%** at 30 days. More importantly from the patients' points of view, the krill oil supplement reduced pain scores by **28.9%**, reduced stiffness by **20.3%**, and reduced functional impairment by **22.8%**.

## Summary

Growing evidence suggests that fish oil omega-3s are complemented by those from krill oil, which occur naturally in a form that can be readily taken up by cell membranes.

Fish oil and krill oil have now been shown to provide superior neuroprotection, protecting vital brain areas from age-related shrinkage and dysfunction. Such measures may prevent memory loss, dementia, and even depression.

Fish and krill oils combined also optimize cardiovascular health to lower blood lipids, reduce the risk of arrhythmias, and prevent heart attacks and the damage they cause. Similarly, the marine oils lower risk for obesity, diabetes, and metabolic syndrome, which in turn can lower chances of developing diseases from cancer to stroke. And now there's evidence that these oils can ameliorate osteoporosis and painful arthritis.

Thus, both fish oil and krill oil offer secure, complementary coverage to safeguard the health of our aging bodies. ●

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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# COGNITEX

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

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

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

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

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

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



ITEM # 01897

## MOST ADVANCED NEUROLOGICAL FORMULA AT NEW LOWER PRICES

The ingredients in Cognitex® sell for a small fortune in **Europe**, where they are commonly prescribed. You can obtain them all at a fraction of this cost in the comprehensive Cognitex® nutrient formula for the brain.

A wide range of **gastrodin** doses have shown protective and supportive effects on neurovascular function, in particular in the context of neurovascular inflammation. One pre-clinical study using a well-validated model showed improved memory consolidation and retrieval in chemically impaired rats using a human equivalent dose of **50 mg** daily. This **50 mg** dose, when combined with nutrients that function via some of the same mechanisms as **gastrodin**, may be sufficient to derive results in aging humans.\* **Gastrodin** is also available in **300 mg** capsules.

The retail price for 90 softgels of Cognitex® with Brain Shield™ is \$62 (Item# 01897). If a member buys four bottles, the price per bottle is **\$39.75**. If eight bottles are purchased, the cost per bottle drops to **\$37.50**. Cognitex® is also available without pregnenolone at a slightly lower price (Item# 01896). Contains soy.

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References for most can be found at: [http://www.lef.org/magazine/mag2007/feb2007\\_report\\_cognitex\\_03.htm](http://www.lef.org/magazine/mag2007/feb2007_report_cognitex_03.htm)

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

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

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

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

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

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

## Just three softgels of Cognitex® provide the following nutrients:

Alpha-Glyceryl Phosphoryl Choline (A-GPC)	600 mg
Phosphatidylserine (from Sharp-PS®)	100 mg
Brain Shield™ (Gastrodin)	50 mg
Vinpocetine	20 mg
Grape Seed Extract	150 mg
Wild Blueberry Extract	150 mg
Sensoril® Ashwagandha Extract	125 mg
Uridine-5'-Monophosphate (disodium)	50 mg
Proprietary NeuroProtection Complex Blend	125 mg
Perluxan® Hops Extract, Rosemary Extract	
Pregnenolone	50 mg

To order Cognitex® with Brain Shield™, 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.

# ULTIMATE PROSTATE PROTECTION

## Now With Thymoquinone

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

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

- **Thymoquinone** targets prostate cells to promote healthy apoptosis (orderly removal of senescent cells).<sup>1-9</sup>
- **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>10-12</sup>
- **AprèsFlex®**, supports normal inhibition of 5-lipoxygenase or 5-LOX, an enzyme that is associated with undesirable cell division changes.<sup>13,14</sup>
- **Stinging and Dwarf nettle root extracts** help support prostate cells against excess estrogen levels.<sup>15,16</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>17-20</sup>
- **Pygeum** (*Pygeum africanum*) extract helps suppress prosta-glandin production in the prostate and supports healthy urination patterns.<sup>21,22</sup>
- **Pumpkin seed oil**, from select pumpkins, enhances the composition of free fatty acids and augments saw palmetto's benefits.<sup>23-25</sup>
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life.<sup>26-28</sup>
- **Graminex® Flower Pollen Extract™**, has been shown to help relax the smooth muscles of the urethra and help regulate inflammatory reactions.<sup>29-31</sup>
- **Boron** has been shown to slow elevation of prostate-specific antigen (PSA).<sup>32-34</sup>
- **Lycopene**, supports efficient cellular communication, helps maintain healthy DNA, regulates hormonal metabolism, and promotes healthy prostate size and structure.<sup>35-41</sup>

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Item # 01895

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

<b>Saw Palmetto CO2 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>ThymoQ™ Phospholipid Complex</b> [Phospholipids, thymoquinone (10 mg)]	<b>170 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> ) extract (gum resin) [providing 14 mg AKB1]	<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 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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To order **Ultra Natural Prostate**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

# SUPER OME

Powerfully  
Enhanced Omega-3  
Benefits



Item #01819

Emerging research suggests that different sources of omega-3 fatty acids, such as **fish oil and krill oil**, provide complementary effects upon cellular targets throughout the body.<sup>1</sup>

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

Fish oil and krill oil share many important similarities, such as reducing levels of omega-6 relative to beneficial omega-3 fatty acids.<sup>2</sup> Most Americans consume too many omega-6 polyunsaturated fatty acids and not enough omega-3s.<sup>3</sup>

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

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

## Combined Benefits Of Fish And Krill Oils

Human studies suggest that omega-3 fatty acids from **fish oil** result in a more rapid uptake into *plasma triglyceride and platelet phospholipids*, which specifically benefit the cardiovascular system.<sup>4</sup>

# GA With Krill & Astaxanthin

The omega-3s found in **krill** appear to be more rapidly incorporated into *red blood cell phospholipids*, which are rapidly absorbed into brain cells.<sup>5</sup>

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

## Astaxanthin: Super-Antioxidant

**Astaxanthin** protects cells by controlling free-radical activity and boosting mitochondrial function.<sup>6</sup> This potent antioxidant carotenoid has been shown to help optimize joint, immune,<sup>7,8</sup> brain,<sup>9,10</sup> cardiovascular,<sup>11,12</sup> DNA,<sup>13,14</sup> and mitochondrial<sup>15,16</sup> health. Astaxanthin also supports healthy blood sugar levels for those already in the normal range.<sup>17,18</sup> And astaxanthin crosses the blood-eye barrier, supporting vascular health within the eye<sup>19</sup> and protecting the eyes' sensitive cells.<sup>20-23</sup>

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

## Newly Documented Benefits Of Mediterranean Diet

In 2013, the results of a huge trial of people who followed a Mediterranean diet were published in the **New England Journal of Medicine**. Those who supplemented this diet either with **olive oil** or **nuts** showed such a huge reduction in primary cardiovascular problems that the trial was stopped early to spare the lives of those on the control diet.<sup>24</sup>

The Mediterranean diet—rich in **omega-3** fatty acids, monounsaturated fatty acids found in **olive oil**, and antioxidant-rich fruits, vegetables, and herbs—has long been associated with cardiovascular health and increased life span.<sup>25-33</sup>

To help emulate a Mediterranean diet, **Super Omega** provides a **standardized olive fruit polyphenol extract** to protect normal LDL from oxidation.<sup>34-38</sup> Research shows that a combination of **olive oil** *and* **fish oil** supplements helps with **inflammation** better than a placebo or fish oil alone.<sup>39</sup> The daily dose of Super Omega softgels provide the equivalent polyphenol content of **4 to 6 tablespoons of extra virgin olive oil**.

## Sesame Lignans Extend Fish Oil's Benefits

The *unstable* nature of fatty acids like fish oil limits their biological efficacy in the body. Scientific studies show that when **sesame lignans** are supplemented with fish oil, the beneficial effects are augmented.<sup>40, 41</sup>

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

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

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

Pure+™ Wild Fish Oil Concentrate	4,050 mg
<b>Yielding:</b>	
EPA (eicosapentaenoic acid)	1,400 mg
DHA (docosahexaenoic acid)	1,000 mg
Typical DPA (docosapentaenoic acid)	158 mg
Antarctic Krill ( <i>Euphausia superba</i> ) oil	300 mg
Polyphen-Oil™ Olive extract (fruit and leaf)	400 mg
[providing 90 mg polyphenols, 20.50 mg verbascoside/oleuropein, 15 mg hydroxytyrosol]	
Sesame seed lignan extract	10 mg
Natural Astaxanthin	4 mg
(from CO <sub>2</sub> extract of <i>Haematococcus pluvialis</i> algae)	
<i>Contains crustacean shellfish (krill).</i>	

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

## Super Omega-3 Still Available

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

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BY ROBERT GOLDFADEN AND GARY GOLDFADEN, MD

# Support Healthy Hair And Scalp Regeneration

A hallmark outward sign of aging is thinning hair. Commercial products focus on the *symptoms* of thinning hair, rather than the *cause*.

Recent discoveries have uncovered compounds that, when combined, offer a diverse approach for improving the condition and appearance of the scalp—laying the foundation for healthier hair.

The **scalp** remains one of the most neglected parts of the body until the signs of dryness and itching appear—or, even worse, thinning hair and hair loss occur.

This article describes how a novel plant extract derived from the **Argan tree** gets to the root of thinning hair and hair loss by stimulating the activity of self-renewing **dermal stem cells** to alleviate a dry scalp and induce hair growth. >





## Discovery Of A Dermal Stem Cell Role

In 2009, a research team at the University of Toronto discovered a therapeutic application for restoring hair growth in those suffering from hair loss (*alopecia*)—and in those combatting the underlying causes that lead to the telltale signs of a damaged scalp. Their research was in the area of adult stem cells.

Adult stem cells have the ability to differentiate into tissue cell types with a specific function.<sup>1</sup> The skin relies on a reservoir of active stem cells in both the *epidermis* (upper layer) and *dermis* (middle layer) to renew and repair itself, and also to enable proper wound healing.<sup>1-3</sup>

The location of dermal stem cells was only recently discovered by the Toronto-based research team.<sup>4</sup>

After conducting a series of studies, the researchers reported that cells localized at the base of the hair follicle (*dermal papilla*) expressed the stem cell marker Sox2 and exhibited the property to grow in colonies in the form of spheres, both characteristics of **dermal stem cells**. In addition to differentiating into fibroblasts that support dermal rejuvenation, these cells (referred to as *skin-derived precursors*, or SKPs) were also shown to generate hair follicle formation and stimulate hair growth in experimental mice. This evidence led the research team to conclude that skin-derived precursors are in fact “dermal stem cells that serve to induce hair morphogenesis and maintain the dermis.”<sup>4</sup>

Once scientists made this important discovery, the next step entailed identifying compounds that can improve the regenerative capacity of aging dermal stem cells. They soon discovered the answer in a rare plant: the **Argan tree**.

## Activate And Vitalize Aging Dermal Stem Cells

Belonging to one of the oldest tree species in the world, the Argan tree grows in southwest Morocco where it adapts to extreme droughts and high temperatures. The plant’s survival under these diverse conditions speaks to the remarkable regenerative capacity of its stem cells.<sup>5</sup> This prompted researchers to investigate whether these stem cells can activate our own aging dermal stem cells. Multiple preliminary studies indicate that they do.

For example, in an advanced cell culture technique, the presence of **0.1%** Argan stem cell extract had beneficial effects on two important characteristics of dermal stem cells: It significantly enhanced the expression of the stem cell marker Sox2, and it increased the number of secondary spheres by **89%** compared to untreated controls in aging dermal skin cells, thus improving their activity.<sup>6</sup> This indicates that these newly activated dermal stem cells could then stimulate the formation of hair follicles and hair growth in humans.



## Topical Ingredients Revive Your Hair And Scalp

- Procyanidin B-2 stimulates hair growth in balding men, leading one research team to recognize it “as a promising cure for male pattern baldness.”
- Biotin combats thinning hair.
- Copper supports hair follicles.
- Antioxidant-rich tea extracts quench excess free radicals that result in skin damage.

In a clinical trial, human skin treated with Argan stem cell extract increased dermal density by nearly 13% compared to a placebo after eight weeks.<sup>6</sup> This is important because aging is associated with a decreased number of fibroblasts that provide structural integrity to the dermis.<sup>7,8</sup> The resulting reduction in dermal thickness gives way to a dry and damaged scalp.<sup>9</sup> Thus, by increasing dermal density, Argan stem cell extract can help support a healthy scalp.

### Four Additional Compounds That Support Healthy Hair

Two other nutrients, *procyanidin B-2* and *biotin*, further encourage hair growth via different mechanisms than Argan stem cells. Additionally, *copper* and *tea extracts* complement procyanidin B-2 and biotin's hair-growing action by rejuvenating the scalp and hair from the inside out. Copper helps solidify the hair's structure. Tea extracts quench excess free radicals that result in dryness, itchiness, and dullness of the scalp.

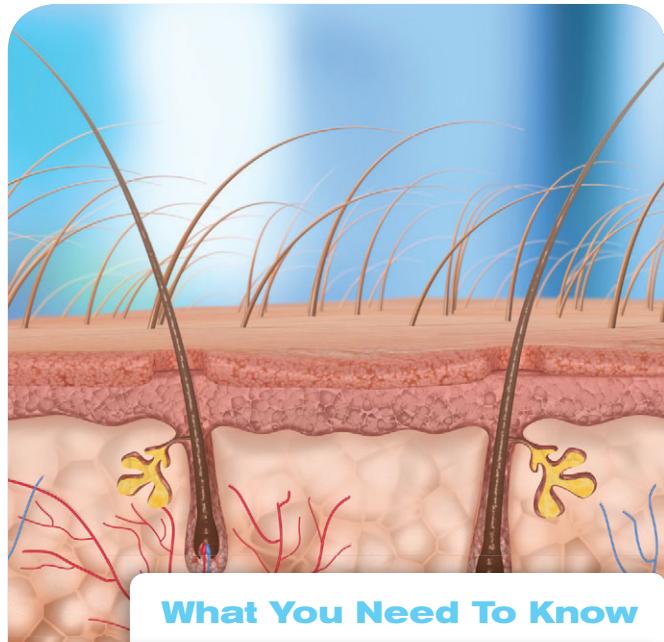
#### 1. Procyanidins

Procyanidins are a subclass of flavonoids found at high concentrations in chocolate, apples, and grapes.<sup>10</sup> Scientists have discovered that a particular form of procyanidin known as procyanidin B-2 favorably affects the natural hair growth cycle by reverting hair follicles from the *telogen* (resting) phase to the *anagen* (growth) phase.<sup>11</sup> Procyanidin B-2 stimulates natural hair growth and has been found to increase hair density and average hair diameter in men.<sup>12,13</sup>

In a human study, researchers observed that 43 men with male pattern baldness who applied procyanidin B-2 twice daily to their scalp area for one year exhibited a significantly greater total number of hairs in a targeted scalp area than those who applied a placebo.<sup>12</sup>

In another double-blind, controlled clinical trial, balding men ranging in age from 30 to 57 applied either a topical application of procyanidin B-2 or a placebo twice daily to the scalp area for four months. At the study's end, 78.9% of patients in the treatment group experienced increases in average hair diameter versus only 30% for the placebo group.<sup>13</sup> Equally noteworthy, the procyanidin B-2 group also had a significantly higher ratio of hairs measuring 40 microns or more in diameter than the placebo group, demonstrating an improvement in hair thickness.<sup>13</sup>

These substantial hair-increasing effects led the team of researchers to recognize procyanidin B-2 as a promising treatment for male pattern baldness.<sup>13</sup>



#### What You Need To Know

### Dermal Stem Cells Stimulate Hair Growth

- In 2009, a University of Toronto-based research team discovered a role for dermal stem cells in the dermal papilla (base of the hair follicle).
- Dermal stem cells induce hair follicle formation and hair growth in mice, which in turn raises their therapeutic potential to treat hair loss (alopecia) in humans.
- Scientists identified stem cells from the Argan tree that have been shown to activate dermal stem cells. This could stimulate the formation of hair follicles and hair growth in humans.
- Argan stem cells increase dermal density to support a healthy scalp.
- In addition, procyanidin B-2 and biotin support hair growth; copper supports hair follicles; and tea extracts protect the skin by fighting free-radical damage.
- When combined, these nutrients offer a multi-faceted approach for improving the health and appearance of the scalp—laying the foundation for healthy hair.

## 2. Biotin

Biotin is a water-soluble vitamin whose deficiency has been shown to manifest itself as hair loss, suggesting that the micronutrient plays a vital role in supporting healthy hair.<sup>14</sup>

Oral supplementation of **1 mg** per day of biotin for just a week led to the disappearance of biotin-deficiency symptoms, including alopecia.<sup>15</sup>

## 3. Copper

*Dermal papilla* (the base of the hair follicle) is the source of adult stem cells. Researchers observed that *tripeptide-copper* complex, a growth factor for various types of cells, stimulated the elongation of human hair follicles and of dermal papilla cells.<sup>16</sup>

## 4. Tea Extracts

The scalp is bombarded with free radicals on a daily basis, especially from UV exposure.<sup>17</sup> As antioxidants produced within the body are depleted, excess free radicals begin to modify the scalp's structure. This process causes a dry, damaged scalp.<sup>9</sup>

Green, black, white, and red tea extracts are brimming with potent antioxidants and anti-inflammatory compounds that protect the skin against the damaging effects of free radicals.<sup>16,18,19</sup>

## Summary

The scalp is often the most neglected body part, yet it forms the foundation for healthy, beautiful hair.

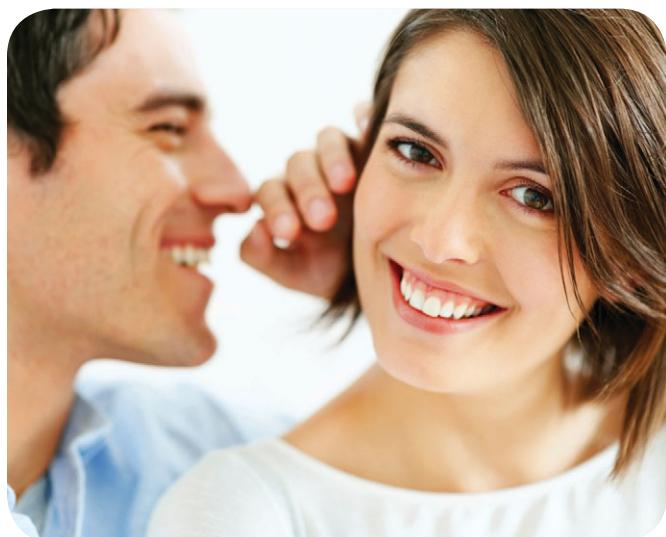
A novel plant extract derived from the rare **Argan** tree enhances the regenerative capacity of aging dermal stem cells to induce hair follicle formation and stimulate hair growth, as well as improve dermal density to alleviate signs of a damaged scalp.

This extract has been formulated into a serum which, along with additional compounds, supports the health and appearance of the hair and scalp. ●

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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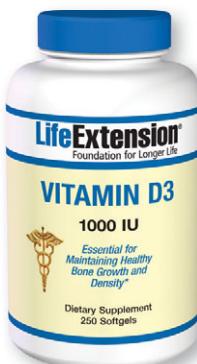
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## VITAMIN D3 SOFTGELS FOR SUPERIOR ABSORPTION

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



### VITAMIN D3 1,000 IU

**250 softgels**

Retail: \$12.50

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

Commercial companies offered only **400 IU** vitamin D products when Life Extension long ago introduced a **1,000 IU** version. For most people, this **1,000 IU** potency is *insufficient* to attain optimal vitamin D blood levels. For smaller individuals who obtain **2,000-3,000 IU** in their multi-nutrient formulas (and children), this potency of vitamin D may be suitable. **Item # 01751**

Keep in mind that you may already be getting **1,000-3,000 IU** of vitamin D in your multi-nutrient formulas.

Vitamin D is now available in superior absorbing softgels. A recent study demonstrated that the use of one **5,000 IU** vitamin D **softgel** daily resulted in a near **30%** increase in vitamin D levels in just **60 days**.



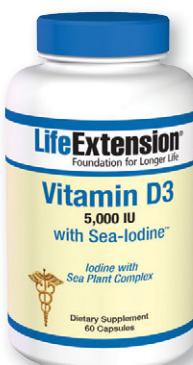
### VITAMIN D3 5,000 IU

**60 softgels**

Retail: \$11

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

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



### VITAMIN D3 5,000 IU WITH SEA-IODINE™\*

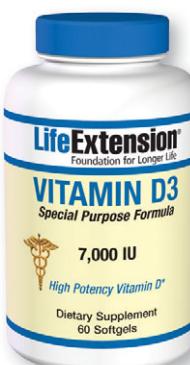
**60 capsules (non-softgel)**

Retail: \$14

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

Most people do not ingest enough vitamin D and iodine, especially those seeking to reduce their salt intake. Combining **5,000 IU** of **vitamin D3** and **1,000 mcg** of **iodine** into one capsule makes taking these two nutrients economical and convenient.

*Due to the source of kelp, this product may contain fish and shellfish.* **Item # 01758**



### VITAMIN D3 7,000 IU 60 softgels

Retail: \$14

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

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



### VITAMIN D3 LIQUID 2,000 IU (Natural mint flavor)

**1 ounce**

Retail: \$28

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

For those rare individuals who have difficulty absorbing enough vitamin D3 from softgels, this liquid of vitamin D can be used. **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-hydroxy-vitamin 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.

# CRUCIFEROUS

## Vegetable Extracts in Convenient Capsules

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

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

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

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

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

Item # 01468



Item # 01469



Triple Action Cruciferous Vegetable Extract provides the following concentrates in just **one** vegetarian capsule:

Broccoli Extract	400 mg
	[standardized to 4% glucosinolates (16 mg)]
Watercress 4:1 extract	50 mg
Indole-3-Carbinol (I3C)	80 mg
Rosemary Extract	50 mg
Cat's Claw Extract	50 mg
Cabbage Extract	25 mg
DIM (di-indolyl-methane)	14 mg
Apigenin	25 mg

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

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**To order Triple Action Cruciferous Vegetable Extract, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

# REJUVENATING SCALP SERUM

## With Argan Tree Extract

The scalp and hair follicles play a critical role in the health of the hair, and they're continually challenged by chemical, mechanical, and environmental stressors.

A novel plant extract derived from the rare **Argan** tree—enhanced by supporting compounds—protects and stimulates the activity of self-renewing **dermal stem cells**. This serves to moisturize the scalp, provide nutrients to every strand of hair, and sustain a strong hair growth cycle.<sup>1,2</sup>

### ARGAN OIL

The new **Rejuvenating Scalp Serum** contains **Argan oil**, which is unlike any other oil. It is a "dry" oil, easily absorbed by the skin so it leaves no residue or build-up on the hair or scalp. **Argan oil** has been shown to be exceptionally effective at targeting scalp skin cells to prevent dry scalp conditions, nourish hair follicles, and revive dull, tired, brittle hair.<sup>1,2</sup>

The effectiveness of the **Argan oil** in **Rejuvenating Scalp Serum** is enhanced by **four** compounds:

1. **Procyanidin B-2** to support hair growth.<sup>3-5</sup>
2. **Biotin** to help support hair growth.<sup>6</sup>
3. **Copper** to support hair follicles.
4. **Tea extracts** to inhibit free radicals<sup>7</sup> that cause dryness, itchiness, and dullness of the scalp.

### SCALP AND HAIR HEALTH

The suggested use of **Rejuvenating Scalp Serum** is to massage **3-5** drops into the scalp each day. This will:

- Improve the health of the scalp.
- Actively nourish hair follicles.
- Promote natural hair growth cycle.
- Lock in moisture for a silky shine.
- Promote strong hair fibers.
- Improve hair texture and volume.

A 2-ounce bottle of Cosmesis **Rejuvenating Scalp Serum** retails for \$46. If a member buys two bottles, the price is reduced to **\$29.25** per bottle.

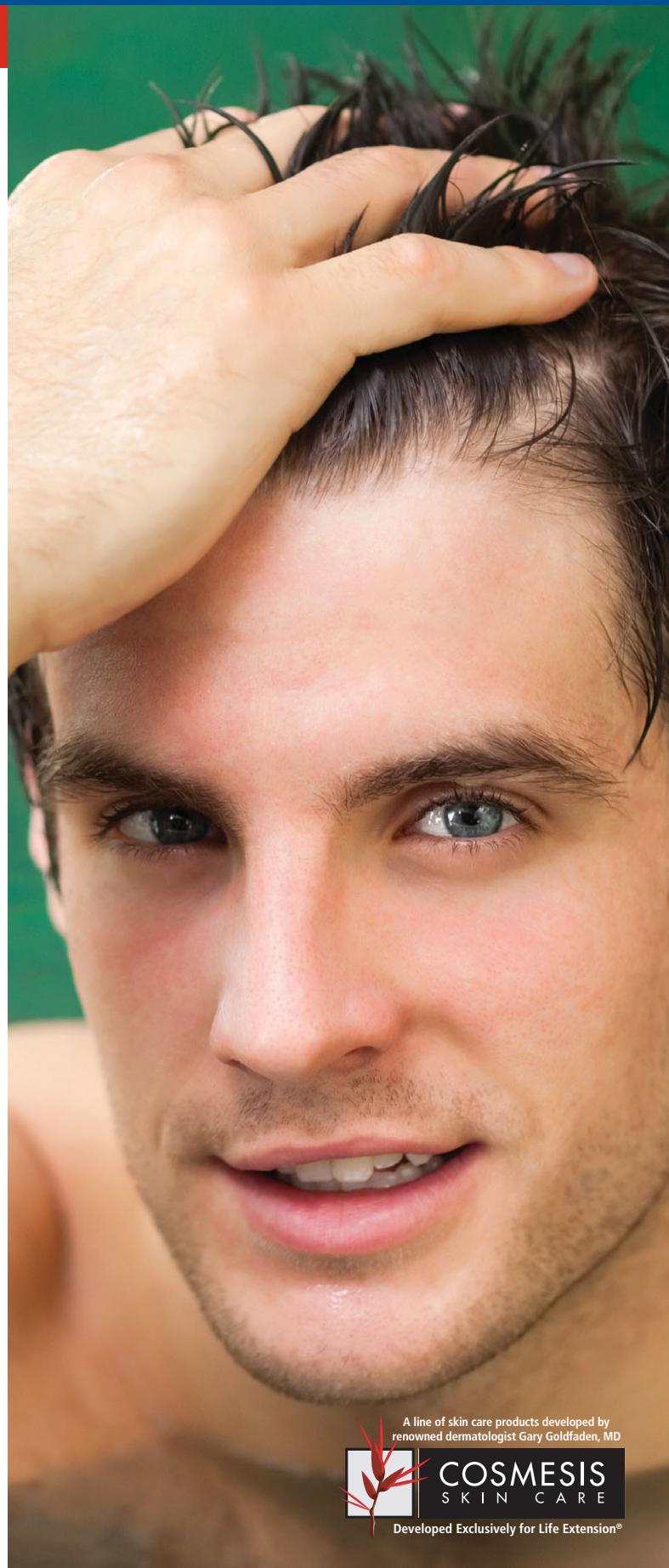
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To order Cosmesis Rejuvenating Scalp Serum, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)



Item # 80153



# *The Dangers Of Using Antibiotics To Prevent Urinary Tract Infections*

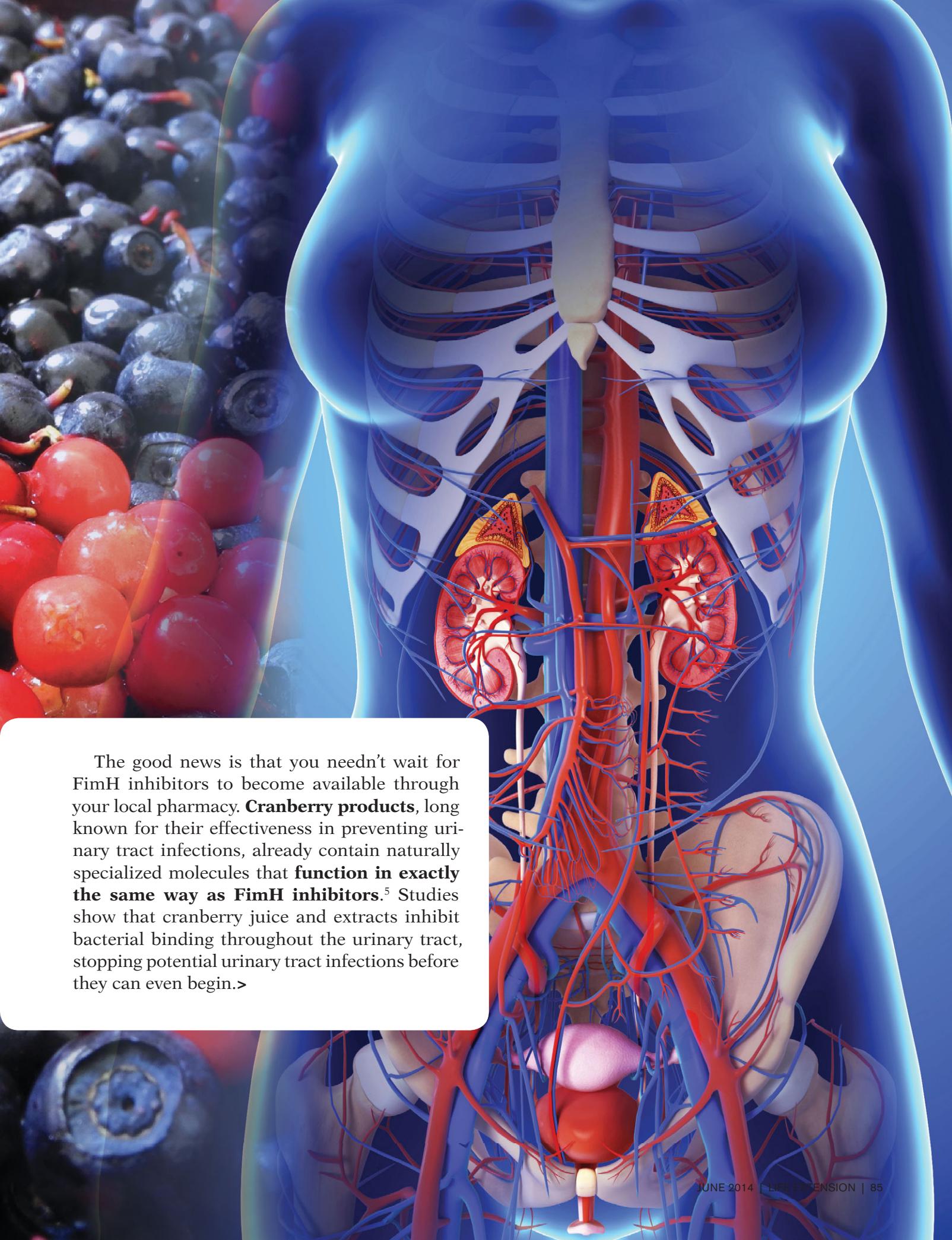
**Urinary tract infections** are one of the most common infections, resulting in more than **11 million** visits to the doctor each year<sup>1</sup>—and most (if not all) of them get treated with antibiotics. But when used for prevention and repetitive treatments, antibiotics pose a public health concern, as their overuse has led to the rise of antibiotic-resistant superbugs.<sup>2</sup>

That's why scientists have been working to come up with an alternative to antibiotics. They have discovered that by preventing the bacteria from *sticking* to the lining of the urinary tract to begin with, it's possible to treat *and* prevent urinary tract infections—and as an added bonus, to reduce the overuse of antibiotics.<sup>3</sup>

Naturally, drug companies are keenly following these developments, intent on commercializing these compounds called **FimH inhibitors**, which prevent bacteria from sticking to the lining of the urinary tract.<sup>4</sup>

The problem is, pharmaceutical treatments targeting this mechanism of action are years away from reaching the market. And when they do finally arrive, you can bet they won't be cheap or necessarily safe.





The good news is that you needn't wait for FimH inhibitors to become available through your local pharmacy. **Cranberry products**, long known for their effectiveness in preventing urinary tract infections, already contain naturally specialized molecules that **function in exactly the same way as FimH inhibitors**.<sup>5</sup> Studies show that cranberry juice and extracts inhibit bacterial binding throughout the urinary tract, stopping potential urinary tract infections before they can even begin.>

## A New Way To Treat And Prevent Urinary Tract Infections

The vast majority of urinary tract infections are caused by *E. coli* bacteria.<sup>5,6</sup> For these bacteria to create an infection, they have to be able to *stick* to cells lining the bladder or urethra (the tube through which urine leaves the body).<sup>3,5,6</sup> The *E. coli* strains that are the most successful at causing urinary tract infections have developed a sophisticated set of cell-surface **adhesion molecules**, which act like tiny grappling hooks to attach themselves to urinary tract tissue.<sup>3,5,7</sup>

Once attached, the organisms start to reproduce, which causes inflammation, and produces the typical symptoms of a urinary tract infection: burning, painful urination, and a sense of urgency to urinate. If the infection ends up in the kidneys, it can lead to fever, chills, and low back pain.<sup>1</sup>

Current medical treatment for urinary tract infections mainly involves antibiotics that destroy bacteria (or impede their reproduction).<sup>6,8</sup> But the overuse of antibiotics has created a new crisis: *antibiotic resistance*.<sup>6,9</sup> Antibiotics can't kill every single organism in an infection, and those that survive develop resistance to the drug. As they reproduce, they give rise to new populations that are similarly resistant. It doesn't take many generations of bacteria until widespread resistance to multiple antibiotics occurs.<sup>6,10</sup>

In short, the more antibiotics we develop, the "tougher" the germs become. Experts warn that a generation of superbugs is emerging that will be immune to any known antibiotic therapy.

That's why it's so important to find a way to prevent urinary tract infections before they begin—and why scientists are working hard to develop synthetic compounds that would make the bacteria incapable of sticking to urinary lining cells.<sup>4,7,8,11</sup> Because the most important binding molecule on *E. coli* cells is called



*FimH*,<sup>6,12</sup> the bulk of drug development has focused on creating molecules that fill up the *FimH* binding sites, eliminating the "stickiness" of the germs.<sup>4,6,7</sup> These drugs are referred to as *FimH inhibitors*.<sup>4,13</sup>

If the bacteria are unable to bind to the urinary tract lining, they will be eliminated simply by the flow of urine, long before they can set up an infection.<sup>6</sup>

Laboratory studies show that *FimH* inhibitors can reduce the amount of bacterial colonization in animal bladders by a factor of almost 10,000 compared with standard antibiotic treatment.<sup>6</sup>

Fortunately, you don't have to wait for *FimH* inhibitors to become available in order to effectively prevent urinary tract infections. The effective characteristics of *FimH* inhibitors occur naturally in cranberries.<sup>14</sup> And that means that you can have access, right now, to a safe, effective way to keep bacteria from sticking to the urinary tract—and ultimately to help prevent urinary tract infections from occurring.

## Cranberries Block Bacterial Stickiness

For more than 45 years, human studies have demonstrated the effectiveness of cranberry products, especially extracts of the whole fruit, at preventing urinary tract infections. Multiple studies, for example, have shown that when people supplement with cranberry juice or extracts, their urine acquires the ability to block bacteria from attaching to cells lining the bladder, urethra, or vagina.<sup>15-20</sup>

Cranberry supplements reduce bacterial adhesion regardless of the specific bacterial strain or of bacterial antibiotic resistance.<sup>16,21</sup> This gives cranberry products a major edge over standard antibiotic therapy.

Cranberries contain a specific group of polyphenol molecules called **proanthocyanidins**.<sup>21-23</sup> Similar to *FimH* inhibitors, these molecules may prevent bacteria from sticking to urinary tract lining cells.<sup>24,25</sup> While antioxidant proanthocyanidins are found in



many plant-based foods, research shows that those from cranberries appear to have more significant anti-adhesion properties.<sup>26</sup>

Multiple laboratory studies have demonstrated in detail just how effective proanthocyanidins are at reducing bacterial stickiness. One study found that cranberry powder from whole berries decreased the number of bacteria sticking to cells lining the urinary tract from **6.9** to just **1.6** organisms per cell.<sup>27</sup>

Using *atomic force microscopy* (an electron microscope that determines forces between individual molecules), scientists were able to measure the rapid reduction in nanoscale adhesive forces between bacteria and lining cells after the addition of cranberry juice to the Petri dish.<sup>28</sup> Cranberry treatment produced a **12.4-fold** reduction in the force holding bacteria to the cells.

In another study using atomic force microscopy, scientists gave human volunteers a dose of cranberry juice, obtained urine specimens, and then applied them directly to *E. coli* bacterial cells in culture.<sup>29</sup> Urine collected just two hours after cranberry juice consumption cut the bacterial stickiness to levels lower than those obtained with urine collected before the juice dose. The bacterial stickiness continued to drop over the entire eight-hour test.

This study demonstrated that cranberry juice components rapidly enter the urine, and almost immediately lead to a decrease in the stickiness of infection-causing bacteria.<sup>29</sup>

Purified proanthocyanidin from cranberries has now been shown to be effective at preventing the adherence of multi-drug resistant strains of *E. coli* to urinary lining cells—showing that these molecules may be effective in preventing urinary tract infections that are difficult to treat with antibiotics.<sup>30</sup>

In addition to reducing bacterial stickiness, proanthocyanidin molecules offer additional benefits beyond FimH inhibition:

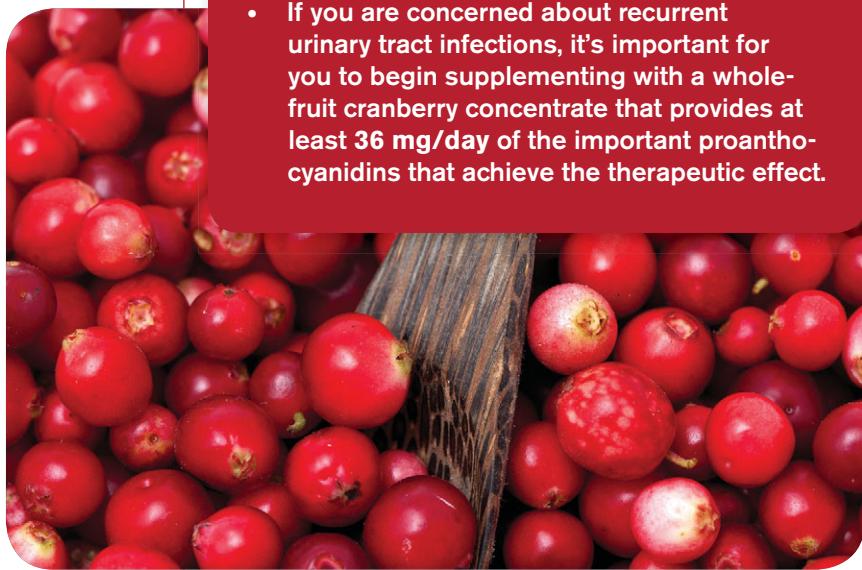
Once proanthocyanidins bind to the bacterial cell surface, they reduce the amount of the sticky projections that the organisms produce.<sup>22,31</sup>

They change the actual shape and structure of the bacteria, making them less functional.<sup>22,31</sup>

There's growing evidence that cranberry extracts reduce the adhesion of other bacterial and yeast species that are often responsible for urinary tract and other infections, giving them a considerably broader spectrum than is likely with FimH inhibitors.<sup>32-36</sup>

## Protect Urinary Tract Health With Cranberry

- Repeated antibiotic treatment for urinary tract infections is a major contributor to the rise of dangerous antibiotic resistant bacteria.
- Frequent antibiotic treatment also raises your individual risk for complications such as bacterial overgrowth and difficult-to-treat infections in the future.
- A new category of drugs, called FimH inhibitors, is under development, aimed at blocking bacteria from attaching to the urinary tract to produce infection.
- But FimH inhibitors are still far in the future; their effectiveness and safety remain unknown.
- A simpler, more natural choice is a whole-fruit cranberry supplement; these supplements act in the same way as FimH inhibitors, preventing bacterial adhesion in the urinary tract.
- Cranberry supplements offer the other benefits of a natural product; they are rich in antioxidant and anti-inflammatory compounds.
- Cranberry supplements compare favorably with antibiotics in preventing recurrent urinary tract infections, and they are known to cause no increase in resistance.
- If you are concerned about recurrent urinary tract infections, it's important for you to begin supplementing with a whole-fruit cranberry concentrate that provides at least **36 mg/day** of the important proanthocyanidins that achieve the therapeutic effect.



Proanthocyanidins impair *E. coli*'s swimming ability, limiting their ability to move around even prior to latching on to bladder lining cells,<sup>32</sup> which increases the chances of eliminating the organisms from the urinary tract before they can cause an infection.

## Understanding Urinary Tract Infections

A urinary tract infection is any infection of the components of the urinary system that make, store, and excrete urine.

Women have a lifetime chance of between **40** and **50%** of having at least one urinary tract infection; their risk is **50 times** that of men for such infections.<sup>25,45</sup> Recurrent urinary tract infections are also common in women, with up to one-third developing at least one recurrence.<sup>25</sup> When recurrences happen more frequently than twice in six months, or three times in one year, preventive antibiotics are usually begun.<sup>21</sup>

Not all urinary tract infections are the same. The simplest kind is an infection limited to the urinary bladder. This "bladder infection," or cystitis, produces pain during urination, along with a need to urinate frequently and urgently. Some patients experience low abdominal pain as well.

A kidney infection (*pyelonephritis*) is a much more serious infection, involving the urine-producing tissue of the kidney. Kidney infections typically cause all the symptoms of a bladder infection, along with fever, chills, malaise, and low back pain. These infections usually arise from a simple bladder infection, and they pose the risk of sepsis, or "blood poisoning."

Men may also develop bacterial infections of the prostate, called acute or chronic bacterial prostatitis.

Regardless of the type or location of a urinary tract infection, the vast majority are caused by virulent strains of *E. coli* bacteria, most of which originate in fecal matter. Simply contaminating the urinary tract with these organisms is not enough to start an infection, however.

The germs must first attach themselves firmly to the urinary tract lining. Blocking that attachment is therefore a major target of drug developers, although cranberry supplements produce an identical kind of adhesion blocking with fewer side effects and no risk of antibiotic resistance.

Cranberries can reduce the bacteria's ability to form a "biofilm," the mucous-rich scum that forms on surfaces like urinary catheters.<sup>33,34,36</sup> This may reduce the risk of serious urinary tract infections caused by necessary medical hardware.

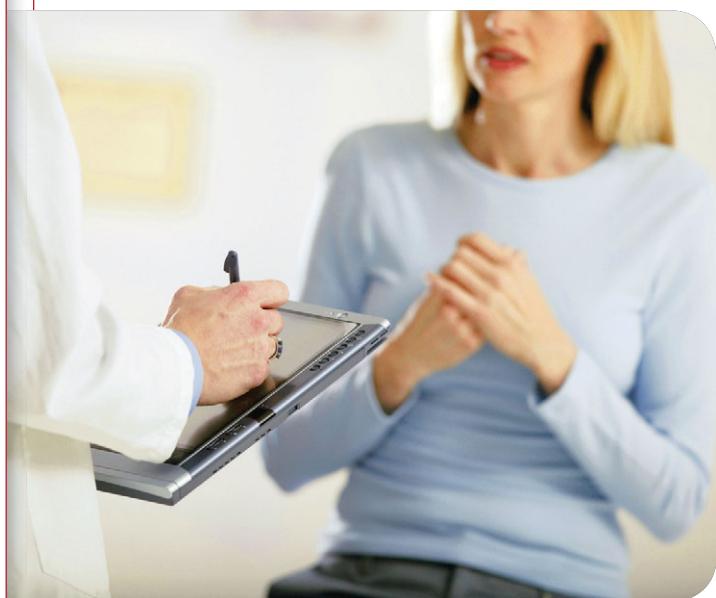
Unlike FimH inhibitors, cranberry extracts also contain antioxidants and anti-inflammatory molecules.<sup>15,33,37</sup> Together, these components can reduce damage to human cells and the symptoms that result from the inflammatory reaction to the organism.<sup>37</sup>

Cranberry treatment, especially in capsules, does not have known significant drug interactions or side effects, something that's still unknown about FimH inhibitors.<sup>21,38</sup>

## Clinical Studies Validate Cranberry Effectiveness

Cranberries have been used for generations to help boost urinary tract health. It's only in the past dozen or so years, however, that scientists have come to a better understanding of how cranberry products work to combat bacterial adhesion, reduce oxidant stress, and fight inflammation. The most compelling studies are those that directly examine how cranberry products reduce the frequency or severity of urinary tract infections.

An early pilot study evaluated women between 25 and 70 years old who took **200 mg** of a concentrated cranberry extract twice a day.<sup>39</sup> All of these women had a history of at least six urinary tract infections in the past year. During the 12-week course of the study, not a single woman had a urinary tract infection.<sup>39</sup>





Even better, two years later, all of those who continued to take the cranberry supplement remained free of urinary tract infections. That's **100%** protection for a group of people who previously had averaged one urinary tract infection every two months.

A large meta-analysis study of 10 individual clinical trials involving 1,049 patients showed that cranberry products significantly reduced the incidence of urinary tract infections at 12 months, lowering the risk of an infection by **35%** compared with control groups.<sup>40</sup>

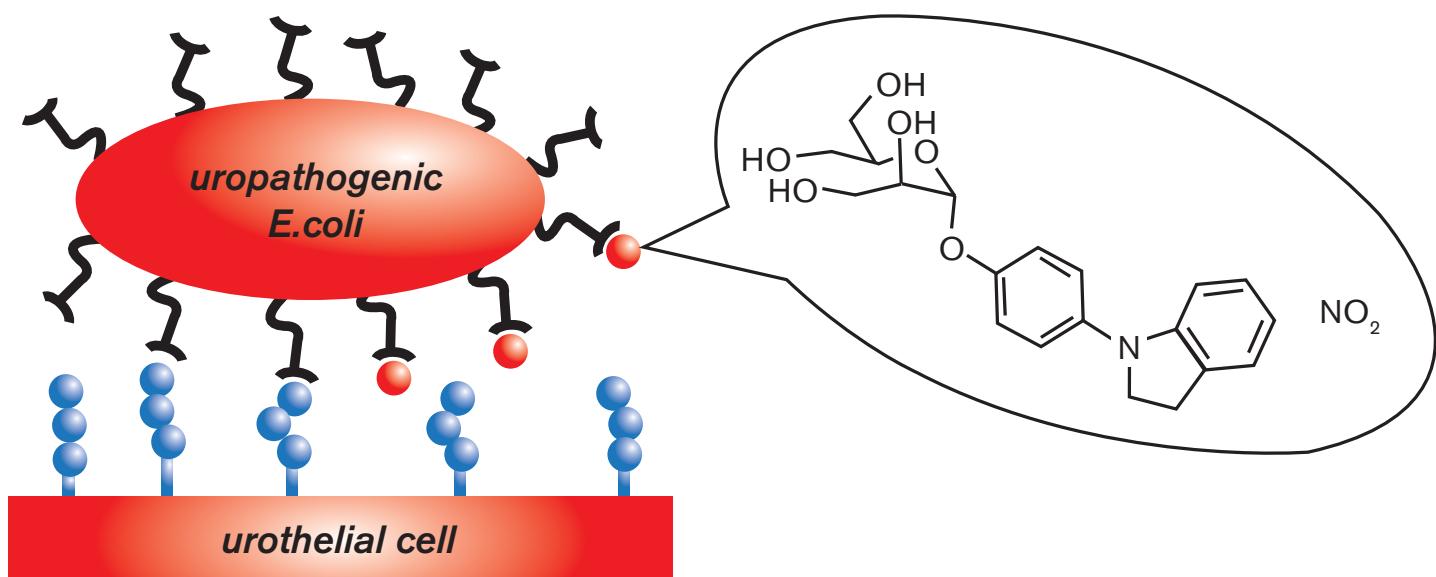
Still more recently, several studies have compared the effect of cranberry extracts with the most commonly used antibiotics in preventing recurrent urinary tract infections. These studies have demonstrated good efficacy of the cranberry treatment in comparison to standard antibiotics.<sup>41,42</sup>

One study showed that cranberry extract had similar effectiveness to the antibiotic trimethoprim at preventing urinary tract infections.<sup>41</sup>

Another study found that the antibiotic combination of trimethoprim and sulfamethoxazole was only slightly more effective at preventing urinary tract infections than cranberry capsules. (Patients took **500 mg** twice daily of cranberry capsules, or once-daily doses of the antibiotic combination.<sup>42</sup>) However, patients treated with antibiotics had a **62% greater amount** of antibiotic-resistant organisms during the study, compared to those receiving cranberry. This study has been widely cited as an example of the reasonable trade-offs between cranberry and antibiotic treatment; over the long term, it seems likely that the cranberry recipients will develop fewer infections with dangerous multiple antibiotic-resistant strains of organisms.

As with any therapy directed against microorganisms, the question arises whether cranberry supplements might in some way alter the normal bacterial population of the intestinal or vaginal tracts. Certainly antibiotics do this, as we've seen, and with often devastating effects.

Research shows that not only do cranberry products not unfavorably affect normal bacteria, but in fact they also help eliminate certain disease-causing germs living in the genito-urinary tract in up to **42%** of patients.<sup>18</sup> Similarly, studies show that cranberry supplementation does not have any negative interactions with existing antibiotics.<sup>43</sup>



FimH inhibitors are shown as red spheres interfering with binding at tips of bacterial pili. Cranberry proanthocyanidins operate in a similar manner, blocking the pili binding to urinary lining cells.

## Summary

Urinary tract infections afflict millions of Americans, overwhelmingly women.<sup>1</sup> Nearly **20%** of women who have had one urinary tract infection will have another and this risk increases with each infection so that a woman who has had three urinary tract infections in her lifetime has an **80%** chance of developing a fourth.<sup>44</sup> Those women (and the few men with similar problems) are often placed on antibiotic preventive therapy to reduce the chance of another recurrence.



### What To Look For In A Cranberry Supplement

Cranberry products, especially those in capsule form and made from whole fruit, provide undoubtedly protection against recurrent urinary tract infections, especially in older women who are at the greatest risk of infection. The strong research proving cranberry's benefits for treating and preventing urinary tract infections led the European Urological Association to recommend the use of cranberry preparations containing not less than **36 mg** of proanthocyanidins per day as a preventive strategy against urinary tract infections.<sup>38</sup>

It's important to do your research before choosing a cranberry supplement. A 2012 study surveying cranberry supplements found that only four of 19 products studied actually provided **36 mg** of total proanthocyanidins per day; some provided none at all.<sup>46</sup>

In order to take advantage of cranberry's benefits, make sure you're taking a cranberry supplement that's derived from whole fruit, and that will deliver the recommended **36 mg/day** of the proanthocyanidins that prevent bacteria from sticking.

But antibiotic treatment poses major risks to the individual and to the health of the public. Repeated treatment produces drug-resistant organisms, which are much more difficult to treat as time goes by.

A new family of drugs is under development that will block the first step in urinary tract infections, binding of the bacteria to the bladder lining. But those drugs are still far in the future, and their safety and effectiveness profiles are as yet unknown.

Whole-fruit cranberry supplements, on the other hand, are already recognized to block bacterial binding to the urinary tract linings, and their safety profile is well-established. Concentrated supplements avoid the excess sugar load and occasional stomach upset that can be caused by cranberry juice.

Supplements with at least **36 mg** of cranberry proanthocyanidins are recognized by international agencies as being appropriate for use in prevention of urinary tract infections.<sup>38</sup> Capsule preparations of these supplements minimize the risk of stomach upset.

If you have or are concerned about recurrent urinary tract infections, you owe it to yourself to start supplementing with a whole-fruit cranberry product today. You'll be benefiting yourself and your entire community by doing so, as you lower your risk for contributing to the epidemic of antibiotic resistance.●

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

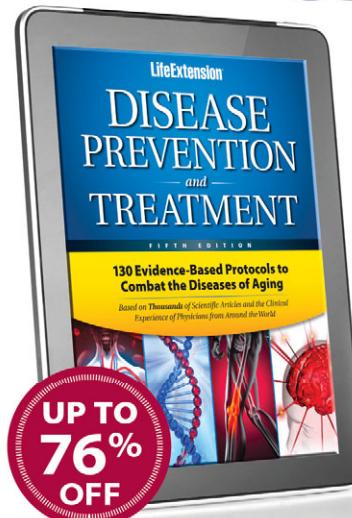
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<b>UTIRose™ (<i>Hibiscus sabdariffa</i>) extract (flower, calyx) [std to 45% total phenolics (45 mg)]</b>	<b>200 mg</b>
<b>Cran-Max® Cranberry whole fruit concentrate</b>	<b>500 mg</b>

The suggested daily amount of Cran-Max® in this formula alone (500 mg) was demonstrated to provide the **anthocyanin** equivalent of **seven 8 oz glasses** of Ocean Spray® Cranberry Juice Cocktail.<sup>9</sup>

The price for one bottle of **Optimized Cran-Max® with UTIRose™** containing 60 vegetarian capsules is \$18. If a member buys four bottles, the price is reduced to **\$12** per bottle.



Item # 01424

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## WELLNESS PROFILE

BY JON FINKEL

### An Impressive Body Of Work: Warren Honeycutt



The story is familiar but the results are far from ordinary. A heavyset 14-year-old kid decides that he's tired of being overweight and hits the gym. He sees some results and realizes the potential of living a healthy, active lifestyle over a sedentary, fast-food diet-filled existence. But this is where the story veers into the extraordinary.

Forty-six years later, Warren Honeycutt, now 60 years old, is a decorated bodybuilder who is America's only Masters Heavyweight to reach the National Physique Committee's Nationals Finals for five consecutive years. He is also the man behind his own weight-loss system called *Get Honeycutt*.

"I entered my first physique competition when I was 19," Honeycutt says. "And I've never stopped. The reason I started my own company is because wherever I go, people stop me and ask me how old I am. They look at my face and see that I'm not 25, but when I'm walking through the mall or at a restaurant, people often want to know how I have the body that I do at 60."



The answer to that question has many parts, from time in the gym to a diet to, of course, a link with **Life Extension®** via Dr. Sergey Dzugan.

"I met Dr. Dzugan about 15 years ago and he introduced me to Life Extension and everything that it offers," Honeycutt says. "Life Extension is one of the few places that you can go to get really good information and good content about healthy living and supplements. Personally, I take omega-3s and the multivitamin... But my favorite product is Cognitex. Dr. Dzugan started me on all of that. Also, my cholesterol went from 325 down to 175 in one month just due to diet changes recommended by Dr. Dzugan. I got away from a high-fat diet and into more healthy protein."

Honeycutt says that the combined knowledge he's gained from places like Life Extension and his lifetime pursuit of fitness, nutrition, and excellent health led him to have an epiphany to start his own diet company.

"I've been a fitness entrepreneur my whole life," Honeycutt says. "I opened my first gym when I was 20, and I've owned multiple businesses. I've also been a gym manager and a trainer. So I've been in this business for over 40 years."

Honeycutt says that he used to train people one-on-one, but now he doesn't have the time. He launched *Get Honeycutt* five years ago as a two-page website with a shopping cart and a listing of times where he would be doing an online seminar. Cut to the present day, where his little site now has thousands of pages of information and recently racked up its 25 millionth hit, and the move looks like a brilliant decision.

"The Internet is filled with gimmicks and pills and tricks," he says. "I wanted to create something that was a paint-by-numbers process that worked. When people sign up for our program, we have a live Internet chat to begin and one 15-minute live coaching session per week."

In general, Honeycutt's diet tips include eating more lean protein while eating more fibrous carbohydrates. He warns, as Life Extension does, to steer clear of simple carbs and high-glycemic carbs. His company even has an app that allows you to take a picture of almost any item in any restaurant and it will send back to you the nutritional value of that item.

Honeycutt stands 5'9" tall, and in order to maintain his 220 pound frame of muscle along with an amazing 5% body fat, he eats lots of protein through salmon and egg whites. He also enjoys some fruits and protein shakes.

### Warren Honeycutt's Life Extension Regimen

- Multivitamin
- Omega-3s
- Cognitex



As a disciple of Jack LaLanne, he likes to quote one of the legend's all-time favorite lines:

"Exercise is king, nutrition is queen; put them together and you've got a kingdom!"

In order to remain competitive as a bodybuilder, Honeycutt spends about two to two-and-a-half hours a week with resistance training.

"My workouts are very intense," he says. "But to be in good health and to feel good and to have muscle strength to support your skeleton, you don't have to exercise in an intense way. A healthy diet and 20 minutes of exercise three or four times a week will do it for **90%** of the population. I've read studies, including a recent one from UCLA, that said that if Americans did two things, we'd lower our cost of health care by **30%**. The two things? Eat right and exercise. Jack LaLanne said that in 1950!"

Part of eating healthy is avoiding foods that can be lethal in high doses. **Life Extension** has long-written about the dangers of excess glucose on our bloodstreams, and

Honeycutt teaches his clients about the cumulative effects of eating too much sugar.

"If you define a poison as anything that you ingest that kills you, then sugar is a poison," he says. "Sugar is also an addictive substance, which most people don't realize because it's been a part of their diet for so long."

In addition to the ill effects of sugar, the nutrient-lacking Western diet has created a "new normal" for people, where they have become so used to having no energy and not feeling well that they don't realize there is a better way to live.

"We've become so accustomed to being lethargic that we don't even realize that we're feeling bad," he says. "One of the amazing things I see in my program is that after a month or so of following our diet, people inevitably have a day or a meal where they eat like their old selves, and they say that they feel horrible. They say to me, 'I ate like I used to and I got sick!' Once people begin to feel good, they don't want to go back to the old way."

Personally, the biggest benefit that Honeycutt sees from his healthy lifestyle is an excitement for life. He says that he wakes up every day with the energy to live life with abundance, happiness, and enthusiasm.

"I stay motivated because we don't have a choice as to whether we pay a price or not in terms of our health," he says. "I looked at the choice of not paying attention to fitness or my diet and the results would be a heart attack, diabetes, obesity, illness, and on and on. To me, that's no choice. It's a much smaller price to pay to stay in shape and eat well and have energy and feel great. I just turned 60, and I've decided that I'm going to get into the best shape I've ever been in."

Sounds like a commitment more people should make to themselves, regardless of age. ●

For more information on Warren Honeycutt, please visit [www.gethoneycutt.com](http://www.gethoneycutt.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.

### Warren Honeycutt's Accomplishments

- Founder and President of Get Honeycutt, Inc.
- Five-time Masters Heavyweight NPC Finalist
- Black belt
- Owned his first gym at 20 years old
- Songwriter, artist
- Founder and President of Timetech, Inc, a brokerage firm



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OLIGOMETASTATIC DISEASE  
PATIENT EMPOWERMENT  
PSA-RELAPSED DISEASE  
RADIATION  
SEXUAL COMPLICATIONS  
& MORE!

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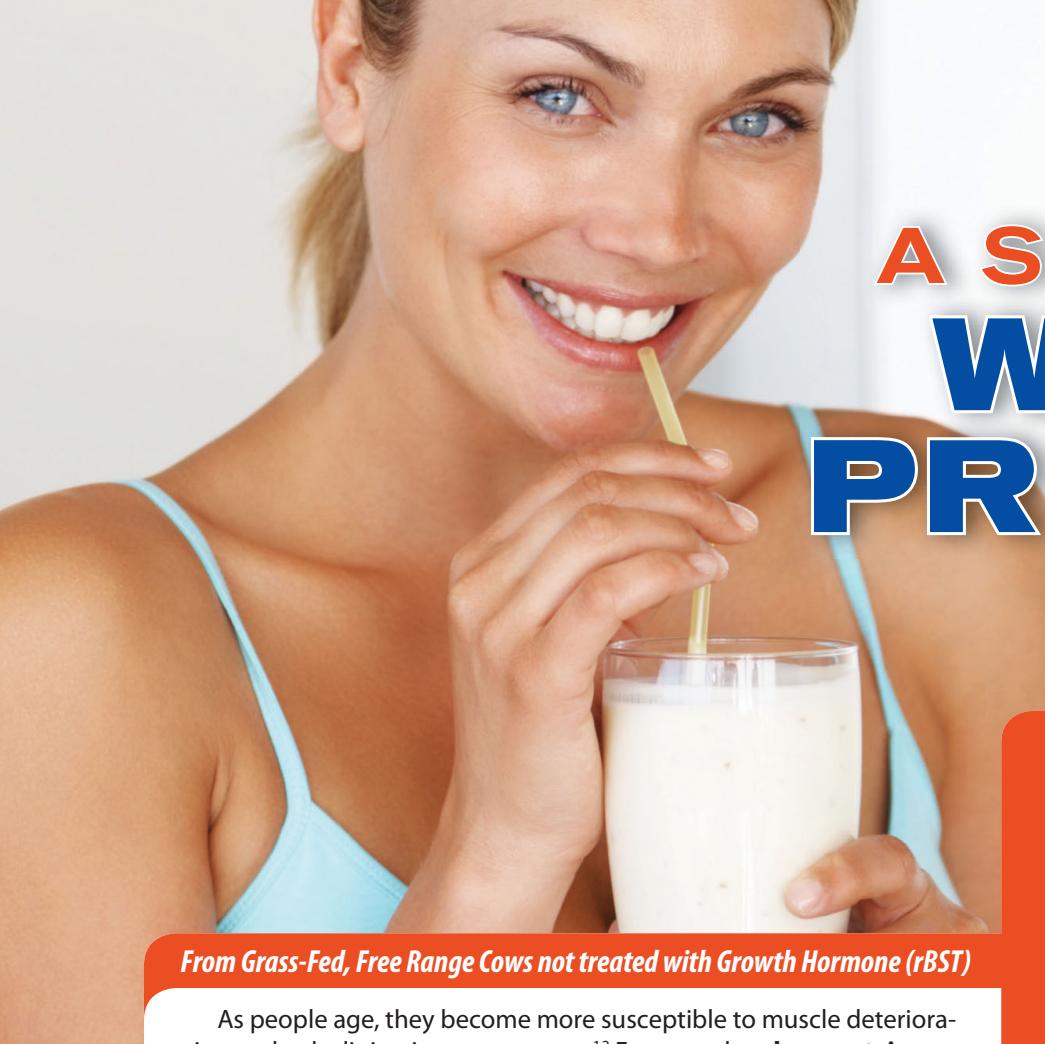
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*Helping Men Know Their Options*



# A SUPERIOR WHEY PROTEIN

**From Grass-Fed, Free Range Cows not treated with Growth Hormone (rBST)**

As people age, they become more susceptible to muscle deterioration and a declining immune system.<sup>1,2</sup> Fortunately, **whey protein** can have a positive impact on muscle construction and immunity due to its *branched-chain amino acid profile* (BCAAs) and naturally occurring *lactoferrin* and *immunoglobins*.<sup>3-5\*</sup>

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

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

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

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

**To order New Zealand Whey Protein Concentrate,  
call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)**

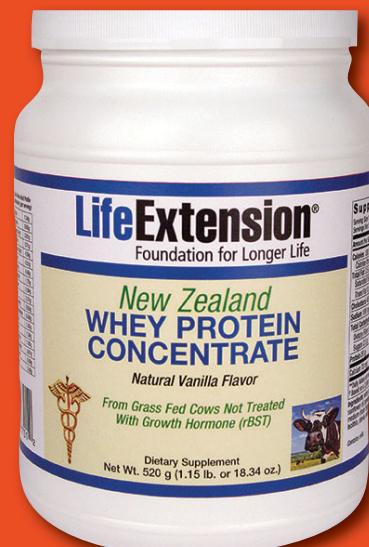
**References**

1. *J Appl Physiol*. 2003; 95(4):1717-27.
2. *Curr Genomics*. 2012 Dec;13(8):589-602.
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[SiteCollectionDocuments/Mono\\_Immunity\\_0304.pdf](http://SiteCollectionDocuments/Mono_Immunity_0304.pdf).

Accessed June 12, 2013.

4. *Curr Opin Clin Nutr Metab Care*. 2011 Nov;14(6):569-80.
5. *J Nutr*. 2006 Jan;136(1 Suppl):277S-80S.



Item # 01770



Item # 01771



**FAST ACTING ORAL & DIGESTIVE SUPPLEMENT**

# GUTSY PRODUCTS

**FOR THAT QUEASY, UNEASY FEELING.**



## GUTSY CHEWY chewable tablet

Gutsy Products promote oral and digestive health with a proprietary blend of nature's remedies. So the next time you have that queasy, uneasy feeling, Gutsy products can help you.

Item #01545



Item #01546

Invented by a  
Gastroenterologist & Dentist



Dr. Doug Haghghi is a Cleveland Clinic trained gastroenterologist and Harvard trained dentist with expertise in diagnosing and treating oral and digestive diseases.

### All-Natural Ingredients



Gutsy Chewy contains our proprietary blend of nature's remedies (GiGs®): papaya, licorice root and apple cider vinegar. It also has xylitol to optimize oral health, plus calcium and magnesium for digestive health. Together, they enhance the body's natural defense mechanisms that maintain a normal digestive system.



### Effective and Safe



GiGs® with calcium was tested in a randomized, double-blind, placebo-controlled human clinical study.<sup>1</sup> GiGs® has been assessed by leading U.S. toxicologists and found to be safe at the levels recommended.

A tube of all-natural **Gutsy Chewy** containing 8 gluten-free, lactose-free, vegan-friendly tablets retails for **\$11.50**.

Members of the Life Extension Foundation pay only **\$8.63** per tube.

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

<sup>1</sup>Effect of GutsyGum, a novel gum, on subjective ratings of gastro-esophageal reflux following a refluxogenic meal. Submitted to *Journal of Complementary and Integrative Medicine*, Brown, Rachel; Sam, Cecilia H Y; Green, Tim and Wood, Simon

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.



# ANNUAL Blood Test

March 31 - June 2, 2014 SUPER SALE

## LIFE EXTENSION'S SUGGESTIONS FOR ANNUAL SCREENING (Member Prices\*)

MEN'S ANNUAL BLOOD TESTING	(NON-MEMBER RETAIL PRICE)	MEMBER SUPER SALE PRICE	WOMEN'S ANNUAL BLOOD TESTING	(NON-MEMBER RETAIL PRICE)	MEMBER SUPER SALE PRICE
<input type="radio"/> <b>MALE LIFE EXTENSION PANEL (LC322582)</b> CBC/Chemistry Profile (description on next page) DHEA-S PSA (prostate-specific antigen) Homocysteine C-Reactive Protein (high-sensitivity) Free Testosterone Total Testosterone Estradiol TSH for thyroid function Vitamin D (25-hydroxyvitamin D) Hemoglobin A1c	\$400	\$199	<input type="radio"/> <b>FEMALE LIFE EXTENSION PANEL (LC322535)</b> CBC/Chemistry Profile (description on next page) DHEA-S Estradiol Homocysteine C-Reactive Protein (high-sensitivity) Progesterone Free Testosterone Total Testosterone TSH for thyroid function Vitamin D (25-hydroxyvitamin D) Hemoglobin A1c	\$400	\$199
<input type="radio"/> <b>MALE HORMONE ADD-ON PANEL<sup>†</sup> (LCADDM)</b> <b>Pregnenolone and Dihydrotestosterone (DHT)</b> To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides information about a testosterone metabolite that can affect the prostate; and the hormone pregnenolone that acts as a precursor to all other steroid hormones.	\$206.75	\$116.25	<input type="radio"/> <b>FEMALE HORMONE ADD-ON PANEL<sup>†</sup> (LCADDF)</b> <b>Pregnenolone and Total Estrogen</b> To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides information about total estrogen status; and the hormone pregnenolone that acts as a precursor to all other steroid hormones.	\$166.75	\$93.75
<input type="radio"/> <b>THYROID ADD-ON PANEL (LCTHYROID)</b> Free T3 & Free T4.	\$73.33	\$36	<input type="radio"/> <b>THYROID ADD-ON PANEL (LCTHYROID)</b> Free T3 & Free T4.	\$73.33	\$36
<input type="radio"/> <b>OMEGA SCORE<sup>***</sup> (LCOMEGA)</b> Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score <sup>TM</sup> also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.	\$175	\$99	<input type="radio"/> <b>OMEGA SCORE<sup>***</sup> (LCOMEGA)</b> Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score <sup>TM</sup> also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.	\$175	\$99
<input type="radio"/> <b>INSULIN (LC004333)</b> Helpful to assess insulin resistance.	\$33.33	\$18.75	<input type="radio"/> <b>INSULIN (LC004333)</b> Helpful to assess insulin resistance.	\$33.33	\$18.75
<input type="radio"/> <b>VAP<sup>™</sup> TEST (LC804500)</b> The VAP <sup>™</sup> cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. This test includes measurements of LDL particle size and lipoprotein subclasses.	\$120	\$67.50	<input type="radio"/> <b>VAP<sup>™</sup> TEST (LC804500) (UPDATED)</b> The VAP <sup>™</sup> cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. This test includes measurements of LDL particle size and lipoprotein subclasses.	\$120	\$67.50
<input type="radio"/> <b>FOOD SAFE ALLERGY TEST<sup>**</sup> (LCM73001)</b> This test measures delayed (IgG) food allergies for 95 common foods.	\$264	\$148.50	<input type="radio"/> <b>FOOD SAFE ALLERGY TEST<sup>**</sup> (LCM73001)</b> This test measures delayed (IgG) food allergies for 95 common foods.	\$264	\$148.50

## SUGGESTED ADDITIONS TO ANNUAL BLOOD TESTING

<input type="radio"/> <b>CORTISOL (LC004051)</b> This test is used to help assess adrenal function.	\$52	\$29.25	<input type="radio"/> <b>HEAVY METALS PANEL (BLOOD) (LC100003)</b> This panel contains mercury, arsenic, and aluminum.	\$265.33	\$149.25
<input type="radio"/> <b>LP-PLA2 (PLAC<sup>®</sup> TEST) (LC123240)</b> This test is used to aid in predicting risk for coronary heart disease and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.	\$175	\$93.75	<input type="radio"/> <b>FERRITIN (LC004598)</b> Used to evaluate iron stores in the body and to determine iron deficiency anemia.	\$37	\$21
<input type="radio"/> <b>RBC MAGNESIUM (LC080283)</b> This test can provide an early indication of magnesium deficiency.	\$117.33	\$66	<input type="radio"/> <b>VITAMIN B12/FOLATE<sup>†</sup> (LC000810)</b> This test measures the amount of vitamin B12 and folate in the blood.	\$44	\$24.75

\* For non-member pricing call 1-800-208-3444.

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

For the past 34 years, the Life Extension Foundation<sup>®</sup> has stated that the most important step one can take to prevent disease cannot be found in a bottle of pills. The true cornerstone of any preventive health care program is annual blood screening. Proactive blood screening can help you greatly reduce your risk of disorders such as heart and kidney disease, stroke, liver conditions, anemia, and diabetes. Plus it's particularly valuable in helping you prevent and treat symptoms associated with hormone imbalance, such as fatigue, memory impairment, bone loss, weight gain, and depression. Blood testing remains one of the most important things you can do for yourself and your loved ones. More than any other measure, annual blood testing holds tremendous potential to protect both yourself and your loved ones.

### Five Easy Steps:

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

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

### For Our Local Members:

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



## OTHER POPULAR PANELS

(NON-MEMBER)  
RETAIL  
PRICE

\$26

### CBC/CHEMISTRY PROFILE (LC381822)

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

#### CARDIOVASCULAR RISK PROFILE

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

Triglycerides

#### LIVER FUNCTION PANEL

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

#### KIDNEY FUNCTION PANEL

BUN	BUN/Creatinine Ratio
Creatinine	Uric Acid

#### BLOOD PROTEIN LEVELS

Total Protein	Globulin
Albumin	Albumin/Globulin Ratio

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

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	

#### BLOOD MINERAL PANEL

Calcium	Sodium
Potassium	Chloride
Phosphorus	Iron

**NEW**

### WEIGHT LOSS PANEL-BASIC (LC100027)

CBC/Chemistry profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Insulin and Hemoglobin A1c.

**NEW**

### WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028)

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.

**NEW**

### HEALTHY AGING PANEL-BASIC<sup>†</sup> (LC100025)

CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Free T3, Free T4, Ferritin, TSH, Ferritin, and Insulin.

**NEW**

### HEALTHY AGING PANEL-COMPREHENSIVE<sup>†</sup> (LC100026)

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.

**NEW**

### NUTRIENT PANEL<sup>†</sup> (LC100024)

Vitamin B12, Folate, Vitamin D 25-hydroxy, Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC magnesium.

**NEW**

### COMPREHENSIVE THYROID PANEL (LC100018)

TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA.

**NEW**

### LIFE EXTENSION THYROID PANEL (LC304131)

TSH, T4, Free T3, Free T4.

**NEW**

(NON-MEMBER)  
RETAIL  
PRICE

\$224.25

### FEMALE COMPREHENSIVE HORMONE PANEL<sup>†</sup> (LC100011)

CBC/Chemistry Profile (see description at left), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.

### MALE COMPREHENSIVE HORMONE PANEL<sup>†</sup> (LC100010)

CBC/Chemistry Profile (see description at left), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.

### MALE BASIC HORMONE PANEL (LC100012)

\$100 \$56.25

### FEMALE BASIC HORMONE PANEL (LC100013)

\$100 \$56.25

### ENERGY PROFILE (LC100005)

\$500 \$281.25

CBC/Chemistry Profile (see description), Epstein –Barr Virus antibodies (IgG and IgM), Cytomegalovirus Antibodies (IgG and IgM), Ferritin, Total and Free Testosterone, DHEA-S, Free T3, Free T4, Cortisol, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Insulin.

### ANEMIA PANEL (LC100006)

\$114.66 \$64.50

CBC/Chemistry Profile (see description), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.

### INFLAMMATION PANEL (LC100007)

\$180 \$101.25

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

### VAP™ PLUS<sup>†</sup> (LC100009)

\$440 \$247.50

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

### DIABESITY PANEL (LC100019)

\$212 \$119.25

Glucose, Insulin, HbA1c, VAP™, Cortisol, C-Reactive Protein.

#### SINGLE TESTS

### GLYCOMARK (LC500115)

\$132 \$74.25

This test measures your average maximum glucose over the past two weeks and is an effective tool in monitoring postmeal glucose control.

### VITAMIN D-25 HYDROXY (LC081950)

\$62.67 \$30

Add this test to any order for a Super Sale Low Price of only \$30.

<sup>†</sup>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

# PRODUCTS

## AMINO ACIDS

Acetyl-L-Carnitine  
Acetyl-L-Carnitine-Arginate  
Branched Chain Amino Acids  
D, L-Phenylalanine Capsules  
Glycine Capsules  
L-Arginine Capsules  
Arginine/L-Ornithine Capsules  
L-Carnitine Capsules  
L-Glutathione, L-Cysteine & C  
L-Glutamine Capsules  
L-Glutamine Powder  
L-Lysine Capsules  
L-Tyrosine Tablets  
Mega L-Glutathione Capsules  
N-Acetyl-L-Cysteine Capsules  
Optimized Carnitine with GlycoCarn®  
Pharma GABA®  
Super Carnosine Capsules  
Taurine Capsules

## BONE & JOINT HEALTH

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

## BRAIN HEALTH

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

## DIGESTIVE

Bifido GI Balance  
Carnosothe w/PicroProtect  
Digest RC™  
Esophageal Guardian  
Enhanced Super Digestive Enzymes  
Extraordinary Enzymes  
FlorAssist™  
Gutsy Chewy Digestive Tablets  
Pancreatin  
Regimint  
Theralac Probiotics

## DURK AND SANDY PRODUCTS

Blast™  
Inner Power™  
**EYE CARE**  
Bilberry Extract  
Brite Eyes III  
Eye Pressure Support with Mirtogenol®  
MacuGuard™ Ocular Support  
MacuGuard™ Ocular Support with Astaxanthin  
Solarshield Sunglasses

## FIBER

AppleWise Polyphenol  
Fiber Food  
TruFiber®  
WellBetX PGX® plus Mulberry

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

## HAIR CARE

Dr. Proctor's Advanced Hair Formula  
Dr. Proctor's Shampoo  
Super-Absorbable Tocotrienols

## HEART HEALTH

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

## HERBAL/PHYTO PRODUCTS

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

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

## HORMONES

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

## IMMUNE ENHANCEMENT

AHCC® (Active Hexose Correlated Compound)  
Black Cumin Seed Oil  
Black Cumin Seed Oil w/Bio-Curcumin®  
Buffered Vitamin C Powder  
Echinacea Extract  
FlorAssist™ Probiotic  
i26 Hyperimmune Egg  
Immune Modulator w/Tinofend®  
Immune Protect with PARACTIN®  
Lactoferrin  
Norwegian Shark Liver Oil  
Optimized Fucoidan w/Maritech® 926  
Peony Immune  
ProBoost™ Thymic Protein A  
Reishi Extract Mushroom Complex  
Vitamin C with Dihydroquercetin  
Winter Wellness™  
Zinc Lozenges

## INFLAMMATORY REACTIONS

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

## LIVER HEALTH

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

# PRODUCTS

## MINERALS

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

## MISCELLANEOUS

Blood Pressure Monitor Arm Cuff  
CR Way Edition Advanced Dietary Software

## MITOCHONDRIAL SUPPORT

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

## MOOD RELIEF

Adrenal Energy Formula  
Bioactive Milk Peptides  
L-Theanine  
5 HTP  
Enhanced Natural Sleep® w/ Melatonin  
Enhanced Natural Sleep® w/o Melatonin  
Natural Stress Relief  
SAMe  
L-Tryptophan  
Optimized Tryptophan Plus

## MOUTH CARE

Advanced Oral Hygiene  
Mouthwash w/Pomegranate  
Toothpaste  
Xyliwhite™ Mouthwash

## MULTIVITAMIN

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

## PET CARE

Cat Mix  
Dog Mix

## PROSTATE & URINARY HEALTH

Optimized Cran-Max® with UTI/Rose™  
5-LOXIN®  
PalmettoGuard™ Saw Palmetto w/Beta Sitosterol

## Pomi-T®

Super Saw Palmetto/Nettle Root Formula w/Beta-Sitosterol  
Ultra Natural Prostate Formula

## SKIN CARE

Advanced Triple Peptide Serum  
Advanced Under Eye Serum with Stem Cells  
Amber Self MicroDermAbrasion  
Anti-Aging Mask  
Anti-Glycation Serum  
Anti-Aging Rejuvenating Face Cream with Coffee Extracts  
Anti-Aging Rejuvenating Scalp Serum  
Antioxidant Rejuvenating Foot Cream  
Antioxidant Rejuvenating Foot Scrub  
Antioxidant Rejuvenating Hand Cream  
Antioxidant Rejuvenating Hand Scrub  
Anti-Redness & Blemish Lotion  
Bio-Collagen w/Patented UC-II®  
Bioflavonoid Cream  
Broccoli Sprout  
Corrective Clearing Mask  
DNA Repair Cream  
Dual-Action MicroDermAbrasion  
Essential Plant Lipids Reparative Serum  
Face Master® Platinum  
Face Rejuvenating Antioxidant Cream  
Enhanced FernBlock® with Red Orange Complex  
Fine Line-Less  
Hair Suppress Formula  
Healing Formula All-in-One Cream  
Healing Mask  
Hyaluronic Facial Moisturizer  
Hydrating Anti-oxidant Face Mist  
Hydroderm®  
Lifting & Tightening Complex  
Lycopene Cream  
Melatonin Cream  
Mild Facial Cleanser  
Neck Rejuvenating Antioxidant Cream  
Pigment Correcting Cream  
(Ultra) Rejuvenex®  
Rejuvenex® Body Lotion  
Rejuvenex® Factor Firming Serum  
Rejuvenating Serum  
Renewing Eye Cream  
Resveratrol Anti-Oxidant Serum  
Skin Lightening Serum  
Skin Restoring Phytochemicals w/Lipowheat®  
Skin Stem Cell Serum  
Stem Cell Cream w/Alpine Rose  
Ultra Rejuvenex®  
Ultra RejuveNight® w/o Progesterone  
Ultra Lip Plumper  
Ultra Wrinkle Relaxer  
Under Eye Refining Serum  
Under Eye Rescue Cream  
Vitamin C Serum  
Vitamin D Lotion  
Vitamin E-ssential Cream  
Vitamin K Healing Cream  
Youth Serum

## SOY

Natural Estrogen w/Pomegranate  
Super Absorbable Soy Isoflavones  
Ultra Soy Extract

## SPECIAL PURPOSE FORMULA

Anti-Alcohol Antioxidants w/HepatoProtection Complex  
Benfotiamine w/Thiamine  
Breast Health Formula  
Butterbur Extract w/Standardized Rosmarinic Acid  
Chlorella  
Chlorophyllin  
Green Coffee Extract CoffeeGenic® (also w/Glucose control)  
Coriolus Super Strength

## CR Mimetic Longevity Formula

Cinsulin® w/InSea® 2+ and Crominex® 3+

European Leg Solution Diosmin 95

Fem Dophilus

Femmenessence MacaPause®

GlycemicPro™ Transglucosidase

Migra-eeze™

Natural Female Support

Pecta-Sol®

Potassium Iodide

PQQ Caps with BioPQQ®

PteroPure™

Prelox® Natural Sex for Men®

Pyridoxal 5' - Phosphate

Tri Sugar Shield™

## SPORTS PERFORMANCE

Creatine Capsules

DMG (N, N-dimethylglycine)

L-Glutamine Capsules

L-Glutamine Powder

Whey Protein Isolate

Whey Protein Concentrate

## VITAMINS

Ascorbyl Palmitate Capsules

B12

Beta-Carotene

Biotin Capsules

Buffered Vitamin C Powder

Complete B Complex

Effervescent Vitamin C

Fast-C®

Folic Acid + B12

Gamma E Tocopherol w/Sesame Lignans

Gamma E Tocopherol/Tocotrienols

Inositol Capsules

Mega Lycopene Extract

Methylcobalamin

MK-7

No-Flush Niacin

Optimized Folate

Super Ascorbate C Capsules

Super Ascorbate C Powder

Super K w/Advanced K2 Complex

Tocotrienols w/Sesame Lignans

Vitamin B3 (Niacin) Capsules

Vitamin B6

Vitamin B12 Lozenges

Vitamin C

Vitamin D3

Vitamin D3 w/Sea-Iodine™

Vitamins D and K w/Sea-Iodine™

Vitamin E

Vitamin K2

## WEIGHT MANAGEMENT

Advanced Anti-Adipocyte Formula w/Meratrim® & Integra Lean®

Advanced Natural Appetite Suppress

Calorie Control Weight Management™ Formula w/CoffeeGenic® Green Coffee Extract

CoffeeGenic® Weight Management™ with Green Coffee Extract

7-KETO DHEA

DHEA® Complete

Fucoxanthin Slim™

Garcinia HCA

Integra-Lean® African Mango Irvingia

LuraLean® Caps Special Propolmannan Particle Size

Optimized Irvingia w/Phase 3™ Calorie Control Complex

Optimized Saffron with Satireal®

Natural Glucose Absorption Control

Super Citrimax®

Super CLA Blend w/Guarana and Sesame Lignans

Super CLA Blend w/Sesame Lignans

WellBetX PGX® plus Mulberry

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

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		
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>ARTHROMAX® w/THEAFLAVINS &amp; APRESFLEX®</b> - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	<b>ARTHROMAX® 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	28.00	21.00		
	Buy 4 bottles, price each	25.38	19.04		
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		
01206	<b>BERRY COMPLETE</b> - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	18.67	14.00		

**SUB-TOTAL OF COLUMN 1**

JUNE 2014

No.		Retail Each	Member Each	Qty	Total
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>BIFFO 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> - 60 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</b> - ARM CUFF (medium)	99.95	64.97		
70004	<b>BLOOD PRESSURE MONITOR</b> - WRIST (travel size)	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 veg. 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		
01379	<b>BOOSTER</b> - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01680	<b>BOOSTER w/ADVANCED K2 COMPLEX (SUPER)</b> - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
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™</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 veg. 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		

**SUB-TOTAL OF COLUMN 2**

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
01203	<b>BROMELAIN (SPECIALY-COATED)</b> - 500 mg, 60 enteric coated tablets	\$21.00	\$15.75		
	Buy 4 bottles, price each	19.00	14.25		
00884	<b>BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID</b> - 60 softgels	44.00	33.00		
	Buy 4 bottles, price each	39.60	29.70		
<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		
01693	<b>CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC® GREEN COFFEE EXTRACT</b> <b>BLUEBERRY FLAVOR</b> - 414 grams powder	60.00	45.00		
	Buy 4 jars, price each	54.00	40.50		
	Buy 8 jars, price each	50.00	37.50		
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>CARNOSOOTHE 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		
01003	<b>CAT MIX</b> - 100 grams powder	15.00	11.25		
	Buy 4 jars, price each	12.00	9.00		
01659	<b>CDP CHOLINE CAPS</b> - 250 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01391	<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		
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		
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		
01707	<b>COFFEEGENIC® WEIGHT MANAGEMENT™</b> <b>w/GREEN COFFEE EXTRACT</b> - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
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		

**SUB-TOTAL OF COLUMN 3**

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

No.		Retail Each	Member Each	Qty	Total
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		
01735	<b>COMPLETE B-COMPLEX</b> - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01798	<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/ <i>l</i>-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/ <i>l</i>-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	52.00	39.00		
	Buy 10 bottles, price each	48.00	36.00		
01733	<b>COQ10 w/BIOPQQ® (SUPER UBIQUINOL)</b> - 100 mg, 30 softgels	54.00	40.50		
	Buy 4 bottles, price each	50.00	37.50		
	Buy 10 bottles, price each	46.00	34.50		
01426	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 100 mg, 60 softgels	62.00	46.50		
	Buy 4 bottles, price each	56.00	42.00		
	Buy 10 bottles, price each	52.00	39.00		
01425	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 50 mg, 100 softgels	58.00	43.50		
	Buy 4 bottles, price each	53.00	39.75		
	Buy 10 bottles, price each	50.00	37.50		
01427	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 50 mg, 30 softgels	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01431	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 200 mg, 30 softgels	62.00	46.50		
	Buy 4 bottles, price each	56.00	42.00		
	Buy 10 bottles, price each	52.00	39.00		
01053	<b>CORIOLUS SUPER STRENGTH</b> - 600 mg, 150 veg. caps	99.95	74.96		
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		
	w/ <b>COFFEE EXTRACT</b> 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		
80134	<b>COSMESIS ANTI-GLYCATION SERUM</b> - 1 oz w/ <b>BLUEBERRY &amp; POMEGRANATE EXTRACTS</b>	33.00	24.75		
	Buy 2 bottles, price each	31.35	23.51		

**SUB-TOTAL OF COLUMN 4**

JUNE 2014

# 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>					
80133	<b>COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz</b>	\$32.00	\$24.00		
	Buy 2 bottles, price each	30.40	22.80		
80127	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz</b>	45.00	33.75		
	Buy 2 jars, price each	42.80	32.10		
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		
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		

**SUB-TOTAL OF COLUMN 5**

JUNE 2014

No.		Retail Each	Member Each	Qty	Total
<b>D</b>					
80106	<b>COSMESIS REJUVENATING SERUM - 1 oz</b>	\$74.50	\$55.88		
	Buy 2 bottles, price each	65.56	49.17		
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 UTIROSE™ (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 CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE		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>					
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	DHA (VEGETARIAN SOURCED) - 200 mg, 30 veg. softgels	\$20.00	\$15.00		
	Buy 4 bottles, price each	18.00	13.50		
00607	DHEA - 25 mg, 100 tablets (dissolve in mouth)	14.00	10.50		
	Buy 4 bottles, price each	11.75	8.81		
01478	DHEA COMPLETE - 60 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	43.20	32.40		
00335	DHEA - 25 mg, 100 caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
00454	DHEA - 15 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	12.00	9.00		
00882	DHEA - 50 mg, 60 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
01689	DHEA - 100 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01358	DIGEST RC - 30 tablets	19.95	14.96		
	Buy 4 boxes, price each	17.00	12.75		
01272	DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01671	D,L-PHENYLALANINE CAPSULES - 500 mg, 100 veg. caps	18.75	14.06		
	Buy 4 bottles, price each	16.00	12.00		
01540	DMAE BITARTRATE - 150 mg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	15.00	11.25		
00059	DMG - 125 mg, 60 tablets	22.80	17.10		
	Buy 4 boxes, price each	21.00	15.75		
01570	DNA PROTECTION FORMULA - 60 veg. caps	34.00	25.50		
	Buy 4 bottles, price each	32.00	24.00		
00544	DOG MIX - 100 grams powder	19.50	14.63		
	Buy 4 jars, price each	16.00	12.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz	39.95	29.96		
	Buy 4 bottles, price each	32.00	24.00		
00320	DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz	24.95	18.71		
	Buy 4 bottles, price each	22.00	16.50		
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz	39.95	29.96		
	Buy 4 jars, price each	38.95	29.21		
<b>E</b>					
01528	ECHINACEA EXTRACT - 250 mg, 60 veg. caps	\$14.35	\$10.76		
	Buy 4 bottles, price each	12.50	9.38		
01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels	56.00	42.00		
	Buy 4 bottles, price each	52.00	39.00		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
00625	EPA/DHA (MEGA) - 120 softgels	19.95	14.96		
	Buy 4 bottles, price each	18.00	13.50		
01737	ESOPHAGEAL GUARDIAN (Berry flavor) - 60 chewable tablets	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01706	EXTRAORDINARY ENZYMES - 60 caps	26.00	19.50		
	Buy 4 bottles, price each	24.00	18.00		
01514	EYE PRESSURE SUPPORT w/MIRTGENOL® - 30 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		

**SUB-TOTAL OF COLUMN 7**

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

No.		Retail Each	Member Each	Qty	Total
<b>F</b>					
'01054	FACE MASTER® PLATINUM	\$199.00	\$199.00		
00965	FAST-ACTING JOINT FORMULA - 30 caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01717	FAST-C® w/DIHYDROQUERCETIN - 120 veg. tabs	26.00	19.50		
	Buy 4 bottles, price each	24.00	18.00		
20053	FEM DOPHILUS® - 30 caps	25.95	19.46		
20055	FEM DOPHILUS® - 60 caps	39.95	29.96		
01064	FEMMENESSENCE MACAPAUSE® - 120 veg. caps	34.99	26.24		
01728	FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED) - 30 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01670	FIBER FOOD CAPS - 200 veg. caps	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
	Buy 10 bottles, price each	13.00	9.75		
00718	FIBRINOGEN RESIST™ - 30 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	44.00	33.00		
01749	FLAX SEED (ORGANIC GOLDEN GROUND) - 14 oz.	11.67	8.75		
01806	FLORASSIST™ PROBIOTIC - 30 liquid veg. caps	33.00	24.75		
	Buy 4 boxes, price each	30.00	22.50		
01439	FOLATE (OPTIMIZED) (L-METHYLFOLATE) 1,000 mcg - 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01641	FOLIC ACID + B12 CAPSULES - 200 veg. caps	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01544	FORSKOLIN - 10 mg, 60 veg. caps	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01513	FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	33.00	24.75		
00993	FUCOXANTHIN-SLIM™ - 90 softgels	44.00	33.00		
	Buy 4 bottles, price each	39.00	29.25		
<b>G</b>					
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels	\$42.00	\$31.50		
	Buy 4 bottles, price each	37.00	27.75		
00759	GAMMA E TOCOPHEROL W/SESAME LIGNANS - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01394	(OPTIMIZED) GARLIC - 200 veg. caps	24.95	18.71		
	Buy 4 bottles, price each	21.00	15.75		
01301	GH PITUITARY SUPPORT DAY FORMULA - 120 tabs	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01302	GH PITUITARY SUPPORT NIGHT FORMULA - 120 veg. caps	25.00	18.75		
	Buy 4 bottles, price each	22.50	16.88		
***01228	GINGER FORCE - 60 softgels	31.95	23.96		
01658	GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 veg. caps	46.00	34.50		
	Buy 2 bottles, price each	43.50	32.63		
01648	GINKGO EXTRACT 28/7 (SUPER) - 120 mg, 100 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.50	19.88		
00756	GLA WITH SESAME LIGNANS (MEGA) - 60 softgels	19.50	14.63		
	Buy 4 bottles, price each	18.00	13.50		
00345	(L) GLUTAMINE CAPSULES - 500 mg, 100 caps	14.95	11.21		
	Buy 4 bottles, price each	13.50	10.13		
00141	(L)-GLUTAMINE POWDER - 100 grams	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00522	GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	32.00	24.00		

**SUB-TOTAL OF COLUMN 8**

JUNE 2014

# 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>					
01541	GLUTATHIONE, CYSTEINE & C - 100 veg. caps	\$20.00	\$15.00		
	Buy 4 bottles, price each	18.00	13.50		
00314	L-GLUTATHIONE (MEGA) - 250 mg, 60 caps	39.64	29.73		
01731	GLYCEMICPRO™ TRANSGLUCOSIDASE - 60 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	42.00	31.50		
01669	GLYCINE - 1,000 mg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	10.80	8.10		
01091	GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01411	GRAPE SEED EXTRACT w/RESVERATROL & PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01604	GREEN COFFEE EXTRACT COFFEEGENIC® - 200 mg, 90 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01620	GREEN COFFEE EXTRACT COFFEEGENIC® - 400 mg, 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00953	GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01545	GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR) - 8 tablets	11.50	8.63		
01546	GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR) - 8 tablets	11.50	8.63		
<b>H</b>					
01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
01738	HCA (GARCINIA) - 90 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
01393	HEPATOPRO - 900 mg, 60 softgels	50.00	37.50		
	Buy 4 bottles, price each	46.00	34.50		
01435	HOMOCYSTEINE RESIST - 100 caps	24.00	18.00		
	Buy 4 bottles, price each	21.60	16.20		
01527	HUPERZINE A - 200 mcg, 60 veg caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00661	HYDRODERM® - 1 oz	79.95	59.96		
	Buy 2 bottles, price each	65.33	49.00		
<b>I</b>					
*01060	I26® HYPERIMMUNE EGG - 140 grams powder	\$54.99	\$46.75		
01704	IMMUNE MODULATOR W/TINOFEND® - 60 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
00955	IMMUNE PROTECT W/PARACTIN® - 30 veg. caps	29.50	22.13		
	Buy 4 bottles, price each	26.55	19.91		
01049	INNERPOWER™ - 555 grams powder	42.00	31.50		
01674	INOSITOL CAPSULES - 1,000 mg, 360 veg. caps	62.00	46.50		
	Buy 4 bottles, price each	58.00	43.50		
01292	INTEGRA-LEAN® AFRICAN MANGO IRVINGIA - 150 mg, 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01002	IODORAL® - 180 tabs	50.00	37.50		
01677	IRON PROTEIN PLUS - 300 mg, 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
01492	IRVINGIA W/PHASE 3™ - 120 veg. caps CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO)	56.00	42.00		
	Buy 4 bottles, price each	48.00	36.00		

**SUB-TOTAL OF COLUMN 9**

JUNE 2014

No.		Retail Each	Member Each	Qty	Total
<b>J, K</b>					
00056	JARRO-DOPHILUS EPS™ - 60 veg. caps	\$22.95	\$17.21		
01759	JARRO-DOPHILUS EPS™ - 25 Billion - 30 caps	39.95	29.96		
01724	K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01600	KRILL HEALTHY JOINT FORMULA - 30 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01050	KRILL OIL PHOSPHOMEGA™ - 60 softgels	33.95	25.46		
00316	KYOLIC® GARLIC FORMULA 102 - 200 caps	26.45	19.84		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps	27.45	20.59		
00789	KYOLIC® RESERVE - 600 mg, 120 caps	27.95	20.96		
<b>L</b>					
01681	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps	\$52.00	\$39.00		
	Buy 4 bottles, price each	48.00	36.00		
00020	LECITHIN - 16 oz. granules	15.00	11.25		
	Buy 4 jars, price each	12.50	9.38		
01855	LIFE EXTENSION MIX™ - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01857	LIFE EXTENSION MIX™ W/EXTRA NIACIN - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01854	LIFE EXTENSION MIX™ - 490 caps	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01856	LIFE EXTENSION MIX™ POWDER - 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		
01865	LIFE EXTENSION MIX™ - 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		
01867	LIFE EXTENSION MIX™ W/EXTRA NIACIN 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		
01864	LIFE EXTENSION MIX™ - 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		
01866	LIFE EXTENSION MIX™ POWDER - 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	LIVER EFFICIENCY FORMULA - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01639	5-LOX INHIBITOR W/APRESFLEX® - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01678	L-LYSINE - 620 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
01470	LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels	35.00	26.25		
	Buy 4 bottles, price each	30.00	22.50		

**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
<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		
01668	<b>MELATONIN</b> - 300 mcg, 100 veg. caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		
01083	<b>MELATONIN</b> - 500 mcg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00329	<b>MELATONIN</b> - 1 mg, 60 caps	5.00	3.75		
	Buy 4 bottles, price each	4.63	3.47		
00330	<b>MELATONIN</b> - 3 mg, 60 caps	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01786	<b>MELATONIN TIME RELEASE</b> - 3 mg, 60 veg. tabs	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00331	<b>MELATONIN</b> - 10 mg, 60 caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00332	<b>MELATONIN</b> - 3 mg, 60 veg. lozenges	8.00	6.00		
	Buy 4 bottles, price each	6.88	5.16		
01734	<b>MELATONIN</b> (Fast Acting Liquid) - 3 mg (Natural Citrus-Van)	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01787	<b>MELATONIN TIME RELEASE</b> - 300 mcg, 100 veg. tabs	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
01788	<b>MELATONIN TIME RELEASE</b> - 750 mcg, 60 veg. tablets	8.00	6.00		
	Buy 4 bottles, price each	7.00	5.25		
01536	<b>METHYLCOBALAMIN</b> - 1 mg, 60 lozenges (vanilla)	9.95	7.46		
	Buy 4 bottles, price each	8.00	6.00		
01537	<b>METHYLCOBALAMIN</b> - 5 mg, 60 lozenges (vanilla)	32.00	24.00		
	Buy 4 bottles, price each	25.00	18.75		
	Buy 10 bottles, price each	23.00	17.25		
00709	<b>MIGRA-EEZE™ (BUTTERBUR)</b> - 60 softgels	29.50	22.13		
	Buy 4 bottles, price each	26.33	19.75		
01800	<b>MIGRA-MAG w/BRAIN SHIELD™</b> - 90 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01522	<b>MILK THISTLE (CERTIFIED EUROPEAN)</b> - 750 mg, 60 veg caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
01822	<b>MILK THISTLE (EUROPEAN)</b> - 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01817	<b>MILK THISTLE (EUROPEAN)</b> - 120 softgels	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01698	<b>MIRAFORTE w/STANDARDIZED LIGNANS (SUPER)</b> - 120 caps	62.00	46.50		
	Buy 4 bottles, price each	56.00	42.00		
01769	<b>MITOCHONDRIAL BASICS w/BIOPQQ®</b> - 30 caps	52.00	39.00		
	Buy 4 bottles, price each	46.00	34.50		
01768	<b>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ®</b> - 120 caps	94.00	70.50		
	Buy 4 bottles, price each	84.00	63.00		
00065	<b>MK-7</b> - 90 mcg, 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		

**SUB-TOTAL OF COLUMN 11**

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

No.		Retail Each	Member Each	Qty	Total
<b>N</b>					
01279	<b>MOUTHWASH W/POMEGRANATE</b> - 16 oz	\$18.50	\$13.88		
	Buy 4 bottles, price each	17.00	12.75		
00451	<b>MSM (METHYLSULFONYLMETHANE)</b> - 1,000 mg, 100 caps	14.00	10.50		
	Buy 4 bottles, price each	11.95	8.96		
<b>O</b>					
01534	<b>N-ACETYL-L-CYSTEINE</b> - 600 mg, 60 veg. caps	\$14.00	\$10.50		
	Buy 4 bottles, price each	13.50	10.13		
00066	<b>NATTOKINASE</b> - 60 softgels	25.50	19.13		
01807	<b>NATURAL APPETITE SUPPRESS (ADVANCED)</b> - 60 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	34.00	25.50		
00984	<b>NATURAL BP MANAGEMENT</b> - 60 tablets	42.00	31.50		
	Buy 4 bottles, price each	37.80	28.35		
01692	<b>NATURAL ESTROGEN w/POMEGRANATE EXTRACT</b> - 60 caplets	38.00	28.50		
	Buy 4 bottles, price each	33.00	24.75		
01221	<b>NATURAL FEMALE SUPPORT</b> - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01471	<b>NATURAL GLUCOSE ABSORPTION CONTROL</b> - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01626	<b>NATURAL SEX FOR WOMEN ® 50+ (ADVANCED)</b> - 90 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	45.33	34.00		
01444	<b>NATURAL SLEEP®</b> - 60 veg. caps	13.00	9.75		
	Buy 4 bottles, price each	10.00	7.50		
01551	<b>NATURAL SLEEP® w/ MELATONIN (ENHANCED)</b> - 30 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01511	<b>NATURAL SLEEP® w/o MELATONIN (ENHANCED)</b> - 30 caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01445	<b>NATURAL SLEEP® MELATONIN</b> - 5 mg, 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00987	<b>NATURAL STRESS RELIEF</b> - 30 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01603	<b>NEURO-MAG™ MAGNESIUM L-THREONATE</b> - 90 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01602	<b>NEURO-MAG™ L-THREONATE W/CALCIUM &amp; VITAMIN D</b> 225 grams - Lemon flavor	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00373	<b>NO-FLUSH NIACIN</b> - 800 mg, 100 caps	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		
<b>O</b>					
01623	<b>OLIVE LEAF VASCULAR SUPPORT</b> - 500 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01819	<b>OMEGA WITH KRILL &amp; ASTAXANTHIN (SUPER)</b> - 120 softgels	45.00	33.75		
	Buy 4 bottles, price each	42.00	31.50		
	Buy 10 bottles, price each	38.00	28.50		
01483	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
	Buy 10 bottles, price each	14.00	10.50		
01482	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01484	<b>OMEGA 3 EPA/DHA W/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 enteric coated softgels	34.00	25.50		
	Buy 4 bottles, price each	31.00	23.25		
	Buy 10 bottles, price each	28.00	21.00		

**SUB-TOTAL OF COLUMN 12**

JUNE 2014

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>O CONTINUED</b>					
01485	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 enteric coated softgels	\$20.00	\$15.00		
	Buy 4 bottles, price each	18.00	13.50		
	Buy 10 bottles, price each	16.00	12.00		
01619	OMEGA 3 EPA/DHA W/SESAME LIGNANS & - 240 softgels OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	24.90	18.68		
01632	OMEGA-3 LEMON WHIRL - 16 oz bottle	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01633	OMEGA-3 TROPICAL WHIRL - 16 oz bottle	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01801	ONE-PER-DAY - 60 tablets	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01328	ONLY TRACE MINERALS - 90 caps	15.00	11.25		
	Buy 4 bottles, price each	12.50	9.38		
<b>P</b>					
01789	PALMETTOGUARD™ SAW PALMETTO w/BETA SITOSTEROL -30 softgels	\$15.00	\$11.25		
	Buy 12 bottles, price each	12.00	9.00		
00073	PANCREATIN - 500 mg, 50 caps	13.22	9.92		
01323	PEAK ATP® WITH GLYCOCARN® - 60 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	50.00	37.50		
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder	109.95	82.46		
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps	79.95	59.96		
01811	PEONY IMMUNE - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00673	PGX™ PLUS MULBERRY (WELLBETX®) -180 caps	34.95	26.21		
00865	PHARMA GABA® - 60 chewable tablets	29.95	22.46		
	Buy 4 bottles, price each	27.00	20.25		
01676	PHOSPHATIDYLSERINE CAPS - 100 mg, 100 veg. caps	54.00	40.50		
	Buy 4 bottles, price each	48.00	36.00		
01390	PHOSPHOMEKA® - 60 softgels	39.95	26.96		
01436	POLICOSANOL - 10 mg, 60 veg. caps	20.00	15.00		
	Buy 6 bottles, price each	15.00	11.25		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels	24.00	18.00		
	Buy 4 bottles, price each	21.00	15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.55	13.16		
00957	POMEGRANATE JUICE CONCENTRATE - 16 oz. liquid	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01797	POMI-T® - 60 veg. caps	33.33	25.00		
	Buy 4 bottles, price each	30.00	22.50		
00577	POTASSIUM IODIDE - 1 box, 14 tablets	6.95	5.21		
	Buy 4 boxes, price each	5.25	3.94		
01500	PQQ CAPS W/BIOPQQ® - 10 mg, 30 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01647	PQQ CAPS W/BIOPQQ® - 20 mg, 30 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00302	PREGNENOLONE - 50 mg, 100 caps	26.00	19.50		
	Buy 4 bottles, price each	22.00	16.50		
00700	PREGNENOLONE - 100 mg, 100 caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
***01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		

**SUB-TOTAL OF COLUMN 13**

JUNE 2014

No.		Retail Each	Member Each	Qty	Total
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	\$59.95	\$44.96		
01441	PROGESTACARE FOR WOMEN - 4 oz cream	35.00	26.25		
	Buy 4 bottles, price each	32.00	24.00		
01895	PROSTATE FORMULA (ULTRA NAT) 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		
	Buy 12 bottles, price each	32.00	24.00		
01742	PROTEIN-ISOLATE (WHEY) VANILLA - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01743	PROTEIN-ISOLATE (WHEY) CHOCOLATE - 1 lb. powder	30.00	22.50		
	Buy 4 jars, price each	27.00	20.25		
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla - 520 gr	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate - 660 gr	30.00	22.50		
	Buy 4 bottles, price each	26.60	19.95		
01812	PROVINAL® PURIFIED OMEGA-7 - 30 softgels	27.00	20.25		
	Buy 4 bottles, price each	24.00	18.00		
01508	PTEROPURE™ - 50 mg Pterostilbene 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01587	PURE PLANT PROTEIN - Veg. Vanilla 540 grams powder	38.00	28.50		
	Buy 4 jars, price each	35.00	26.25		
01637	PYCNOPENOL® FRENCH MARITIME PINE BARK EXTRACT-100 mg, 60 veg. caps	64.00	48.00		
	Buy 4 bottles, price each	60.00	45.00		
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	19.80	14.85		
<b>Q, R</b>					
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
01030	RED YEAST RICE (Bluebonnet) - 600 mg, 60 veg. caps	16.95	13.56		
00605	REGIMINT - 60 enteric-coated caps	19.95	14.96		
	Buy 4 bottles, price each	18.67	14.00		
01708	REISHI EXTRACT MUSHROOM COMPLEX - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01448	REJUVENEX® BODY LOTION - 6 oz	24.00	18.00		
	Buy 4 tubes, price each	19.80	14.85		
	Buy 8 tubes, price each	17.00	12.75		
01621	REJUVENEX® FACTOR FIRMING SERUM - 1.7 oz	65.00	48.75		
	Buy 2 bottles, price each	50.66	38.00		
	Buy 6 bottles, price each	38.52	28.89		
01220	REJUVENEX® (ULTRA) - 2 oz	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	REJUVENIGHT® (ULTRA) - 2 oz	39.95	29.96		
	Buy 4 jars, price each	36.00	27.00		
01413	RESVERATROL W/PTEROSTILBENE - 20 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	41.33	31.00		
00889	RHOIDIOLA EXTRACT - 250 mg, 60 veg. caps	11.75	8.81		
	Buy 4 bottles, price each	10.58	7.94		

**SUB-TOTAL OF COLUMN 14**

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
00972	(D) RIBOSE POWDER - 150 grams	\$27.50	\$20.63		
	Buy 4 jars, price each	24.75	18.56		
01473	(D) RIBOSE TABLETS - 100 veg. tabs	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
01609	RICH REWARDS® BREAKFAST GROUND COFFEE - 12 oz. bag	13.00	9.75		
01729	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag	15.00	11.25		
	Natural Vanilla				
01730	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag	15.00	11.25		
	Natural Mocha				
01610	RICH REWARDS® DECAFFEINATED ROAST GROUND COFFEE - 12 oz. bag	14.00	10.50		
01809	RICH REWARDS™ DARK CHOCOLATE - 15 piece bag	15.00	11.25		
	Buy 4 bags, price each	12.96	9.72		
01712	RICH REWARDS™ BLACK BEAN VEGETABLE SOUP - 32 oz. bottle	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01530	RICH REWARDS™ CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle	11.95	8.96		
	Buy 6 bottles, price each	11.25	8.44		
01531	RICH REWARDS™ (SPICY) CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle	11.95	8.96		
	Buy 6 bottles, price each	11.25	8.44		
01705	RICH REWARDS™ LENTIL VEGETABLE SOUP - 32 oz. bottle	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01810	RICH REWARDS™ MUNG BEAN SOUP W/TURMERIC - 32 oz. bottle	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01208	R-LIPOIC ACID (SUPER) - 300 mg, 60 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	45.00	33.75		
00070	RNA CAPSULES - 500 mg, 100 caps	17.95	13.46		
	Buy 4 bottles, price each	16.16	12.12		
<b>S</b>					
01432	SAFFRON w/SATIEREAL (OPTIMIZED) - 60 veg. caps	\$36.00	\$27.00		
	Buy 4 bottles, price each	32.00	24.00		
00358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets	16.00	12.00		
	Buy 8 boxes, price each	14.00	10.50		
00453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00557	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets	28.00	21.00		
	Buy 6 boxes, price each	24.00	18.00		
01055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets	66.00	49.50		
	Buy 4 bottles, price each	60.00	45.00		
01740	SEA-IODINE™ - 1,000 mcg, 60 veg. caps	8.00	6.00		
	Buy 4 bottles, price each	7.20	5.40		
00046	SELENIUM - 2 oz dropper bottle	11.95	8.96		
01679	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00318	SERRAFLAZYME - 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00284	SHARK LIVER OIL (NORWEGIAN) - 1,000 mg, 30 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01684	SILYMARIN - 100 mg, 50 veg. caps	9.25	6.94		
	Buy 4 bottles, price each	8.25	6.19		
01596	SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT® - 30 veg. liquid caps	25.00	18.75		
	Buy 4 bottles, price each	23.00	17.25		
00961	SODZYME® w/GLISODIN® AND WOLFBERRY - 90 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		

**SUB-TOTAL OF COLUMN 15**

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

No.		Retail Each	Member Each	Qty	Total
00657	SOLARSHIELD SUNGLASSES - 1 pair smoke color	\$12.99	\$9.74		
	Buy 2 pairs, price each	11.50	8.63		
01097	SOY EXTRACT (ULTRA) - 150 veg. caps	87.00	65.25		
	Buy 4 bottles, price each	78.00	58.50		
00432	STEVIA™ EXTRACT (BETTER) - 100 packets, 1 gram each	9.95	7.46		
00438	STEVIA™ ORGANIC LIQUID EXTRACT (BETTER) - 2 oz liquid	11.00	8.25		
01476	STRONTIUM - 750 mg, 90 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01649	SUPER ABSORBABLE SOY ISOFLAVONES - 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01790	SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL - 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		
01778	SUPER SELENIUM COMPLEX - 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	TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE® - 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
00199	TAURINE - 1,000 mg, 50 caps	8.95	6.71		
	Buy 4 bottles, price each	8.00	6.00		
00133	TAURINE POWDER - 300 grams	20.00	15.00		
	Buy 4 bottles, price each	16.88	12.66		
01304	THEAFLAVIN STANDARDIZED EXTRACT - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01683	(L) THEANINE - 100 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	20.50	15.38		
**01038	ATHERALAC PROBIOTICS - 30 caps	47.95	35.96		
00668	THYROID FORMULA™ (METABOLIC ADVANTAGE) - 100 caps	21.95	16.46		
00349	TMG POWDER - 50 grams	14.00	10.50		
	Buy 4 bottles, price each	11.00	8.25		
01859	TMG - 1,000 mg, 60 veg. liquid caps	13.00	9.75		
	Buy 4 bottles, price each	12.00	9.00		
00781	TOCOTRIENOLS WITH SESAME LIGNANS - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	36.00	27.00		
01400	TOCOTRIENOLS (SUPER-ABSORBABLE) - 60 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01278	TOOTHPASTE - 4 oz (Mint)	9.50	7.13		
	Buy 4 tubes, price each	8.67	6.50		
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.60	22.20		
01803	TRI SUGAR SHIELD™ - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01386	TRUFLIBER® - 180 grams	32.95	24.71		
01389	TRUFLORA PROBIOTICS - 32 veg. caps	42.95	32.21		
01722	L-TRYPTOPHAN - 500 mg, 90 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01721	TRYPTOPHAN PLUS (OPTIMIZED) - 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		

**SUB-TOTAL OF COLUMN 16**

JUNE 2014

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
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## T CONTINUED

01816	<b>TWO-PER-DAY</b> - 60 tablets	\$10.50	\$7.88		
	Buy 4 bottles, price each	9.50	7.13		
01815	<b>TWO-PER-DAY</b> - 120 tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01814	<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		
	<b>V</b>				
00213	<b>VANADYL SULFATE</b> - 7.5 mg, 100 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		
01526	<b>VITAMIN B3 NIACIN</b> - 1,000 mg, 100 veg. caps	12.75	9.56		
	Buy 4 bottles, price each	12.00	9.00		
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 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 tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	<b>VITAMIN C (BUFFERED) POWDER</b> - 454.6 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-IODINETM</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-IODINETM</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		

SUB-TOTAL OF COLUMN 17

No.		Retail Each	Member Each	Qty	Total
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## X

00409	<b>XYLWHITE™ MOUTHWASH</b> - 16 oz	\$10.00	\$7.50		
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## W

01739	<b>WINTER WELLNESS™</b> - 60 caps	\$15.00	\$11.25		
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## Z

01813	<b>ZINC HIGH POTENCY</b> - 50 mg, 90 veg. caps	\$7.95	\$5.96		
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01561	<b>ZINC LOZENGES</b> - 60 veg. lozenges	9.00	6.75		
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***01051	<b>ZYFLAMEND® WHOLE BODY</b> - 120 softgels	64.95	48.71		
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SUB-TOTAL OF COLUMN 18

**GIVE THE GIFT of  
HEALTH, with a  
LIFE EXTENSION  
GIFT CARD!**



**GIVE THE LIFE-ENHANCING  
BENEFITS OF LIFE EXTENSION®  
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**To order a  
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\* 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.



### 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, continental U.S.) **\$5.50**

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

UPS OVERNIGHT add \$16, UPS 2nd DAY AIR add \$7. For Puerto Rico, US Virgin Islands, Alaska & Hawaii, add \$7. CANADA UPS EXPRESS Flat rate \$17.50, UK Flat rate \$25 USD.  
Shipping ALL OTHER INTERNATIONAL AIR WILL BE ADDED.

**GRAND TOTAL** (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	

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Life Extension Foundation® Buyers Club, Inc.

P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198

Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050

**ORDER ONLINE AT: [www.LifeExtension.com](http://www.LifeExtension.com)**

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CHECK HERE FOR C.O.D. ORDERS

CHECK HERE FOR UPS BLUE LABEL (2ND DAY)

CHECK HERE FOR UPS RED LABEL (OVERNIGHT)

### SHIP TO ADDRESS

NAME	E-MAIL
ADDRESS	
CITY/STATE/ZIP-POSTAL CODE	COUNTRY
PHONE	FAX
SIGNATURE	

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No.	LIFE EXTENSION MEDIA	Retail	Member Price	Qty	Total
33866	HEART, AN AMERICAN MEDICAL ODYSSEY • by Dick Cheney & Jonathan Reiner, MD	2014	\$28.00	\$21.00	
33864	THE SUPPLEMENT PYRAMID • by Michael A. Smith, MD	2014	\$24.95	\$18.71	
DPT05	DISEASE PREVENTION AND TREATMENT, EXPANDED FIFTH EDITION (hardcover) Buy 4 books, price each	2014	\$39.95 \$36.00	\$39.95 \$36.00	
33865	THE RESTORATION OF THE HUMAN BODY [IN 7 PARTS] • by Sergey A. Dzigan, MD, PhD	2014	\$29.95	\$22.46	
33863	YOU THE OWNERS MANUAL • by Michael F. Roizen, MD & Mehmet C. Oz, MD (paperback)	2014	\$19.99	\$14.99	
33862	I'M TOO YOUNG FOR THIS • by Suzanne Somers	2013	\$26.00	\$19.50	
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33958	THE VITAMIN D SOLUTION • by Michael F. Holick, PhD, MD (paperback)	2013	\$16.00	\$12.00	
33861	THE SOUTH BEACH DIET GLUTEN SOLUTION • Dr. Arthur Agatston	2013	\$25.99	\$19.49	
33860	YOUNG FOR LIFE • by Marilyn Diamond and Dr. Donald Schnell	2013	\$26.99	\$20.24	
33859	THE BLOOD SUGAR SOLUTION • by Mark Hyman, MD	2013	\$27.99	\$20.99	
33855	POWER FOODS FOR THE BRAIN • by Neal D. Barnard, MD	2013	\$26.99	\$20.24	
33854	THE GREAT CHOLESTEROL MYTH • by Jonny Bowden, PhD, CNS and Stephen Sinatra, MD	2012	\$19.99	\$14.99	
33852	THE MAGIC OF CHOLESTEROL NUMBERS • by Dr. Sergey Dzigan	2012	\$29.95	\$22.46	
33848	YOUR BEST INVESTMENT SECRETS TO A HEALTHY BODY AND MIND • by Edwin Lee, MD	2012	\$24.95	\$18.71	
33847	THE FATIGUE SOLUTION • by Dr. Eva Cwynar	2012	\$24.95	\$18.71	
33844	ABUNDANCE: THE FUTURE IS BETTER THAN YOU THINK • by Steven Kotler and Peter Diamandis	2012	\$26.99	\$20.24	
33843	BOMBSHELL • by Suzanne Somers	2012	\$26.00	\$19.50	
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33842	HEART ATTACK PROOF • by Michael Ozner, MD	2012	\$19.95	\$14.96	
33839	THE GOLDEN RATIO LIFESTYLE DIET • by Robert Friedman, MD, and Matthew Cross	2012	\$19.95	\$14.96	
33838	YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY • by Gary Goldfaden, MD	2012	\$26.00	\$15.00	
33837	WHEAT BELLY • by William Davis, MD	2011	\$25.99	\$19.49	
33833	THE LIFE PLAN • by Jeffry S. Life, MD, PhD	2011	\$26.00	\$19.50	
33832	YOUR BONES • by Lara Pizzorno, MA, LMT	2011	\$12.00	\$9.00	
33829	THE IMMORTALITY EDGE • by Michael Fossel, MD, PhD, Greta Blackburn, David Woynarowski, MD	2011	\$25.95	\$18.17	
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33822	BREAKTHROUGH: EIGHT STEPS TO WELLNESS • by Suzanne Somers (paperback)	2010	\$15.00	\$10.50	
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33816	FDA: FAILURE, DECEPTION, ABUSE • by Life Extension Foundation	2010	\$20.00	\$15.00	
33818	STAY YOUNG & SEXY WITH BIO-IDENTICAL HORMONE REPLACEMENT • by Jonathan Wright, MD	2010	\$19.95	\$14.96	
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33812	LIFE OVER CANCER • by Keith Block, MD (hardcover)	2009	\$25.00	\$17.50	
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33599	YOUNGER YOU • by Eric Braverman, MD	—	\$24.95	\$15.75	
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33906	THE MIGRAINE CURE • by Sergey Dzigan, MD, PhD	2006	\$24.00	\$15.60	
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33806	THE CR WAY • by Paul McGlothin and Meredith Averill	—	\$15.95	\$11.25	
33828	THE SEXY YEARS • by Suzanne Somers (paperback)	2004	\$15.00	\$10.50	
33803	WHAT YOUR DOCTOR MAY NOT TELL YOU ABOUT DIABETES • by Steven V. Joyal, MD	2008	\$14.99	\$10.49	
33703	JOHN ABDO'S NO EXCUSES WORKOUT DVD	2008	\$13.30	\$9.98	
33804	YOU: STAYING YOUNG: THE OWNER'S MANUAL FOR EXTENDING YOUR WARRANTY • by Mehmet Oz, MD	2008	\$26.00	\$18.20	
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Shipping only \$5.50 U.S. • \$17.50 Canada • \$12.50 Hawaii, Alaska, U.S. Virgin Islands, Puerto Rico • UK Flat rate \$25 USD					
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Other International Shipping Restrictions May Apply. Please visit

[www.lef.org/vitamins-supplements/shipping/shipping-information.htm](http://www.lef.org/vitamins-supplements/shipping/shipping-information.htm) for details.

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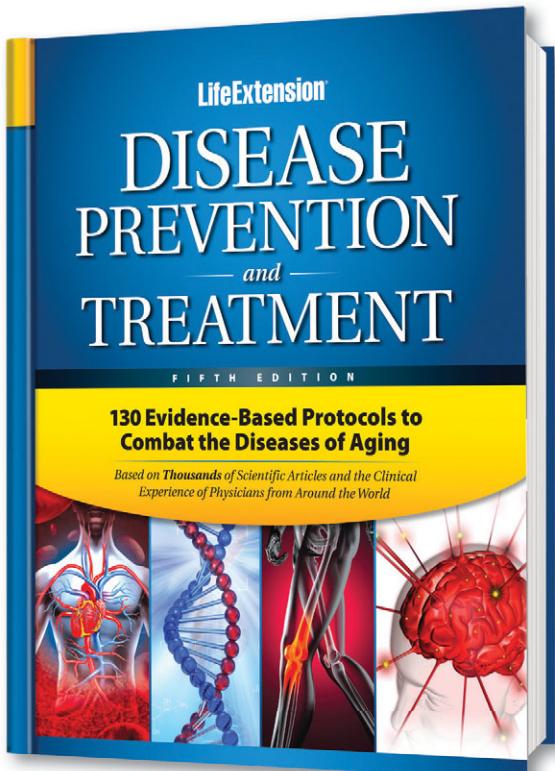
Enclosed is \$75 for annual membership. (Canadians add \$700, all others outside the U.S. add \$35.00). Send me: *Disease Prevention & Treatment Protocol Book*

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## FREE Gift to New Members

This 2014 edition of **Disease Prevention and Treatment** provides 1,400 pages of information about therapies that are documented in the scientific literature, but are not routinely used in clinical medical practice. Gaining access to this knowledge enables one with a medical disorder to take advantage of these advanced modalities immediately, rather than waiting years for conventional medicine to catch on.



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### HOW TO JOIN THE LIFE EXTENSION FOUNDATION®

As a member of the Life Extension Foundation®, you have the opportunity to participate in a great scientific endeavor. We are the world's premier organization dedicated to stopping and reversing aging.

Our 34-year track record shows that we have been five to 10 years ahead of conventional and alternative medicine in making new life-saving therapies available to our members.

When you join the Life Extension Foundation®, we update you on the latest published medical research by sending you FREE books. Our most impressive publication is the 1,400-page *Disease Prevention and Treatment* protocol book that contains novel therapies to treat 130 common diseases of aging. *Disease Prevention and Treatment* is the only book that combines conventional and alternative therapies in order to implement a treatment regimen for fighting the multiple processes involved in degenerative disease.

Each month, Life Extension Foundation® members receive a magazine packed with the latest medical findings from around the world. Members also can call a toll-free phone number to talk to our knowledgeable health advisors about their health issues.

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I want to contribute to your research efforts to extend the healthy human life span. Enclosed is my first year's membership donation of \$75 to join the most elite group of longevity enthusiasts in the world. (Canadians add \$7, all others outside the U.S. add \$35) Item code: MEMB1. Call for multiple year membership rates.

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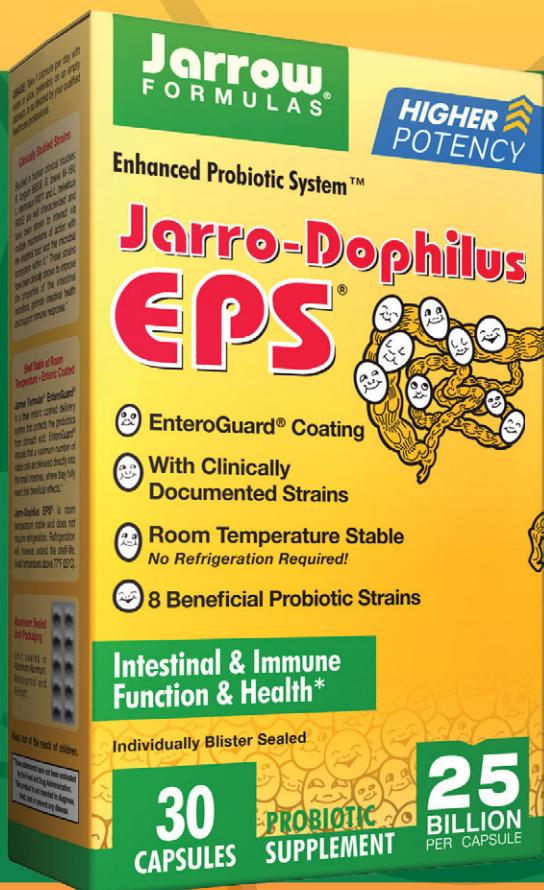
Check enclosed (payable to Life Extension Foundation®)

Charge my cc:

Card # \_\_\_\_\_ Exp. \_\_\_\_\_

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Jarro-Dophilus EPS® 25 Billion Per Capsule, 30 caps. Item # 01759.

Retail Price - \$39.95  
Member Price - \$29.96

**[www.Jarrow.com](http://www.Jarrow.com)**

To order 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.

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## ENTEROGUARD® CAPSULES PROTECT VALUABLE CARGO

Jarrow Formulas® new Jarro-Dophilus EPS® 25 Billion contains clinically documented strains. Each capsule is packaged in blister packaging for enhanced room temperature stability and protected with the Enteroguard® coating, meaning that probiotic organisms arrive at the intestines unharmed by stomach acid. Each blister pack is made in a humidity-controlled environment, preventing moisture from decreasing potency.

The new Jarro-Dophilus EPS® 25 Billion leverages excellence in formulation, manufacturing, packaging and product development to create a new higher potency shelf-stable probiotic.

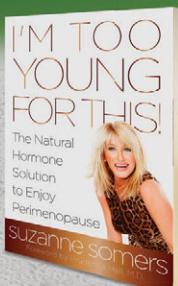
**25  
BILLION  
PER CAPSULE**

**Theralac®** and **TruFlora®** pack powerful help for digestive health.

# Powerful Pair.

## Theralac®

- + Bio-Replenishing® Action
- + Colonizes the intestinal lining in the large and small intestines
- + Five clinically proven probiotic strains
- + High Bifido bacteria count to help with colon health



Theralac® has been recommended in **Suzanne Somers** recent book.

Both Theralac® and TruFlora® offer powerful probiotic action for total digestive balance. Because they differ, they can be used alternatively for maximum digestive biodiversity. Both are covered by **seven U.S. Patents** that ensure delivery through harsh stomach acid and active prebiotic stimulation of the probiotics with LacoStim®, found only in Master Supplements products.

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## TruFlora®

- + Bio-Cleansing Action
- + Colonizes the contents of the G.I.Tract
- + Three probiotic strains and two enzymes
- + Contains enzymes that help digest problematic yeast cell walls



Theralac®  
30 capsules  
Item# 01038  
Retail: \$47.95

TruFlora®  
32 capsules  
Item# 01389  
Retail: \$42.95

TruFiber®  
6.2 OZ  
Item# 01386  
Retail: \$32.95



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

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

## Full-Spectrum Extraction: Our Difference

Many companies isolate elements from an herb, concentrate them, and add the label "whole herb." New Chapter aims to deliver Nature's **whole wisdom**. Using only natural supercritical CO<sub>2</sub> or traditional techniques of extraction, our potent *Force* extracts guarantee the fullest spectrum of beneficial phytonutrients in their natural profile.

**Ginger Force** 60 Softgels Item# 01228

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

## Nature's Profile of Beneficial Compounds

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

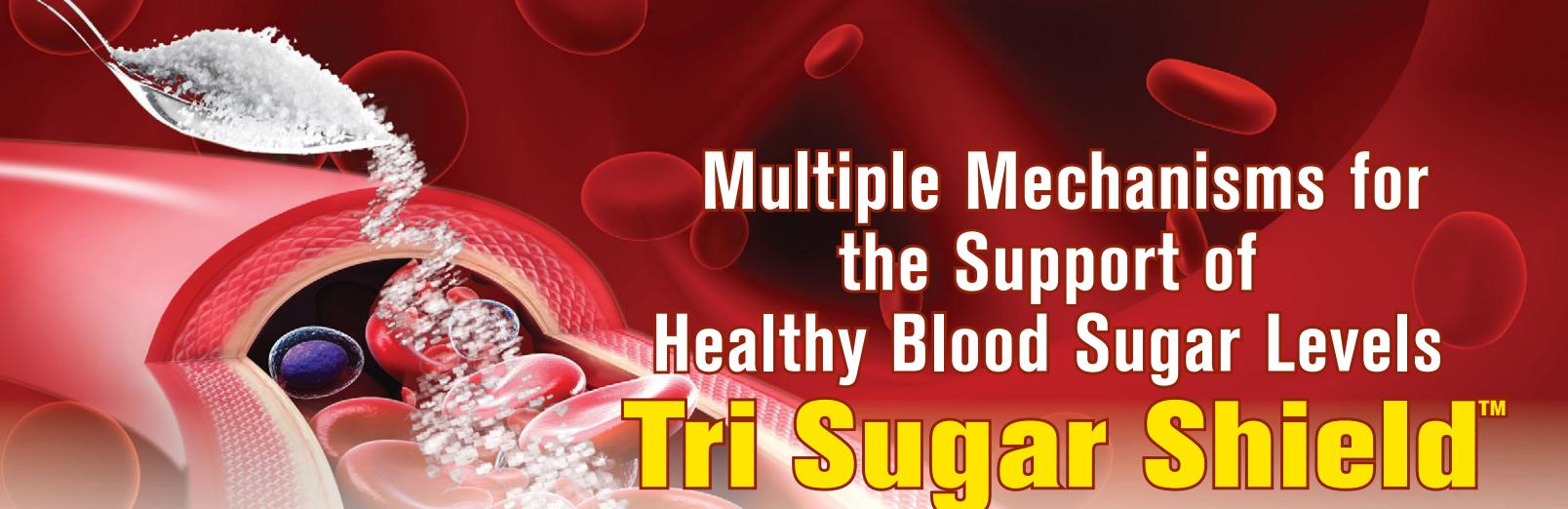


Learn more at [newchapter.com](http://newchapter.com)



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# NEWCHAPTER®



# Multiple Mechanisms for the Support of Healthy Blood Sugar Levels

## Tri Sugar Shield™

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

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

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

**Tri Sugar Shield™** provides three plant-derived nutrients that—through their **rich array of complementary mechanisms**<sup>3-18</sup>—afford an unrivalled level of optimal, broad-spectrum support for healthy glucose metabolism in aging individuals within normal range.

### MULTI-PRONGED APPROACH

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

#### Sorghum Extract

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

- Balances the rate of sugar manufacture in the liver (*gluconeogenesis*).<sup>5</sup>
- Promotes insulin sensitivity.<sup>6</sup>
- Regulates *PPAR-gamma*, a metabolic thermostat controlling glucose metabolism.<sup>6,7</sup>
- Regulates the enzyme *alpha-amylase*, which in turn controls the release of sugar found in starch.<sup>3,4</sup>

#### Mulberry Leaf Extract

Mulberry leaf has been used in Chinese traditional medicine for centuries. Like sorghum, mulberry leaf extract targets **three** different mechanisms:

- Targets the *alpha-glucosidase* enzyme to regulate conversion of starch into glucose.<sup>8-10</sup>
- Supports glucose transporter *GLUT4* that moves glucose out of the bloodstream and into muscle and liver cells.<sup>11,12</sup>
- Promotes insulin sensitivity.<sup>13</sup>

#### Phloridzin

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

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

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

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

<b>Sorghum bran (<i>Sorghum bicolor</i>) extract</b> [providing proanthocyanidins (540 mg)]	<b>600 mg</b>
<b>White mulberry extract</b> (leaf) [providing 1-deoxynojirimycin (DNJ) (15 mg)]	<b>300 mg</b>
<b>Phloridzin</b> [from apple extract (root bark)]	<b>100 mg</b>



Item #01803

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

#### References

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To order **Life Extension® Tri Sugar Shield™**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)



## WHAT'S INSIDE

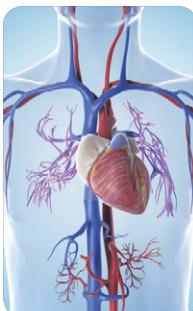
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# LifeExtension® Magazine



### 7 MISGUIDED MEDICINE

In a recent study, men were **overdosed** on an **estrogen-suppressing** drug. The side effects reported may cause physicians to avoid prescribing this class of drug to those who need it. The tragic result will be aging men succumbing to the lethal effects of **estrogen** overload.



### 28 LONGEVITY BENEFITS OF PYCNOGENOL

Discovered in Europe, a standardized pine extract improves congestive heart failure, reduces markers of metabolic syndrome, and protects against neurological disorders.



### 38 DRUG-FREE WAY TO MANAGE DEPRESSION

A new study shows **curcumin** to be as effective as an anti-depressant drug, without the side effects, while promoting the creation of new brain cells!



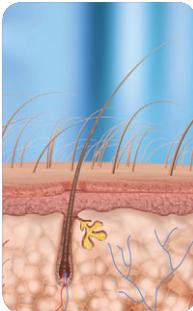
### 50 ANTI-AGING CONFERENCE REPORT

At the most recent SENS (Strategies for Engineered Negligible Senescence) conference, innovative research funded by the **Life Extension Foundation®** was presented for discussion.



### 62 MAXIMIZE OMEGA-3 HEALTH BENEFITS

The combination of **fish oil** and **krill oil** supplies a **spectrum** of fatty acids to a variety of cellular targets, further enhancing the effects of the **omega-3s**.



### 76 HEALTHY HAIR THROUGH SCALP REGENERATION

**Argan tree extract** targets the origins of hair loss by stimulating self-renewal of dermal stem cells—alleviating dry scalp and inducing hair growth.