

NATURAL MOISTURE FOR DRY EYES

# LifeExtension<sup>®</sup>

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

August 2015

## How Carnosine Protects Against Glycation

Live Longer  
By Changing  
How You Cook

Diets That Contain  
Too Many AGEs

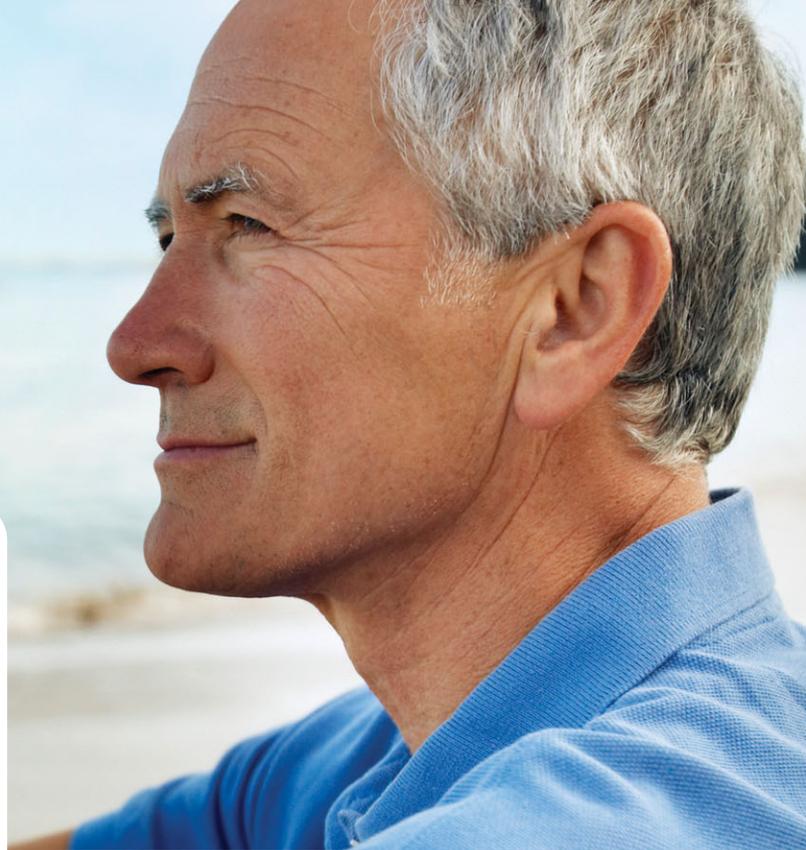
Novel Human  
Age-Reversal  
Initiative

Guard Against Most  
Common Food Toxin



**SUZANNE SOMERS**  
Environmental Hazards To Avoid

# ULTIMATE PROSTATE PROTECTION



**Ultra Natural Prostate** formula provides the latest scientifically-validated botanical extracts shown to promote healthy prostate function.

No other prostate protection formula provides such a broad array of nutrients to support the multiple factors involved in the health of the aging prostate gland. **Ultra Natural Prostate** contains:

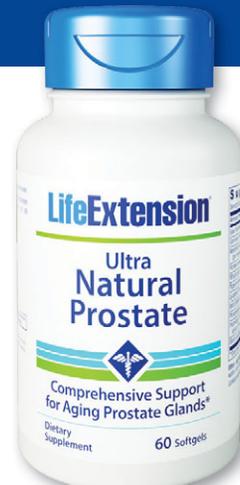
- **Standardized lignans** provide support for prostate cells against excess estrogen levels.<sup>1,3</sup>
- **AprèsFlex®** supports normal inhibition of *5-lipoxygenase* or *5-LOX*, an enzyme associated with undesirable cell division changes.<sup>4,5</sup>
- **Stinging and Dwarf nettle root extracts** help support prostate cells against excess estrogen levels.<sup>6,7</sup>
- **Saw Palmetto CO<sub>2</sub> extract** helps inhibit *dihydrotestosterone* (DHT) activity in the prostate, helps support normal urinary flow, and helps regulate inflammatory reactions in the prostate.<sup>8-11</sup>
- **Pygeum** extract helps suppress prostaglandin production in the prostate and supports healthy urination patterns.<sup>12,13</sup>
- **Pumpkin seed oil**, enhances the composition of free fatty acids and augments saw palmetto's benefits.<sup>14-16</sup>
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life.<sup>17-19</sup>
- **Graminex® Flower Pollen Extract™**, has been shown to help relax the smooth muscles of the urethra and help regulate inflammatory reactions.<sup>20-22</sup>
- **Boron** has been shown to slow elevation of prostate-specific antigen (PSA).<sup>23-25</sup>
- **Lycopene** supports efficient cellular communication, helps maintain healthy DNA, regulates hormonal metabolism, and promotes healthy prostate size and structure.<sup>26-32</sup>
- **Phospholipids** enhance absorption of active compounds.

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

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

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

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



Item # 01898

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To order Ultra Natural Prostate, 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.

REPORTS



**36 ORAL TREATMENT FOR DRY EYES**

Aging, laser surgery, contact lenses, and computer use contribute to the lack of tear production that characterizes **dry eye syndrome**. Scientists in Japan have discovered that an extract from the **maqui berry** can alleviate *dry eye syndrome* without the use of commercial eye drops. Human studies demonstrate that orally taken **maqui berry** extract produces a **48%** improvement in protective tear production, along with reductions in burning and discomfort.



**48 HUMAN AGE-REVERSAL STUDY INITIATIVE**

A clinical study is being designed that seeks to induce meaningful and systemic reversal of **aging processes** in elderly human subjects. The premise of this clinical trial is published findings from **Harvard, Stanford**, and other universities demonstrating powerful **age reversal** when blood from young animals is transfused into old animals. The **Life Extension<sup>®</sup> Foundation** is coordinating the first clinical study to reverse aging in frail elderly humans utilizing plasma **youth factors** derived from the stem cell-mobilized young human donors. The goal of this research is systemwide rejuvenation and life span increases.



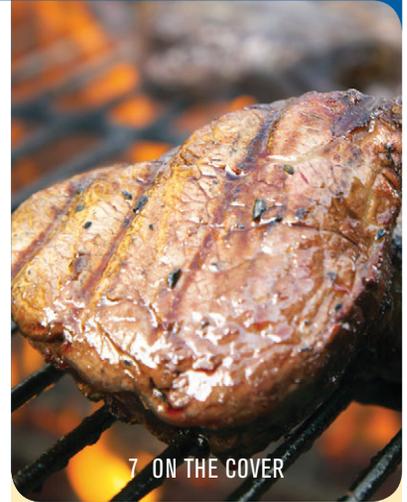
**68 FROM TOXIC TO NOT SICK**

In her new book, **Tox-Sick: From Toxic to Not Sick**, Suzanne Somers discusses the dire consequences of environmental toxins, sugar, and poor gut balance on health and what you can do to protect yourself against these detrimental forces.



**80 LIPID COMPLEX REVITALIZES AGING SKIN**

Repeated exposure to UV light alters the structure of key molecules that keep skin firm, causing wrinkles, pigment irregularities, and sagging skin. A novel lipid formulation rich in **essential fatty acids, palmitoyl oligopeptide, vitamin A, and marula oil** restores skin moisture, leading to a more youthful appearance.



7 ON THE COVER

**STOP COOKING YOURSELF TO DEATH**

A list of over **500** dietary constituents reveals surprising differences in levels of **glycation** products depending on how foods are prepared. Foods cooked at **high temperatures** increase cancer risk and accelerate aging because of the harmful **mutagens** and **advanced glycation end products** they contain. Glycation reactions can be **inhibited** in one's body using **carnosine, benfotiamine, and pyridoxal-5-phosphate**. Mutation damage is **reduced** in the presence of **chlorophyllin** and **indole-3-carbinol**.

DEPARTMENTS

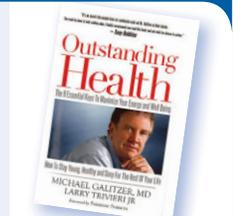


**29 IN THE NEWS**

Coffee may lower coronary artery calcium; broccoli extract inhibits oral cancer; calorie restriction prevents muscle loss; eight nutrients protect aging brain; coffee may inhibit multiple sclerosis; glucosamine blocks inflammation; vitamin D may block pancreatic cancer; selenium prevents damage after cardiac arrest; and much more.

**91 AUTHOR INTERVIEW**

In his book, **Outstanding Health: The 6 Essential Keys to Maximize Your Energy and Well Being**, Dr. Michael Galitzer reveals secrets to reverse aging, increase energy, and restore optimum health.



**97 ASK THE CHIROPRACTOR**

**Dr. Jonathan Ozner** discusses the latest chiropractic techniques, exercise, nutrition, and supplementation for keeping the body at optimum performance.





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# Preserve Youthful Skin with Phytoceramides

**Ceramides** are essential for preserving healthy-looking skin.<sup>1,2</sup> They play an important role in maintaining the skin's moisture balance and protecting the skin's surface.<sup>3</sup>

Unfortunately, your body's production of ceramides declines with age.<sup>4</sup> Many anti-aging face creams include ceramides. The problem is that **topical application** cannot penetrate deeply enough to have a long-term impact on your skin's appearance.

## Restoring Youthful Ceramide Levels

Researchers have discovered that the ceramides naturally produced by young skin are identical to those present in **wheat**—and that these wheat-derived oils can be taken *orally*.

**Skin Restoring Phytoceramides with Lipowheat®** can reach the deepest layers of skin all over the body—*not just where creams are applied*—where it can offset the visible impact of the body's gradual decline in ceramides. The hydrating action of **Lipowheat® ceramides** has proved effective in clinical trials.

## Just One Capsule Daily

Life Extension® has brought together these skin-nourishing oils in a concentrated **oral formula** called **Skin Restoring Phytoceramides with Lipowheat®**.

A bottle containing 30 **350 mg** vegetarian liquid capsules retails for **\$25**. If a member buys four bottles, the price is reduced to **\$17.25**.

### References

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To order Skin Restoring Phytoceramides with Lipowheat® call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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# LifeExtension<sup>®</sup>

Magazine

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



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



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



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



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



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



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

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



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**Xiaoxi Wei, PhD**, is a chemist expert in supramolecular assembly and development of synthetic transmembrane nanopores with distinguished selectivity via biomimetic nanoscience. She has expertise in ion channel function and characterization. She founded X-Therma Inc., a company developing a radical new highway towards non-toxic, hyper-effective antifreeze agents to fight unwanted ice formation in regenerative medicine and reduce mechanical icing.



# Blueberry Extract Boosts DNA Function

Studies show that blueberries delay the aging process through a variety of mechanisms, including **maintaining healthy DNA structure** and favorably modulating **genes** associated with aging.<sup>1,2</sup>

Chockfull of **anthocyanins**, the **blueberry** provides health-boosting benefits shown to:

- Enhance heart health<sup>3</sup>
- Maintain brain function<sup>4,5</sup>
- Sustain healthy blood sugar levels already within normal range<sup>6</sup>
- Support smooth firm skin<sup>7</sup>
- Maintain a healthy weight<sup>8</sup> and stable cholesterol levels already within normal range<sup>9</sup>

**Blueberry extract** is even more potent than the whole berry or juice, providing greater metabolic support throughout the entire body and without the excess sugar of raw fruit.<sup>10</sup> Life Extension®'s **Blueberry Extract Capsules** consists of only concentrated **extracts** from **wild blueberries**, which possess up to **10 times** the nutritional capacity of cultivated berries.

## Blueberry Extract Capsules

Item #01214 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$22.50	<b>\$16.88</b>
4 bottles	\$20 each	<b>\$15 each</b>



Suggested dose is one capsule daily. Each bottle lasts two months.

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### Non-GMO

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To order **Blueberry Extract Capsules**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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# Live Longer By Changing How You Cook!



BY WILLIAM FALOON

There is a simple way to protect against disease, lose weight, and extend healthy life span. This method is not new to longtime **Life Extension**® members. Recent studies, however, mandate that we re-emphasize our food preparation guidelines.

Put simply, when you ingest foods cooked at **high temperature**, your body is exposed to dangerous levels of **mutagens** and **advanced glycation end products**.<sup>1,2</sup>

**Mutagens** damage **DNA** and increase **cancer** risk. **Glycation** products damage your body's **proteins** which causes tissues to lose **functionality** and prematurely **age**.<sup>3-5</sup>

This article reveals startling findings about the magnitude of toxic **glycation products** formed in response to various **cooking** methods. An example of the impact “cooking methods” have on **glycation** risk can be seen on the adjacent column.<sup>1</sup>

## Cooking Method

## Glycation Products (kilounits [kU]/serving)

<b>Raw beef</b>	<b>636</b> (low)
<b>Microwaved beef</b>	<b>2,418</b> (moderate)
<b>Grilled beef</b>	<b>6,674</b> (too high)
<b>Pan fried beef</b>	<b>9,052</b> (toxic)
<b>Broiled beef hot dog</b>	<b>10,143</b> (more toxic)



Foods with high levels of **glycation** products happen to also have the greatest numbers of **mutagens**.<sup>6,7</sup>

The public does not appreciate the damage inflicted by eating **high-temperature** cooked foods. Since few people consume a “**raw food**” diet, we’re going to show how one can mitigate the deadly impact of **glycation** on your body’s living proteins.

In 2003, I described a study published in the *Proceedings of the National Academy of Sciences* showing that eating foods cooked at **high temperature** increases the rate at which we age.<sup>4</sup> Scientists uncovered back then that ingestion of high-temperature cooked foods results in chronic **inflammation** and accelerated **glycation** of our body’s proteins.<sup>8</sup>

More recent studies confirm these dangers. For example, breast and prostate cancers are sharply **increased** in those who eat **heavily cooked** meat such as **hamburgers**.<sup>9-13</sup>

When any food is heated to a high temperature (over 300 degrees), chemical changes occur that inflict damage to our cells when we eat that food.<sup>14-16</sup>

Cooked food contains more **advanced glycation end products** than raw foods. Be it fat, carbohydrate, or protein, when exposed to **high temperatures**, toxic compounds form that you don’t want in your body.<sup>1</sup>

To put this in perspective, a recent study found that men who ate just **1.5** servings or more of processed meat or **one** or more servings of grilled red meat or well-done red meat a week increased their risk of **advanced** prostate cancer by **50%**.<sup>17</sup> Considering that some men eat high-temperature cooked meat **every** day, is it any wonder that aging men suffer epidemic rates of prostate cancer?

Recall the previous page of this article that shows that **pan fried beef** registers a toxic **9,052 kilounits** of **advanced glycation end products** per serving.<sup>1</sup> This may help explain why heavily cooked beef **increases** cancer risk.

The number of **advanced glycation end products** in a serving of **bacon** comes in higher at **11,905 kilounits**.<sup>1</sup> If cancer concerns you, I hope the data about more than 500 different foods that we provide at the end of this article will assist you in making healthier food choices.

### Shed Fat Pounds By Avoiding High-Temperature Cooked Foods

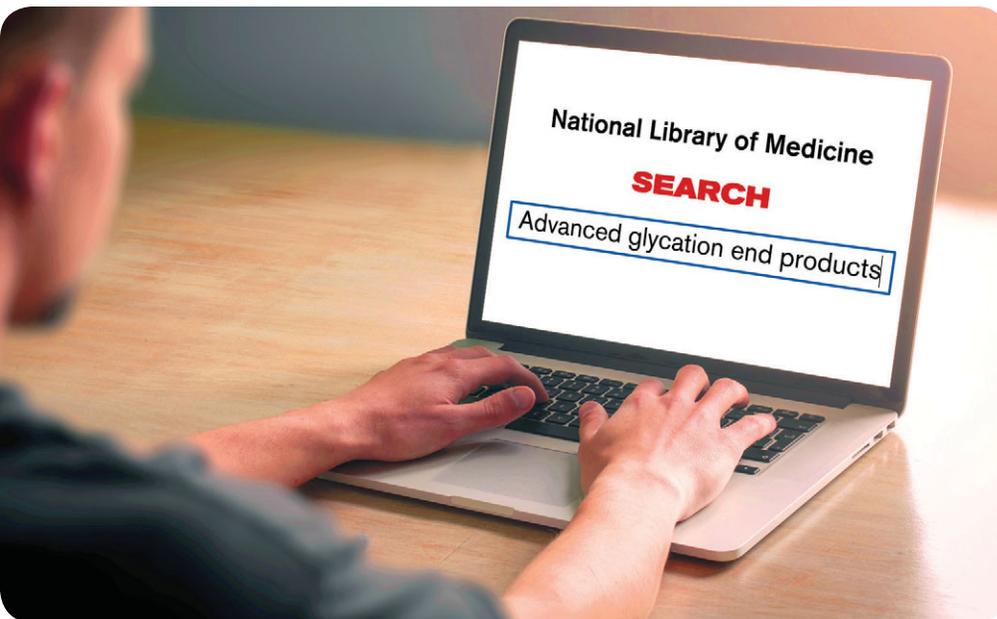
A fascinating study shows that **diabetics** who consumed a **low-temperature** cooked diet **lost weight** compared to a group that consumed the same numbers of calories, carbohydrates, fats, and protein cooked at **higher temperature**. Not only did the **low-temperature** prepared diet facilitate **weight loss**, but there were also reductions in blood **glucose**.<sup>8</sup>

This six-week study showed that eating the **same** food cooked at **low-temperature** **reduced** glycated **LDL** by **33%**, whereas diabetics consuming the same **higher** temperature prepared foods **increased** glycated **LDL** by **32%**.<sup>8</sup>

Researchers have now identified a compound in **overcooked foods** that plays a major role in the development of **abdominal obesity** and its related diseases. The name of the compound is **methylglyoxal**. Mice with sustained exposure to **methylglyoxal** developed significant abdominal weight gain, early insulin resistance, significant inflammation/oxidation, and type II diabetes.<sup>18</sup> **Methylglyoxal** is a type of **advanced glycation end product** that is produced when food is cooked with dry heat.<sup>19-22</sup>

**Glycation** destroys functioning proteins in the body and induces **chronic inflammation**, which in turn promotes **weight gain**.<sup>23-27</sup>





### National Library of Medicine Studies Describe “Glycation”

If one enters the term “**advanced glycation end products**” into the **National Library of Medicine** database, over **8,000** studies came up by mid-May 2015.

This includes studies that describe many diseases associated with **glycation**.<sup>28-31</sup> They also reveal how the deadly effects of **advanced glycation end products** are related to their ability to promote **oxidative stress** and **inflammation** by **cross-linking** with body **proteins**, which alters protein structure and function.<sup>1,32-35</sup>

To understand the significance of this, each one of our typical cells has thousands of different **proteins** that together enable a cell to **function** and maintain its **structure**.<sup>36</sup> Our enzymes, hormones, antibodies, neurotransmitters, collagen, and hemoglobin are all examples of molecules that must be protected against **glycation** reactions.<sup>37</sup>

The most accurate blood test of glucose control is to measure the percentage of **glycated hemoglobin** contained in red blood cells (i.e. **hemoglobin A1c**).<sup>38-40</sup> While a glycated hemoglobin percentage up to **5.5%** is considered normal,<sup>41</sup> once it exceeds **6%**, vascular

disease incidence skyrockets.<sup>42</sup> That tiny percentage increase (>**0.5%**) of glycated hemoglobin increases risk for diabetic complications,<sup>43</sup> yet few doctors try to protect their patients against **protein glycation** other than by achieving tighter **glucose control**.

### Why Are These Data Overlooked?

The acronym for **advanced glycation end products** is “**AGEs**.”<sup>41</sup>

Diabetics suffer a disproportional higher number of diseases from **AGEs** because high **glucose** blood levels are another cause of **protein glycation**.<sup>44</sup>

The role of **AGEs** in disease causation in diabetics and nondiabetics has been sadly overlooked by the medical mainstream, perhaps because there is relatively little they think they can do about it. It was also assumed that **AGEs** in foods were poorly absorbed. However, studies clearly show that **AGEs** contained in food are readily **absorbed** and contribute to formation of toxic **advanced glycation end products** (**AGEs**) in the body.<sup>45-47</sup>

The good news is that health-conscious individuals exert a significant amount of control over how quickly their **proteins** are destroyed

by toxic **glycation** reactions. They can reduce the amount of simple **sugars** and **starches** they ingest and minimize their exposure to **overcooked** foods.

The availability of nutrients like **carnosine**,<sup>48-53</sup> **benfotiamine**,<sup>54-60</sup> and **pyridoxal-5-phosphate**<sup>61-65</sup> represents a significant medical advance because they function as potent **anti-glycation** agents. This is important because toxic **AGEs** form within the body as a part of normal metabolism, and even healthy foods contain some level of **advanced glycated end products**.<sup>1</sup>

### How Food Makers Mislead Consumers

As I was writing this article, I came across a local news story about a restaurant that was opening which was serving only “**naturally raised meats**” that would be free of genetic modification, antibiotics, hormones, etc. These healthy meats would then be served as “**char-cooked**” hamburgers and other burnt foods.<sup>66</sup>

From what you’ve learned so far, this kind of cooking results in the formation of large numbers of **AGEs** within these foods. In particular, grilling, broiling, roasting, searing, and frying propagate and accelerate **AGEs** formation in food.<sup>1,67,68</sup> Yet some of these terms (such as “grilling”) are used on restaurant menus to imply these are good ways to prepare food.

A wide variety of common foods are exposed to cooking or thermal processing for reasons of protection against microorganisms and convenience, as well as to enhance flavor, color, and appearance. The large amount of **AGEs** contained in the modern diet is well-documented.<sup>8,67,68</sup>



Grilled salmon, for instance, is often labeled as a heart healthy choice, yet it contains lots of AGEs compared to microwaved cooked salmon.<sup>1</sup>

When mice consume diets high in AGEs, their rate of atherosclerosis<sup>69</sup> and kidney disease skyrocket.<sup>70</sup> Restriction of dietary AGEs prevents vascular and kidney dysfunction<sup>70,71</sup> and diabetes,<sup>72</sup> improves insulin sensitivity,<sup>73,74</sup> and accelerates wound healing in mice.<sup>75</sup>

Studies in healthy humans show that dietary AGEs directly correlate with markers of oxidative stress.<sup>76</sup> Restriction of AGEs in patients with diabetes<sup>8</sup> or kidney disease<sup>77</sup> as well as in healthy subjects<sup>78</sup> reduces markers of oxidative stress and inflammation.

These findings from animal and human studies suggest that avoidance of AGEs in food helps delay chronic diseases,<sup>79</sup> yet processed foods, fast foods, and foods served at even upscale restaurants are laden with AGEs.

Purporting that these foods are healthy to eat is highly misleading. At a minimum, when one has no choice but to consume AGEs-laden or high-glycemic foods, supplementation with *anti-glycation* nutrients

such as **carnosine**, **benfotiamine**, and/or **pyridoxal-5-phosphate** should be considered.

### *Don't "Cook" Yourself To Death... Protect Your Genes Against Overcooked Food*

It has long been known that heavily cooked foods inflict massive damage to the genes.

A group at the University of Minnesota reported that women who ate overcooked hamburgers had a **50%** greater risk of **breast cancer** than women who ate rare or medium hamburgers. The famous Iowa Women's Health Study found that women who consistently eat well-done steak, hamburgers, and bacon have a **4.62-fold** increased risk of breast cancer than women who consumed these meats rare or medium done.<sup>10</sup>

Cooking foods at high temperatures causes the formation of gene-mutating *heterocyclic amines*, which is why deep-fried foods are so dangerous to eat.<sup>80</sup> Heterocyclic amines have been linked to prostate, breast, colorectal, esophageal, lung, liver, and other cancers.<sup>10,81-91</sup> While health

conscious people try to avoid foods that are known carcinogens, even grilled fish contains a potent dose of gene-mutating heterocyclic amines.<sup>92</sup>

While one can reduce their exposure to cancer-causing heterocyclic amines, it may be impossible to keep them from forming within the body. Enzymatic activities that naturally occur in the liver can inadvertently manufacture heterocyclic amines from otherwise harmless organic compounds.<sup>93</sup>

### *Neutralizing Dietary Carcinogens*

One of the most important lines of defense against carcinogens consumed in the diet are agents that prevent gene mutation. Many antimutagenic agents have been identified in fruits and vegetables, the most potent being **indole-3-carbinol** and **chlorophyllin**.<sup>94,95</sup>

**Life Extension**<sup>®</sup> introduced members to the antimutagenic effects of chlorophyllin back in **1989**. The recommendation to supplement with chlorophyllin was based on a study published in the journal *Mutation Research*<sup>96</sup> showing that this plant extract was a highly effective **antimutagenic** agent.

What impressed us most about the *Mutation Research* study was that chlorophyllin suppressed the mutagenic activity of carcinogens such as fried pork, diesel emissions, and coal dust by more than **90%**!<sup>96</sup> We are aware of no other supplement that comes close to chlorophyllin's ability to inhibit deadly gene mutations. Most Life Extension<sup>®</sup> members obtain **100 mg** of chlorophyllin in a multi-ingredient supplement designed to be taken with the heaviest meal of the day.

The great majority of studies about chlorophyllin's health benefits concern its antimutagenic and anticarcinogenic properties. Chlorophyllin "traps" heterocyclic hydrocarbon carcinogens by reacting with their "backbone," making it impossible for them to form adducts with DNA which is a precursor to malignant transformation in cells.<sup>97,98</sup>

### Additional Protection Against Carcinogens

**Indole-3-carbinol (I3C)** is found in cruciferous vegetables such as cabbage, cauliflower, and broccoli.<sup>99</sup> When I3C was administered to rodents given cancer-causing chemicals (carcinogens), the number of tumors was reduced by up to **96%**. I3C has been shown to extend the length of the time between exposure to carcinogens and development of tumors by nearly **200%**.<sup>100</sup>

One of the ways I3C protects cells against cancerous changes is by preventing DNA damage.

A study from the Medical College of Ohio shows that I3C can cut the rate of DNA damage

from chemicals in several organs by up to **95%**.<sup>101</sup> I3C significantly decreases DNA damage in white blood cells by up to **81%**, the colon by up to **86%**, and the liver by up to **72%**. This would seem almost unbelievable if it hadn't been confirmed by others who have shown that I3C can reduce DNA damage in other tissues by similar amounts.<sup>102</sup>

Based on this plethora of evidence, if one happens to eat overcooked food, it makes sense to take at the same time, **100 mg** of chlorophyllin and/or **80 to 240 mg** of indole-3-carbinol and other cruciferous vegetables extracts. Most Life Extension® members already obtain these nutrients in supplement formulas they take with meals.

### Painstaking Development Of Antiglycating Nutrients

Back in **1998**, a growing body of literature pointed to the **anti-glycation** effect of a dipeptide nutrient called **arnosine**.<sup>103-106</sup> The two amino acids that comprise arnosine are L-histidine and beta-alanine.

The problem was that the synthesis of histidine and beta-alanine into arnosine was so complicated and expensive that it was unaffordable to the public. We went to great lengths to enhance this method so that meaningful potencies could be obtained by our members.

Back in those early days, dietary supplement companies sold arnosine in **50 mg** capsules. To illustrate how trivial this **50 mg** dose is, **248 mg** of arnosine (from meat) was given to human subjects. Arnosine levels were detected in the blood and steadily increased. However, within **5.5** hours, no arnosine was detected in the blood. The reason arnosine disappears so quickly is that the *arnosinase* enzyme quickly degrades it.<sup>107</sup>

With this study in mind, a dose of **50 mg** of arnosine would only be expected to remain in the blood at meaningful levels for around one hour. To achieve near 24-hour protection against toxic glycation reactions in the body, it requires about **500 mg** of arnosine to be taken twice a day.

When we launched the first **high-potency** arnosine supplement in the year **2000**, it represented a major advance in enabling aging humans to protect their vital **proteins** from transforming into toxic **advanced glycation end products (AGEs)**.

### New Studies Corroborate Carnosine Health Benefits

**Diabetics** are the group of people most in need of protection from **AGEs**.

High blood **glucose** levels create internal glycation reactions that result in massive protein destruction.<sup>108</sup>

Recent studies reveal broad-spectrum protection in the diabetic



model in response to **carnosine** or its analogs. Carnosine analogs are being patented for potential approval in the lucrative pharmaceutical (drug) marketplace.<sup>109</sup>

A **2014** study using **carnosine** in a mouse diabetic model showed huge reductions in measurements of **atherosclerosis**. The researchers who conducted this study concluded:

**“...prolonged carnosine supplementation enhances plasma levels, and has novel and significant effects on atherosclerotic lesion lipid, collagen and macrophage levels. These data are consistent with greater lesion stability, a key goal in treatment of existing cardiovascular disease. Carnosine supplementation may therefore be of benefit in lowering triglyceride levels and suppressing plaque instability in diabetes-associated atherosclerosis.”**<sup>110</sup>

No one questions the fact that **diabetes** results in a state of accelerated formation of **AGEs** and atherosclerosis.<sup>111</sup>

**Nondiabetics** may delay this process, but nonetheless will suffer the adverse effects of AGEs unless they take steps to protect their proteins from transforming into **advanced glycation end products**.

## Practical Anti-Glycation Cooking Changes

Foods cooked at high temperature and low moisture strongly induces formation of deadly AGEs (advanced glycation end products).<sup>2</sup>

Cooking the same foods using lower temperatures, high moisture, and/or pre-exposure to an acidified environment will limit new AGEs formation.<sup>2, 68</sup>

Regrettably, the toxic effects of **high-temperature** cooking and food processing are still not accepted health considerations, despite irrefutable evidence we presented more than **12 years** ago.

Reducing intake of dietary AGEs can be achieved by increasing the consumption of properly prepared fish, legumes, vegetables, fruits, and whole grains and by reducing intake of solid fats, fatty meats, full-fat dairy products, and highly processed foods.

Cooking methods that produce relatively low AGEs levels include poaching, steaming, stewing, and boiling.<sup>1</sup> As an example, the high AGE content of **broiled** chicken can be reduced by at least **80%** when the same piece of chicken is **boiled**.<sup>68</sup>

The use of acidic marinades, such as lemon juice and vinegar, before cooking also limits AGEs formation in the food.<sup>1</sup> These culinary practices are part of Mediterranean, Asian, and other cuisines and can be used to create tasty, easily prepared dishes.

Since most “junk” foods are cooked at extremely high temperatures, it makes sense to avoid french fries, hamburgers, potato chips, fried food, and most snacks. These foods not only contain lots of AGEs, but they also create other metabolic disorders that can induce degenerative disease.

## Broad-Spectrum Protection Against Age-Accelerating Glycation

Most **Life Extension**® members follow a healthy lifestyle that helps prevent glycation and chronic inflammation.

Supplementing with **1,000 mg** a day of carnosine,<sup>50,52,112</sup> along with benfotiamine (**50 to 500 mg** per day),<sup>113-115</sup> and pyridoxal-5-phosphate (**100 to 200 mg** per day)<sup>53,60,116,117</sup> can further inhibit **glycation reactions** in the body.

Avoiding foods cooked at high temperature not only reduces pathological glycation processes, but also prevents the formation of gene-mutating toxins that are known carcinogens. When food is cooked at high temperatures, DNA readily mutates.<sup>14,118</sup> This results in increased cancer risk.

With overwhelming evidence that overheated food is associated with accelerated aging and cancer, health-conscious individuals have a strong incentive to pay attention to how they prepare their food.

Mainstream doctors should be advising patients on safer ways to cook their food. This message





is tragically still not getting out, despite numerous studies published in prestigious scientific journals.

The failure of hurried physicians to inform aging people about the need to protect against toxic **AGEs** is another reason why consumers need to look out for their own health.

The section after the references to this article lists over **500** common foods and their **AGEs content** per serving. This list provides practical guidance on what foods are safe, moderately safe and outright deadly.

For additional protection against **advanced glycation end products (AGEs)**, consider daily supplementation of **carnosine, benfotiamine** and/or **pyridoxal-5-phosphate**.

For longer life,

William Faloon

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# Advanced Glycation End Product Content Of Common Foods and Drinks

Epidemiological studies associate consumption of unhealthy foods with structural changes to the **proteins** in our bodies.

When one ingests foods/drinks processed or cooked at **high temperature**, the **advanced glycation end products** (AGEs) in these foods/drinks inflict **glycation** changes to the body's own proteins.

The result is an accumulation of non-functional (AGEs) structures throughout the body that are associated with normal aging.

The following pages reveal the number of **advanced glycation end products** (AGEs) per serving of over 500 different foods and drinks.

A correlation can be seen by the heating process involved in processing or cooking the food and the number of AGEs they contain.

**Bacon**, for instance, has the highest levels of AGEs per serving at **11,905** compared to only **407** in tuna canned in water.

A consistent finding in this listing of 549 dietary items is that food cooked at **higher temperatures** has far more AGEs than the same food served raw or prepared at lower temperature. Some foods, however, have naturally higher levels of AGEs.

What may surprise you are foods that are considered healthy, but may have modest to relatively high AGE levels per serving.

The take home lesson from the following pages is that it is impossible to completely avoid consuming AGEs in your diet. AGEs also form in your body as a result of normal metabolism.

To achieve maximum reduction of **AGEs**, you should minimize intake of high glycemic **sugars/starches**, consume foods in the lower **AGEs** range (as revealed on the following chart), along with appropriate nutrients.

The advanced glycation end product (AGE) content of the following foods is based on their carboxymethyllysine content:\*

Food Item	AGE kU/serving
<b>Fats</b>	
Almonds, blanched slivered (Bazzini's Nut Club, Bronx, NY)	1,642
Almonds, roasted	1,995
Avocado	473
Butter, whipped	1,324
Butter, sweet cream, unsalted, whipped (Land O'Lakes, St Paul, MN)	1,167
Cashews, raw (Bazzini's Nut Club)	2,019
Cashews, roasted	2,942
Chestnut, raw	817
Chestnut, roasted, in toaster oven 350°F for 27 min	1,606
Cream cheese, Philadelphia soft, (Kraft, Northfield, IL)	3,265
Cream cheese, Philadelphia original (Kraft)	2,616
Margarine, tub	876
Margarine, tub, I Can't Believe it's Not Butter (Unilever, Rotterdam, The Netherlands)	496

Margarine, tub, Smart Balance (CFA Brands, Heart Beat Foods, Paramus, NJ)	311
Margarine, tub, Take Control (Unilever Best Foods)	200
Mayonnaise	470
Mayonnaise, imitation (Diet Source, Novartis Nutrition Group, East Hanover, NJ)	10
Mayonnaise, low-fat (Hellman's, Unilever Best Foods)	110
Olive, ripe, large (5 g)	501
Peanut butter, smooth, Skippy (Unilever)	2,255
Peanuts, cocktail (Planters, Kraft)	2,500
Peanuts, dry roasted, unsalted (Planters, Kraft)	1,934
Peanuts, roasted in shell, salted (Frito-Lay, Plano, TX)	1,032
Pine nuts (pignolias), raw (Bazzini's Nut Club)	3,363
Pistachios, salted (Frito Lay)	114
Pumpkin seeds, raw, hulled (House of Bazzini, Bronx, NY)	556
Soybeans, roasted and salted (House of Bazzini)	501
Sunflower seeds, raw, hulled (House of Bazzini)	753

Sunflower seeds, roasted and salted (House of Bazzini)	1,408
Tartar Sauce, creamy (Kraft)	37
Walnuts, roasted	2,366

**Fat, Liquid**

**AGE  
kU/serving**

Cream, heavy, ultra-pasteurized (Farmland Dairies, Fairlawn, NJ)	325
Oil, canola	451
Oil, corn	120
Oil, cottonseed (The B Manischewitz Company, Cincinnati, OH)	426
Oil, diaglycerol, Enova (ADM Kao LLC, Decatur, IL)	521
Oil, olive	595
Oil, olive, extra virgin, first cold pressed (Colavita, Linden, NJ)	502
Oil, peanut (Planters)	572
Oil, safflower (The Hain Celestial Group, Inc, Melville, NY)	151
Oil, sesame (Asian Gourmet)	1084
Oil, sunflower (The Hain Celestial Group, Inc)	197
Salad dressing, blue cheese (Kraft)	41
Salad dressing, caesar (Kraft)	111
Salad dressing, French (H. J. Heinz Co, Pittsburgh, PA)	17
Salad dressing, French, lite, (Diet Source, Novartis Nutr Corp)	0
Salad dressing, Italian (Heinz)	41
Salad dressing, Italian, lite (Diet Source, Novartis Nutr Corp)	0
Salad dressing, thousand island (Kraft)	28

**Meats and Meat Substitutes**

**AGE  
kU/serving**

**Beef**

Beef, bologna	1,468
Beef, corned brisket, deli meat (Boar's Head, Sarasota, FL)	179
Beef, frankfurter, boiled in water, 212° F, 7 min	6,736

Beef, frankfurter, broiled 450°F, 5 min	10,143
Beef, ground, boiled, marinated 10 min w/lemon juice	1,384
Beef, ground, pan browned, marinated 10 min w/lemon juice	3,450
Beef, ground, 20% fat, pan browned	4,435
Beef, ground, 20% fat, pan/cover	4,974
Beef, hamburger (McDonald's Corp, Oak Brook, IL)	4,876
Beef, hamburger patty, olive oil 180°F, 6 min	2,375
Beef, meatball, potted (cooked in liquid), 1 h	3,870
Beef, meatball, w/sauce	2,567
Beef, meatloaf, crust off, 45 min	1,676
Beef, raw	636
Beef, roast	5,464
Beef, salami, kosher (Hebrew National, ConAgra Foods, Omaha, NE)	565
Beef, steak, broiled	6,731
Beef, steak, grilled 4 min, George Foreman grill (Salton Inc, Lake Forest, IL)	6,674
Beef, steak, microwaved, 6 min	2,418
Beef, steak, pan fried w/olive oil	9,052
Beef, steak, raw	720
Beef, steak, strips, 450°F, 15 min	6,166
Beef, steak, strips, stir fried with 1 T canola oil, 15 min	8,570
Beef, steak, strips, stir fried without oil, 7 min	6,276
Beef, stewed, shoulder cut	2,007
Beef, stewed	2,391
Beef, stewed, (mean)	2,199

**Poultry**

**AGE  
kU/serving**

Chicken, back or thigh, roasted then BBQ	7,922
Chicken, boiled in water, 1 h	1,011
Chicken, boiled with lemon	861
Chicken, breast, skinless, roasted with BBQ sauce	4,291
Chicken, breast, skinless, breaded	4,102
Chicken, breast, skinless, breaded, reheated 1 min	5,157

Chicken, breast, boiled in water	1,089
Chicken, breast, breaded, deep fried, 20 min	8,750
Chicken, breast, breaded, oven fried, 25 min, with skin	8,965
Chicken, breast, breaded/pan fried	6,687
Chicken, breast, grilled/George Foreman grill (Salton Inc)	4,364
Chicken, breast, pan fried, 13 min, high	4,444
Chicken, breast, pan fried, 13 min high/microwave 12.5 sec	4,875
Chicken, breast, poached, 7 min, medium heat	991
Chicken, breast, potted (cooked in liquid), 10 min medium heat	2,232
Chicken, breast, roasted, 45 min with skin	5,975
Chicken, breast, skinless, microwave, 5 min	1,372
Chicken, breast, skinless, poached, 15 min	968
Chicken, breast, skinless, raw	692
Chicken, breast, steamed in foil, 15 min, medium heat	952
Chicken, breast, strips, stir fried with canola oil, 7 min	3,726
Chicken, breast, strips, stir fried without oil, 7 min	3,199
Chicken, breast, with skin, 450°F, 45 min	7,420
Chicken, breast, skinless, broiled, 450°F, 15 min	5,245
Chicken, crispy (McDonald's)	6,950
Chicken, curry, cube skinless breast, panfry 10 min, broiled 12 min	5,706
Chicken, curry, cube skinless breast, steam 10 min, broiled 12 min	5,071
Chicken, dark meat, broiled, inside, 450°F, 15 min	7,469
Chicken, fried, in olive oil, 8 min	6,651
Chicken, ground, dark meat with skin, raw	1,101
Chicken, ground, dark w/skin, pan fried, w/canola oil, 2.5 min, high heat	2,701
Chicken, ground, white meat, pan fried, no added fat, 5 min, high heat	1,627

Chicken, ground, white meat, pan fried, with oil	1,482
Chicken, ground, white meat, raw	789
Chicken, kebab, cubed skinless breast, pan fried, 15 min	5,510
Chicken, leg, roasted	4,185
Chicken, loaf, roasted	3,551
Chicken, loaf, roasted, crust off	1,278
Chicken, meat ball, potted (cooked in liquid), 1 h	1,351
Chicken, nuggets, fast food (McDonald's)	7,764
Chicken, potted (cooked in liquid) with onion and water	2,996
Chicken, roasted	5,418
Chicken, selects (McDonald's)	8,331
Chicken, skin, back or thigh, roasted then BBQ	16,668
Chicken, skin, leg, roasted	9,897
Chicken, skin, thigh, roasted	10,034
Chicken, thigh, roasted	4,631
Turkey, burger, pan fried with cooking spray, 5 min, high heat	7,171
Turkey, burger, pan fried with cooking spray, 5 min, high heat, microwaved 13.5 sec, high heat	8,044
Turkey, burger, pan fried with 5 mL canola oil, 3.5 min, high heat	7,426
Turkey, ground, grilled, crust	5,716
Turkey, ground, grilled, interior	5,379
Turkey, ground, raw	4,461
Turkey, burger, broiled	4,829
Turkey, breast, roasted	4,202
Turkey, breast, smoked, seared	5,412
Turkey, breast, steak, skinless, marinated w/orange juice, broiled	3,949
<b>Pork</b>	<b>AGE kU/serving</b>
Bacon, fried 5 min no added oil	11,905
Bacon, microwaved, 2 slices, 3 min	1,173
Ham, deli, smoked	2,114
Liverwurst (Boar's Head)	570
Pork, chop, marinated w/balsamic vinegar, BBQ	3,001
Pork, chop, raw, marinated w/balsamic vinegar	1,069
Pork, chop, pan fried, 7 min	4,277

Pork, ribs, roasted, Chinese take out	3,987
Pork, roast, Chinese take out	3,190
Sausage, beef and pork links, pan fried	4,883
Sausage, Italian, raw	1,675
Sausage, Italian, BBQ	4,355
Sausage, pork links, microwaved, 1 min	5,349
<b>Lamb</b>	<b>AGE kU/serving</b>
Lamb, leg, boiled, 30 min	1,096
Lamb, leg, broiled, 450°F, 30 min	2,188
Lamb, leg, microwave, 5 min	926
Lamb, leg, raw	743
<b>Veal</b>	<b>AGE kU/serving</b>
Veal, stewed	2,572
<b>Fish/Seafood</b>	<b>AGE kU/serving</b>
Crabmeat, fried, breaded (take out)	3,028
Fish, loaf (gefilte), boiled 90 min	685
Salmon, Atlantic, farmed, prev. frozen, microwaved, 1 min, high heat	859
Salmon, Atlantic, farmed, prev. frozen, poached, 7 min, medium heat	1,621
Salmon, Atlantic, farmed, prev. frozen, steamed, 10 min, medium heat	1,091
Salmon, Atlantic, farmed, prev. frozen, steamed in foil, 8 min, medium heat	900
Salmon, breaded, broiled 10 min	1,348
Salmon, broiled with olive oil	3,901
Salmon, canned pink (Rubenstein, Trident Seafoods, Seattle, WA)	825
Salmon, fillet, boiled, submerged, 18 min	974
Salmon, fillet, broiled	3,012
Salmon, fillet, microwaved	821
Salmon, fillet, poached	2,063

Salmon, pan fried in olive oil	2,775
Salmon, raw, previously frozen	465
Salmon, raw	475
Salmon, smoked	515
Scrod, broiled 450°F, 30 min	424
Shrimp frozen dinner, microwaved 4.5 min	3,959
Shrimp, fried, breaded (take out)	3,895
Shrimp, marinated raw	903
Shrimp, marinated, grilled on BBQ	1,880
Trout, baked, 25 min	1,924
Trout, raw	705
Tuna, patty, chunk light, broiled, 450°F, 30 min	672
Tuna, broiled, with soy, 10 min	4,602
Tuna, broiled, with vinegar dressing	4,635
Tuna, fresh, baked, 25 min	827
Tuna, loaf (chunk light in recipe), baked 40 min	531
Tuna, canned, chunk light, w/water	407
Tuna, canned, white, albacore, w/oil	1,566
Whiting, breaded, oven fried, 25 min	7,897
<b>Cheese</b>	<b>AGE kU/serving</b>
Cheese, American, low fat (Kraft)	1,212
Cheese, American, white, processed	2,603
Cheese, brie	1,679
Cheese, cheddar	1,657
Cheese, cheddar, extra sharp, made with 2% milk (Cracker Barrel, Kraft)	737
Cheese, cottage, 1% fat (Light & Lively, Kraft)	436
Cheese, feta, Greek, soft	2,527
Cheese, mozzarella, reduced fat	503
Cheese, parmesan, grated (Kraft)	2,535
Cheese, Swiss, processed	1,341
Cheese, Swiss, reduced fat (Alpine Lace, Alpine Lace Brands, Inc, Maplewood, NJ)	1,423

<b>Soy</b>	<b>AGE kU/serving</b>
Bacon bits, imitation, Bacos (Betty Crocker, General Mills, Minneapolis, MN)	187
Meatless jerky, Primal Strips (Primal Spirit Inc, Moundsville, WV)	1,258
Soy burger, Boca Burger, 400°F, 8 min-4 each side (BOCA Foods Co, Mandison, WI)	39
Soy burger, Boca Burger, microwaved, 1.5 min (BOCA Foods Co)	20
Soy burger, Boca Burger, skillet, cook spray, 5 minc (BOCA Foods Co)	30
Soy burger, Boca Burger, skillet, w/1 tsp olive oil, 5 min (BOCA Foods Co)	131
Soy burger, Boca Burger (BOCA Foods Co) (mean)	55
Tofu, broiled	3,696
Tofu, raw	709
Tofu, soft, raw	439
Tofu, sautéed, inside	3,212
Tofu, sautéed, outside	5,289
Tofu, sautéed (mean)	4,251
Tofu, soft, boiled 5 min, +2 min to return to boil	565
Tofu, soft, boiled 5 min, +2 min, + soy sauce, sesame oil	716
<b>Eggs</b>	<b>AGE kU/serving</b>
Egg, fried, one large	1,237
Egg white powder (Deb-El Products, Elizabeth, NJ)	104
Egg white, large, 10 min	13
Egg white, large, 12 min	19
Egg yolk, large, 10 min	179
Egg yolk, large, 12 min	252
Egg, omelet, pan, low heat, cooking spray, 11 min	27
Egg, omelet, pan, low heat, corn oil, 12 min	67
Egg, omelet, pan, low heat, margarine, 8 min	49
Egg, omelet, pan, low, butter, 13 min	152

Egg, omelet, pan, low, olive oil, 12 min	101
Egg, poached, below simmer, 5 min	27
Egg, scrambled, pan, high, butter, 45 sec	101
Egg, scrambled, pan, high, cooking spray, 1 min	35
Egg, scrambled, pan, high, corn oil, 1 min	52
Egg, scrambled, pan, high, margarine, 1 min	37
Egg, scrambled, pan, high, olive oil, 1 min	73
Egg, scrambled, pan, med-low, butter, 2 min	50
Egg, scrambled, pan, med-low, cooking spray, 2 min	20
Egg, scrambled, pan, med-low, corn oil, 1.5 min	37
Egg, scrambled pan, med-low, margarine, 2 min	19
Egg, scrambled, pan, med-low, olive oil, 2 min	29

## Carbohydrates

### Bread

Bagel, small, Lender's	40
Bagel, large	32
Bagel, toasted	50
Biscuit (Mc Donald's)	441
Biscuit, refrigerator, baked-oven, 350°F, 17 min (Pillsbury Grands, General Mills)	403
Biscuit, refrigerator, uncooked (Pillsbury Grands, General Mills)	247
Bread, 100% whole wheat, center, toasted (Wonder, Interstate Bakeries, Inc, Irving, TX)	25
Bread, 100% whole wheat, center (Wonder)	16
Bread, 100% whole wheat, top crust (Wonder)	22
Bread, 100% whole wheat, top crust, toasted (Wonder)	36
Bread, Greek, hard	45

Bread, Greek, hard, toasted	182
Bread, Greek, soft	33
Bread, pita	16
Bread, white, Italian, center (Freihoffer's, Bimbo Bakeries, Horsham, PA)	7
Bread, white, Italian, center, toasted (Freihoffer's)	25
Bread, white, Italian, crust (Freihoffer's)	11
Bread, white, Italian, top crust, toasted (Freihoffer's)	36
Bread, white, slice (Rockland Bakery, Nanuet, NY)	25
Bread, white, slice, toasted (Rockland Bakery)	32
Bread, whole wheat, slice (Rockland Bakery)	31
Bread, whole wheat, slice, toasted, slice, (Rockland Bakery)	41
Croissant, butter (Starbucks, Seattle, WA)	334
Roll, dinner, inside	7
Roll, dinner, outside	23

<b>Breakfast Cereals</b>	<b>AGE kU/serving</b>
Bran flakes, from Raisin Bran (Post, Kellogg Co, Battle Creek, MI)	10
Cinnamon Toast Crunch (General Mills)	330
Corn Flakes (Kellogg's)	70
Corn Flakes, Honey Nut (Kellogg Co)	96
Corn Flakes, Sugar Frosted (Kellogg Co)	128
Corn Pops (Kellogg's)	373
Cream of Wheat, instant, prepared (Nabisco, East Hanover, NJ)	189
Cream of Wheat, instant, prepared with honey (Nabisco)	331
Fiber One (General Mills)	421
Froot Loops (Kellogg Co)	20
Frosted Mini Wheats (Kellogg Co)	63
Granola, Organic Oats & Honey (Cascadian Farms, Small Planet Foods, Minneapolis, MN)	128

Life, mean (Quaker Oats, Chicago, IL)	394
Puffed Corn Cereal (Arrowhead Mills, The Hain Celestial Group, Inc)	30
Puffed Wheat	5
Rice Krispies (Kellogg Co)	600
Total, Wheat and Brown Rice (General Mills)	70
Oatmeal, instant, dry (Quaker Oats)	4
Oatmeal, instant, prepared (Quaker Oats)	25
Oatmeal, instant, prepared with honey (Quaker Oats)	31

<b>Breakfast Foods</b>	<b>AGE kU/serving</b>
French toast, Aunt Jemima, frozen, microwaved 1 min (Pinnacle Foods)	181
French toast, Aunt Jemima, frozen, 10 min at 400°F (Pinnacle Foods Corp)	255
French toast, Aunt Jemima, frozen, not heated (Pinnacle Foods Corp, Cherry Hill, NJ)	79
French toast, Aunt Jemima frozen, toaster medium-1 cycle (Pinnacle Foods)	184
Hot Cakes (McDonald's)	73
Pancake, from mix	247
Pancake, frozen, toasted (General Mills)	679
Pancake, homemade	292
Waffle, frozen, toasted (Kellogg Co)	861

<b>Grains/Legumes</b>	<b>AGE kU/serving</b>
Beans, red kidney, raw	116
Beans, red kidney, canned	191
Beans, red kidney, cooked 1 h	298
Pasta, cooked 8 min	112
Pasta, cooked 12 min	242
Pasta, spiral	245
Rice, white, quick cooking, 10 min	9

Rice, Uncle Ben's white, cooked, 35 min (Mars, Inc, Houston, TX)	9
Rice, white, pan toasted 10 min, cooked 30 min	32
<b>Starchy Vegetables</b>	<b>AGE kU/serving</b>
Corn, canned	20
Potato, sweet, roasted 1 h	72
Potato, white, boiled 25 min	17
Potato, white, roasted 45 min, with 5 mL oil/serving	218
Potato, white, french fries (McDonald's)	1,522
Potato, white, french fries, homemade	694
Potato, white, french fries, in corn oil, held under heat lamp	843
Potato, white, hash browns (McDonald's)	129

<b>Crackers/Snacks</b>	<b>AGE kU/serving</b>
Breadsticks, Stella D'oro hard (Brynwood Partners, Greenwich, CT)	38
CheeZ Doodles, crunchy (Wise Foods Inc, Berwick, PA)	965
Chex mix, traditional (General Mills, Inc)	352
Chips, corn, Doritos (Frito Lay)	151
Chips, corn, Harvest Cheddar Sun Chips (Frito-Lay)	381
Chips, Platanitos, plantain (Plantain Products Co, Tampa, FL)	111
Chips, potato (Frito Lay)	865
Chips, potato, baked original potato crisps (Frito Lay)	135
Combos, nacho cheese pretzel (M & M Mars, McLean, VA)	504
Cracker, chocolate Teddy graham (Nabisco)	494
Cracker, Pepperidge Farms Goldfish, cheddar (Campbell Soup Co, Camden, NJ)	653
Cracker, Keebler honey graham (Kellogg Co)	366
Cracker, Old London melba toast (Nonni's Food Co, Tulsa, OK)	271

Cracker, oyster	513
Cracker, rice cake, corn (Taanug)	41
Cracker, saltine, hospital (Alliant)	281
Cracker, Keebler sandwich, club+cheddar, (Kellogg Co)	549
Cracker, toasted wheat	275
Cracker, wheat, round	257
Cracker, KA-ME rice crunch, plain (Liberty Richter, Bloomfield, NJ)	275
Popcorn, air popped, with butter	40
Popcorn, Pop Secret microwaved, fat free, no added fat (General Mills)	10
Pretzel, minis (Snyder's of Hanover, Hanover, NJ)	537
Pretzel, Q rolled	565
Pretzel, stick	480
Pretzel (mean)	527
Veggie Booty (Robert's American Gourmet, Seacliff, NY)	295

<b>Cookies, Cakes, Pies, Pastries</b>	<b>AGE kU/serving</b>
Bar, granola, chocolate chunk, soft (Quaker)	152
Bar, Nutrigrain, apple cinnamon (Kellogg's)	643
Bar, Rice Krispies Treat (Kelloggs)	576
Bar, Granola, peanut butter & choc chunk, hard (Quaker)	953
Cake, angel food, Danish Kitchen (Sam's Club, Bentonville, AR)	8
Cookie, biscotti, vanilla almond (Starbucks)	966
Cookie, chocolate chip, Chips Ahoy (Nabisco)	505
Cookie, Golden Bowl fortune (Wonton Food, Inc, Brooklyn, NY)	27
Cookie, Greek wedding, nut cookie	288
Cookie, meringue, homemade	239
Cookie, Keebler oatmeal raisin (Kellogg Co)	411
Cookie, Oreo (Nabisco)	531
Cookie, Nilla vanilla wafer (Nabisco)	148
Croissant, chocolate (Au Bon Pain, Boston, MA)	148

Danish, cheese (Au Bon Pain)	257
Donut, glazed devil's food cake (Krispy Kreme, Winston-Salem, NC)	422
Donut, chocolate iced, crème filled (Krispy Kreme)	541
Fruit pop, frozen (Dole, Westlake Village, CA)	11
Fruit roll up, sizzlin' red (General Mills)	294
Gelatin, Dole strawberry (Nestle, Minneapolis, MN)	2
Gelatin, Dole strawberry, sugar free (Nestle)	1
Ice cream cone, cake (Haagen Dazs, Oakland, CA)	44
Ice cream cone, sugar (Haagen Dazs)	46
Muffin, bran (Au Bon Pain)	102
Pie, apple, individual, baked (McDonald's)	191
Pie, crust, frozen, baked per pkg, mean Mrs. Smith's Dutch Apple Crumb and Pumpkin Custard (Kellogg Co)	417
Pie, Mrs. Smith's Dutch apple crumb, deep dish, apple filling (Kellogg Co)	102
Pie, Mrs. Smith's Dutch apple crumb, deep dish, crumbs (Kellogg Co)	309
Pie, Mrs. Smith's Dutch apple crumb, deep dish, crust (Kellogg Co)	423
Pie, Mrs. Smith's Dutch apple crumb, deep dish, pie (Kellogg Co)	268
Pie, Mrs. Smith's pumpkin custard, bake it fresh, original recipe, crust (Kellogg Co)	412
Pie, Mrs. Smith's pumpkin custard, bake it fresh, original recipe, custard (Kellogg Co)	185
Pie, Mrs. Smith's pumpkin custard, bake it fresh, original recipe, pie (Kellogg Co)	264
Pop tart, microwave-3 sec high power (Kellogg Co)	73
Pop tart, microwave-6 sec. medium high power (Kellogg's)	63
Pop tart, not heated (Kellogg Co)	40

Pop tart, toaster-low, 1 cycle (Kellogg Co)	78
Scone, cinnamon (Starbucks)	237
Sorbet, Edy's strawberry (Dryer's, Oakland, CA)	3
Sweet roll, cinnamon swirl roll (Starbucks)	272
<b>Fruits</b>	<b>AGE kU/serving</b>
Apple, baked	45
Apple, Macintosh	13
Banana	9
Cantaloupe	20
Coconut cream, Coco Goya cream of coconut (Goya, Secaucus, NJ)	140
Coconut milk, leche de coco, (Goya)	46
Coconut, Baker's Angel Flake, sweetened (Kraft)	177
Dates, Sun-Maid California chopped (Sun-Maid, Kingsburg, CA)	18
Fig, dried	799
Plums, Sun-Maid dried pitted prunes (Sun-Maid)	50
Raisin, from Post Raisin Bran (Kellogg Co)	36
<b>Vegetables</b> (raw unless specified otherwise)	<b>AGE kU/serving</b>
Carrots, canned	10
Celery	43
Cucumber	31
Eggplant, grilled, marinated with balsamic vinegar	256
Eggplant, raw, marinated with balsamic vinegar	116
Green beans, canned	18
Portabella mushroom, raw, marinated with balsamic vinegar	129
Onion	36
Tomato	23
Tomato sauce (Del Monte Foods, San Francisco, CA)	11
Vegetables, grilled (broccoli, carrots, celery)	226
Vegetables, grilled (pepper, mushrooms)	261

<b>Other Carbohydrates</b>	<b>AGE kU/serving</b>
Sugar, white	0
Sugar substitute, aspartame as Canderel (Merisant, Chicago, IL)	0
<b>Liquids</b>	<b>AGE kU/serving</b>
<b>Milk and Milk Products</b>	
Cocoa packet, Swiss Miss, prepared (ConAgra Foods)	656
Cocoa packet, Swiss Miss sugar- free, prepared (ConAgra Foods)	511
Ice cream, America's Choice vanilla (The Great Atlantic and Pacific Tea Co, Montvale, NJ)	84
Milk, fat-free (hospital)	2
Milk, Lactaid fat free (McNeil Nutritionals, Fort Washington, PA)	26
Milk, fat free (Tuscan Dairy Farms, Burlington, NJ)	4
Milk, fat free, with A and D	1
Milk, fat free, with A and D (microwaved, 1 min)	5
Milk, fat free, with A and D (microwaved, 2 min)	19
Milk, fat free, with A and D (microwaved, 3 min)	86
Milk, soy (Imagine Foods, The Hain Celestial Group)	77
Milk, whole (4% fat)	12
Pudding, instant chocolate, fat-free, sugar-free, prepared	1
Pudding, instant chocolate, skim milk	1
Pudding, Hunt Wesson snack pack, chocolate (ConAgra Foods)	20
Pudding, Hunt Wesson snack pack, vanilla (ConAgra Foods)	16
Yogurt, cherry, (Dannon, White Plains, NY)	10
Yogurt, vanilla, (Dannon)	8

<b>Fruit Juice</b>	<b>AGE kU/serving</b>
Juice, apple	5
Juice, cranberry	8
Juice, orange	14
Juice, orange, from fresh fruit	1
Juice, orange, with calcium	8

<b>Vegetable Juice</b>	<b>AGE kU/serving</b>
Vegetable juice, V8 (Campbell Soup Co)	5

<b>Other Carbohydrate Liquids</b>	<b>AGE kU/serving</b>
Fruit pop, frozen (Dole)	11
Honey	1
Sorbet, strawberry (Edy's)	3
Syrup, caramel, sugar free	0
Syrup, dark corn	0
Syrup, pancake, lite	0

<b>Combination Foods and Solid Condiments</b>	<b>AGE kU/serving</b>
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<b>Combination Foods</b>	
Bacon, Egg and Cheese Biscuit (McDonald's)	2,289
Bacon, Egg and Cheese McGriddles (McDonald's)	858
Big Mac (McDonald's)	7,801
Casserole, tuna	233
Cheeseburger (McDonald's)	3,402
Chicken McGrill (McDonald's)	5,171
Corned beef hash, canned, microwaved 2 min, high power (Broadcast)	1,691
Corned beef hash, canned, stove top, medium heat, 12 min (Broadcast)	2,175
Corned beef hash, canned, unheated (Broadcast)	1,063

Double Quarter Pounder With Cheese (McDonald's)	6,283
Filet-O-Fish (McDonald's)	6,027
Gnocchi, potato/flour/ Parmesan cheese, 3 min	535
Gnocchi, potato/flour/ Parmesan cheese, 4.5 min	2,074
Hot Pocket, bacon, egg, cheese, oven, 350°F, 20 min (Nestle)	1,695
Hot Pocket-bacon, egg, cheese, microwaved 1 min (Nestle)	846
Hot Pocket-bacon, egg, cheese, frozen-not heated (Nestle)	558
Hummus, commercial	733
Hummus, with garlic and scallions	884
Hummus, with vegetables	487
Hummus (mean)	701
Macaroni and cheese	2,728
Macaroni and cheese, baked	4,070
Pasta primavera	959
Pesto, with basil (Buitoni, Nestle)	150
Pickle, bread and butter	3
Pizza, thin crust	6,825
Salad, Italian pasta	935
Salad, lentil potato	123
Salad, tuna pasta	218
Sandwich, cheese melt, open faced	5,679
Sandwich, toasted cheese	4,333
Soufflé, spinach	598
Timbale, broccoli	122
Taramosalata (Greek style caviar spread)	678
Veggie burger, California burger, 400°F, 8 min-4 each side (Amy's Kitchen, Petaluma, CA)	198
Veggie burger, California burger, skillet, with spray, 5 min (Amy's)	149
Veggie burger, California burger, skillet, with 1 tsp olive oil, 5 min (Amy's)	374
Veggie burger, California burger, microwave, 1 min (Amy's)	68
Won ton, pork, fried (take out)	2,109
Ziti, baked	2,795

Candy	AGE kU/serving
Ginger, crystallized	49
Candy, Hershey Special Dark Chocolate (The Hershey Co, Hershey, PA)	533
Candy, M & M's, milk chocolate (Mars)	450
Candy, Reese's Peanut Butter Cup (The Hershey Co)	1,032
Candy, Raisinets (Nestle)	59
Candy, Snickers (Mars)	79

**Soups, Liquid Condiments,  
and Miscellaneous Liquids** **AGE  
kU/serving**

Soups	
Soup, beef bouillon	1
Soup, chicken bouillon	3
Soup, College Inn chicken broth, (Del Monte)	2
Soup, chicken noodle, (Campbell Soup Company)	4
Soup, couscous and lentil (Fantastic World Foods, Edison, NJ)	9
Soup, Knorr vegetable broth, (Unilever)	4
Soup, summer vegetable	3

Condiments	AGE kU/serving
Ketchup	2
Mustard	0
Pectin	12
Soy sauce	9
Vinegar, balsamic	5
Vinegar, white	6

Miscellaneous	AGE kU/serving
<b>Beverages</b>	
SoBe Adrenaline Rush (South Beach Beverage Co, Norwalk, CT)	1
Budwiser Beer (Anheuser-Busch, St Louis, MO)	3
Breast milk, fresh	2
Breast milk, frozen	3
Coca Cola, classic (The Coca-Cola Co, Atlanta, GA)	7
Coffee, with milk and sugar	6
Coffee, drip method	4
Coffee, heating plate >1 h	34
Coffee, Taster's Choice instant (Nestle)	12
Coffee, instant, decaf (mean Sanka [Kraft] and Taster's Choice)	13
Coffee, Spanish	12
Coffee, with milk	17
Coffee, with sugar	19
Coke	16
Coke, Diet (The Coca-Cola Company)	3
Coke, Diet 2008 (The Coca-Cola Company)	10
Coke, Diet plus (The Coca-Cola Company)	4
Enfamil, old (Mead Johnson Nutritional, Glenview, IL)	146
Ensure plus	32
Gelatin, Dole strawberry (Nestle)	2
Gelatin, Dole strawberry, sugar free (Nestle)	1
Glucerna (Abbott Nutrition, Columbus, OH)	175
Malta (Goya)	3
NOFEAR Super Energy Supplement (Pepsico, Purchase, NY)	1
Pepsi, diet (Pepsico)	7
Pepsi, diet MAX (Pepsico)	8

Pepsi, diet, caffeine free (Pepsico)	6
Pepsi, regular (Pepsico)	6
Resource (Nestle)	180
Rum, Bacardi Superior, 80 proof (Miami, FL)	0
Sprite (The Coca-Cola Company)	4
Sprite, diet (The Coca-Cola Company)	1
Tea, apple (RC Bigelow, Inc, Fairfield, CT)	1
Tea, Lipton Tea bag (Unilever)	5
Tea, Lipton Tea bag, decaf (Unilever)	3
Vodka, Smirnoff, 80 proof (Diageo, London, UK)	0
Whiskey, Dewar's White Label (Dewar's, Perthshire, UK)	1
Wine, pinot grigio (Cavit Collection, Port Washington, NY)	82
Wine, pinot noir (Cavit Collection)	28

\*Source: *J Am Diet Assoc.* 2010 Jun; 110(6): 911-16.e12.



**NEW**

# Protect Your Cells Against Glycation and Premature Aging



Foods cooked at high temperatures including grilled meats and fried vegetables can create harmful **advanced glycation end products (AGEs)**. Glycation can lead to cellular damage and premature aging.<sup>1,2</sup>

Researchers have identified three nutrients that have been shown to effectively protect the body's proteins against the glycation process.

The **new Glycation Protection Formula** contains:

- **Carnosine** is a unique dipeptide found in brain, muscle, and other tissues, but its levels diminish with age.<sup>3</sup> It has been shown to interfere with the glycation process and scientists believe that carnosine helps support longevity in our most vital organs.<sup>4,5</sup>
- **Benfotiamine** is vitamin B1 in a highly absorbable, fat-soluble form that can easily penetrate cell membranes.<sup>6</sup> It further protects against glycation and supports healthy blood glucose levels in those already within normal range.<sup>7,8</sup>
- **Pyridoxal 5'-phosphate**, or **P5P**, is vitamin B6 in a metabolically active form shown to protect lipids<sup>9</sup> and proteins against glycation reactions and accumulation of advanced glycation end products.<sup>10,11</sup> **P5P** also "traps" already-formed AGEs and shuttles them out of body cells.<sup>12</sup>

**Glycation Protection Formula** offers a **cost-effective** way to benefit from the complementary glycation-reducing effects of all three compounds.

The suggested dose of two capsules daily provides:

<b>Carnosine</b>	<b>1,000 mg</b>
<b>Benfotiamine</b>	<b>200 mg</b>
<b>Pyridoxal-5-phosphate</b>	<b>100 mg</b>

**Note:** Those already taking **Mitochondrial Energy Optimizer** or **Super Carnosine** do not need this new **Glycation Protection Formula**.

**Non-GMO**



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## Glycation Protection Formula

Item #01987 • 60 vegetarian capsules

	<b>Retail Price</b>	<b>Member Price</b>
1 bottle	\$44	<b>\$33</b>
4 bottles	\$39 each	<b>\$29.25 each</b>

To order **Life Extension® Glycation Protection Formula**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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

# Innovative Support For **INTESTINAL REGULARITY** And **GI COMFORT**

Many individuals experience feelings of bloating, gas, and abdominal discomfort that interfere with their daily lives. These complaints can arise due to factors such as abnormal movements of the intestines' muscles, low-grade inflammation, and disruption of the normal balance of intestinal microorganisms.<sup>1</sup>

**Tranquil Tract™** contains an extract from the *Perilla frutescens* leaf and a patented strain of a probiotic organism called *Saccharomyces cerevisiae* (CNCM I-3856)—each used as culinary and health-promoting ingredients.<sup>2,3</sup> These novel compounds synergistically relieve occasional bloating, pressure, and soothe and balance your intestinal tract.

## **Perilla Leaf Extract**

As an herb in the mint family,<sup>4</sup> *Perilla frutescens* is richly packed with beneficial biomolecules, notably the unique flavonoid vicenin-2.<sup>5,6</sup> In a clinical study of 50 adults, twice-daily capsules of **150 mg of Perilla leaf extract** significantly improved feelings of bloating, gas, fullness, and abdominal discomfort in just four weeks compared to placebo.<sup>5</sup>

## **Saccharomyces Cerevisiae**

*Saccharomyces cerevisiae* is a probiotic that normalizes the intestinal microbial community.<sup>7</sup> Clinical study volunteers who took **500 mg of S. cerevisiae** daily experienced significant improvement in abdominal discomfort after eight weeks.<sup>8</sup>

## **The new Tranquil Tract™**

**Tranquil Tract™** is designed to address specific biological mechanisms related to intestinal discomforts. Two daily vegetarian capsules of **Tranquil Tract™** contain clinically validated novel ingredients shown to deliver unparalleled support for intestinal regularity and GI comfort.

### **Non-GMO**

**Benegut®** is a registered trademark of Vital Solutions.

**Lynside® Pro GI+** is a registered trademark of Lesaffre et Compagnie.

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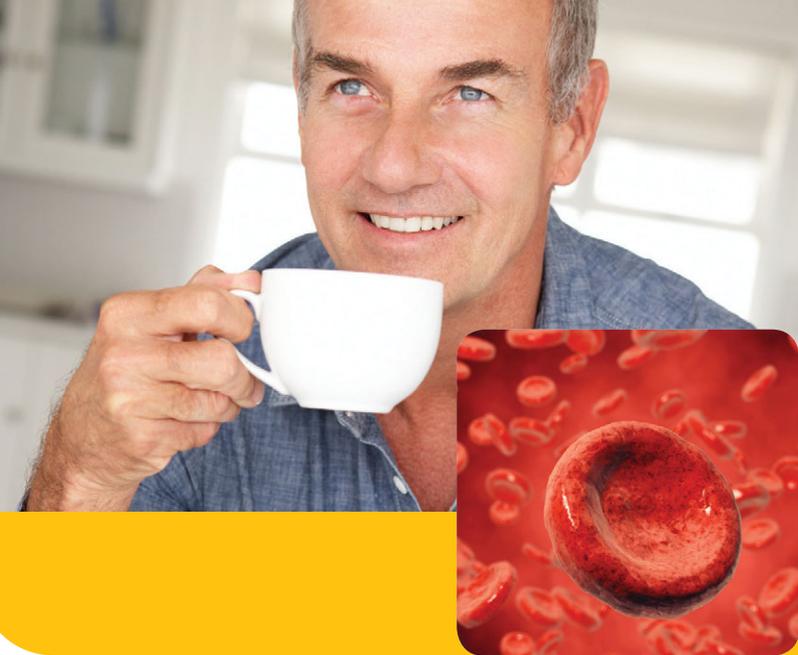


### **Tranquil Tract™**

Item #01917 • 60 vegetarian capsules

	<b>Retail Price</b>	<b>Member Price</b>
1 bottle	\$52	<b>\$39</b>
4 bottles	\$46 each	<b>\$34.50 each</b>

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



## IN THE NEWS

### Moderate Coffee Consumption Linked With Lower Coronary Artery Calcium

The journal *Heart* published the finding of reduced coronary artery calcium scores in men and women with a moderate daily intake of coffee in comparison with those who abstained from the beverage.\*

The current investigation included 25,138 participants in the Kangbuk Samsung Health Study, which involved men and women who received comprehensive examinations yearly or every other year at one of two Korean health care centers. Subjects in the current study were limited to those without cardiovascular disease. Dietary questionnaire responses provided data on coffee intake. Participants underwent cardiac computed tomography scans for coronary artery calcium scoring between 2011 and 2013.

Consuming one to less than three cups coffee per day was associated with an adjusted **13%** lower risk of detectable coronary artery calcium in comparison with those who drank no coffee, and the intake of three to less than five cups was associated with a **40%** lower risk.

**Editor's Note:** Coronary artery calcium is a sub-clinical marker of coronary atherosclerosis and is predictive of future heart disease.

\* *Heart*. 2015 May 1;101(9):686-91.

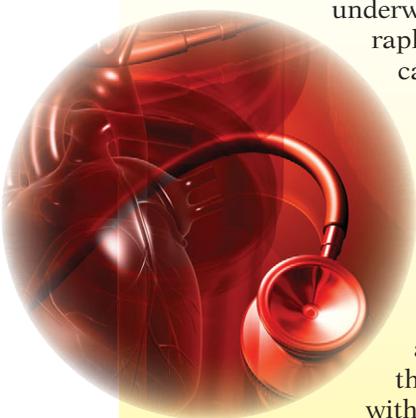
### Broccoli Sprout Extract Shows Promise For Head And Neck Cancer Prevention

The outcome of research reported at the American Association for Cancer Research Annual Meeting revealed a protective effect for an extract of broccoli sprouts against oral cancer.\* The sprouts are high in sulforaphane, a compound that occurs in broccoli and other cruciferous vegetables whose intake has been associated with protection against environmental carcinogens and several cancers.

Acting on positive findings in mice predisposed to the disease, Julie Bauman, MD, MPH, and her associates tested the effect of broccoli sprout extract in 10 healthy human volunteers. The extract was associated with protective changes in the lining of the subjects' mouths, indicating it was well-absorbed and directed to at-risk tissue. These preliminary studies are the basis for a clinical trial that will be conducted next year, which will involve 40 participants successfully treated for head and neck cancer who will be given broccoli seed powder capsules.

**Editor's Note:** "People who are cured of head and neck cancer are still at very high risk for a second cancer in their mouth or throat, and, unfortunately, these second cancers are commonly fatal," noted Dr. Bauman, who is co-director of the University of Pittsburgh Medical Center Head and Neck Cancer Center of Excellence. "So we're developing a safe, natural molecule found in cruciferous vegetables to protect the oral lining where these cancers form."

\* American Association for Cancer Research Annual Meeting. 2015 Apr 18-22.



## Calorie Restriction Protects And Preserves Muscle Mass In Middle Age

According to a study reported in the *American Journal of Physiology-Endocrinology and Metabolism*, reducing the amount of calories you consume can preserve muscle mass and function during middle age and in later years.\*

Researchers at Chang Gung University in Taiwan fed groups of middle-aged and young rats a very high-calorie diet, then compared them to a control group fed a normal diet. The experimental group was slowly eased into their restricted diet, receiving **10%** fewer calories in the first week, **25%** fewer in the second and **40%** fewer for the remainder of the study period.

After 14 weeks, the scientists found that the younger rats had a reduction in muscle mass due to their low-caloric intake while the older rats' muscle mass remained the same despite consuming far fewer calories. The older rodents also scored as well as the younger rats on measures of muscle metabolism.

**Editor's Note:** "To date, caloric restriction is the only non-pharmaceutical and non-genetic strategy that increases the life span of animals and provides health benefits. Regarding skeletal muscle, an organ that is critical for movement and fuel metabolism, studies have reported that CR attenuates age-related muscle loss," the researchers said.

\* *Am J Physiol Endocrinol Metab.* 2014 Apr 14.



## Top Eight Nutrients For Aging Brain

As people age, they may begin to experience a wide range of cognitive issues—from decreased critical thinking to dementia and Alzheimer's. In a recent paper published by the Institute of Food Technology, editor Linda Milo Ohr listed the top eight nutrients that protect the aging brain.\* They include:



**Cocoa flavanols**, which improve function of a specific age-related memory portion of the brain called the dentate gyrus; **omega-3 fatty acids** to improve recognition memory, spatial memory, and adverse response retention; combination of **phosphatidylserine** and **phosphatidic acid**, which two pilot studies show can benefit memory, mood, and cognitive function; **walnuts** to

delay the onset of (or slow progression of) Alzheimer's disease in mice; **citicoline** to protect the brain from free radical damage; **choline** to prevent brain chemistry changes that result in cognitive decline; **magnesium** for those who've experienced a concussion; and **blueberries** to increase neural signaling in brain center.

**Editor's Note:** According to a 2014 study by the American Association of Retired People, brain health is the second most important component of a healthy lifestyle.

\* *ScienceDaily.* 2015 Apr 15.

## Coffee Consumption Could Help Protect Against Multiple Sclerosis

A presentation at the American Academy of Neurology's 67<sup>th</sup> Annual Meeting revealed a protective effect for coffee drinking against the risk of developing multiple sclerosis (MS), a progressive disease of the nervous system.\*

Ellen Mowry, MD, MCR, and colleagues evaluated data from two case-control studies, conducted in Sweden and the United States. The Swedish study compared 1,629 individuals with MS to 2,807 subjects without the disease, and the American study included 584 MS patients and 581 controls. The amount of coffee consumed one, five, or 10 years before diagnosis was ascertained among those with the disease, and was compared to the intake of those without MS during a similar time period.

The researchers observed a **33%** lower risk of MS among subjects who consumed at least six cups coffee per day the year before diagnosis in comparison with those who did not consume coffee at the same point in time.

**Editor's Note:** In the US study, drinking four cups or more per day was associated with a similar benefit. High intake of coffee five or 10 years prior to diagnosis was also associated with significant protection.

\* 2015 Apr 18-25. American Academy of Neurology's 67<sup>th</sup> Annual Meeting, Washington, DC.





### Trial Finds Less Inflammation In Adults Supplemented With Glucosamine/Chondroitin

*PLoS One* reported the outcome of a double-blind, crossover study that found supplementation with chondroitin sulfate and glucosamine hydrochloride, a nutritional combination used to alleviate symptoms of arthritis, was associated with a reduction in C-reactive protein (CRP), a marker of inflammation.\*

The study randomized 18 overweight men and women between the ages of 20 and 55 years to receive **1,200 mg** per day chondroitin sulfate and **1,500 mg** per day glucosamine hydrochloride, or a placebo, for 28 days, followed by an equal number of days during which no supplements were given. This was followed by another 28-day phase in which the treatments were switched. Blood samples collected at the beginning of the study and after each 28-day period were analyzed for serum C-reactive protein and other inflammatory markers, as well as additional factors.

C-reactive protein levels were **23%** lower after treatment with glucosamine/chondroitin in comparison with the placebo.

**Editor's Note:** The Fred Hutchinson Cancer Research Center investigators uncovered a reduction in the cytokine activity pathway following treatment with glucosamine/chondroitin.

\* *PLoS One*. 2015 Feb 26.

### Pancreatic Cancer May Be Linked To Insufficient Vitamin D

An article published in the *Journal of Steroid Biochemistry and Molecular Biology* confirmed an association between increased latitude and greater cloud cover as risk factors for pancreatic cancer.\* Higher latitudes receive less ultraviolet light irradiance than latitudes nearer to the equator, which can result in insufficient vitamin D formation in the individuals who reside there. The study is the first to provide evidence of an association between pancreatic cancer and vitamin D insufficiency.

Using 2008 data from 107 countries, Cedric F. Garland, DrPH, and colleagues at the University of California San Diego examined the association between cloud-adjusted ultraviolet B (UVB) irradiance and pancreatic cancer incidence rates. They found that the risk of cancer of the pancreas was **six times** greater among residents of countries with low UVB irradiance compared to countries with high irradiance, even after adjustment for other risk factors, including alcohol consumption, obesity, and smoking.

**Editor's Note:** "If you're living at a high latitude or in a place with a lot of heavy cloud cover, you can't make vitamin D most of the year, which results in a higher-than-normal risk of getting pancreatic cancer," Dr. Garland observed. "People who live in sunny countries near the equator have only one-sixth of the age-adjusted incidence rate of pancreatic cancer as those who live far from it. The importance of sunlight deficiency strongly suggests but does not prove that vitamin D deficiency may contribute to risk of pancreatic cancer."

\* *J Steroid Biochem Mol Biol*. 2015 Apr 30.



### Selenium Reduces Heart Damage Following Cardiac Arrest

An article in *Critical Care Medicine* describes the finding of a protective effect for selenide, a form of selenium, against reperfusion injury that occurs when blood flow is restored to the heart following cardiac arrest.\*

Mark Roth, PhD, and colleagues examined the effects of selenium in mouse models of ischemia reperfusion injury. In one experiment, one of the animals' coronary arteries was blocked for one hour and blood flow was subsequently restored. Two hours later, Dr. Roth and his associates measured selenium levels in the heart and blood. "We observed that the greater the injury, the greater the loss of selenium in the blood and the greater amount of selenium was found in the heart," he reported.

The team then restricted blood flow to one of the animals' hind limbs and observed a significant increase in selenide in the injured limb after blood flow was restored in comparison with the untreated hind limb.

**Editor's Note:** "This led us to wonder whether supplementing the body's naturally occurring selenide with an infusion of selenide might further protect tissues after a heart attack once blood flow is restored," Dr. Roth added. "We found that administration of selenide after the heart has been deprived of blood flow and before blood flow is restored significantly protects the heart tissue in a mouse model of acute myocardial infarction and reperfusion injury."

\* *Crit Care Med*. 2015 Apr 6.

## Despite Dramatic Increase In Use Of Vitamin D, Toxicity Is Rare

Numerous studies have shown that many Americans have low vitamin D levels and as a result, vitamin D supplementation has increased dramatically over the past decade. Despite this increase, researchers have determined that toxic vitamin D levels are very rare, according to a report published in the journal *Mayo Clinic Proceeding*.\*

Researchers analyzed data collected between 2002 and 2011 from 20,308 patients who took part in the Rochester Epidemiology Project in Minnesota. Of these, only **8%** had vitamin D levels greater than **50 ng/mL**, and less than **1%** had levels over **100 ng/mL**. A vitamin D level greater than **50 ng/mL** is considered high by many mainstream doctors. Vitamin D levels are determined by a blood test called a serum **25-hydroxyvitamin D** blood test. A normal level is **20 to 50 ng/mL**, and deficiency is anything less than **20 ng/mL**, according the Institute of Medicine.

“We found that even in those with high levels of vitamin D over **50 ng/mL**, there was not an increased risk of hypercalcemia, or elevated serum calcium, with increasing levels of vitamin D,” says study co-author Thomas D. Thacher, MD, of the Mayo Clinic.

**Editor’s Note:** Hypercalcemia, or high blood calcium, can occur when there are very high levels of vitamin D in the blood. Too much calcium in the blood can cause weakness, lead to kidney stones, and interfere with the heart and brain, and even be life threatening.

\* *Mayo Clinic Proceedings*. 2015 Apr 29.



## Two-Week Diet Swap Has Dramatic Impact On Colon Cancer Risk

The results of a study published in *Nature Communications* found that African American men who switched diets with men in Africa substantially reduced their risk of colon cancer within **two weeks**, while the African volunteers dramatically **increased** their colon cancer risk within the same time frame.\*

Dr. Stephen O’Keefe of the University of Pittsburgh School of Medicine had 20 rural South Africans and 20 black men in the US swap diets for 14 days. The African group was fed a high-fat, low-protein, low-fiber Western diet, while the Americans ate a high-fiber diet featuring lots of beans and legumes. Fecal and colon consent samples were taken before the study and at the end of the two-week period.

Two weeks was enough to cause the microbiome, the bacteria that live in the intestinal system, to change its metabolism to adapt to the new diet. The rate of cell turnover in the intestinal lining, levels of fiber fermentation, bacterial metabolic activity, and inflammation were all reflected in the new eating patterns of those eating the Western-style diet, indicating increased colon cancer risk. Those eating the African high-fiber diet saw a reversal of colon cancer risk markers.

“These findings are really very good news,” O’Keefe said. “In just two weeks, a change from a Westernized composition of a traditional African high-fiber, low-fat diet reduced biomarkers of cancer risk, indicating it’s never too late to modify risk of colon cancer.”

**Editor’s Note:** Colon or colorectal cancer is the third most common cancer in the world, with nearly 1.4 million new cases diagnosed in 2012. It is the fourth most common cause of cancer death, accounting for over 600,000 deaths a year.

\* *Nature Communications*. 2015 April 29.

## Omega-3 Essential For Brain Development

*The Journal of Neuroscience* reported the discovery of researchers at the University of California Irvine of an important role for the omega-3 fatty acid docosahexaenoic acid (DHA) in fetal brain development.\*

Susan Cohen-Cory and colleagues studied DHA’s effect in the African clawed frog *Xenopus laevis*. Mother frogs were given diets containing adequate or deficient amounts of DHA, and their embryos were examined every 10 weeks for up to 60 weeks. The mothers were then given a diet supplemented with fish oil, which is a good source of omega-3.

After 40 weeks on a DHA-deficient diet, egg cells and tadpoles had reduced DHA levels and at 60 weeks, brain DHA was lowered by **57%**. Deficient frogs were found to have poorly developed optic neurons and a reduction in synapses, which facilitate the transmission of impulses from one neuron to another.

**Editor’s Note:** “Additionally, when we changed the diets of DHA-deficient mothers to include a proper level of this dietary fatty acid, neuronal and synaptic growth flourished and returned to normal in the following generation of tadpoles,” Dr. Cohen-Cory reported.

\* *J Neurosci*. 2015 Apr 15;35(15):6079-92.





# ENHANCE CELLULAR VITALITY

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

The loss of cellular vitality is caused by a number of factors, including mitochondrial problems, glycation, and free radical reactions. Life Extension® formulators created MITOCHONDRIAL ENERGY OPTIMIZER WITH BioPQQ® that helps protect delicate cellular structures and enables cells to perform life-sustaining metabolic processes.

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

- **CARNOSINE:** As humans age, proteins in their bodies become **irreversibly damaged** by **glycation** reactions. *Glycation* can lead to alterations of normal cell function. **Carnosine** is a powerful **anti-glycating** agent, and protects **neurons** against reactive and cytotoxic protein carbonyl species associated with normal aging.<sup>1-5</sup>
- **PQQ:** This breakthrough micronutrient has been shown to trigger the growth of **new** mitochondria in aging cells!<sup>6</sup> PQQ also activates genes involved in protecting the delicate structures within the mitochondria.<sup>7-10</sup>
- **LUTEOLIN:** Systemic inflammation is involved in most consequences of aging. Culprits behind **inflammatory** reactions are pro-inflammatory **cytokines**, such as **interleukin-1** and **tumor necrosis factor-alpha**. *Luteolin* is a flavonoid that has been shown to help suppress these inflammatory cytokines.<sup>11-16</sup>
- **BENFOTIAMINE:** Human mortality studies indicate that *ideal* fasting glucose levels are between **74–85 mg/dL**. Yet many aging people have fasting glucose above **90 mg/dL**, which is less than optimal.<sup>16-19</sup> Benfotiamine protects endothelial cell integrity from the harmful effects of high glucose levels. In addition, benfotiamine supports DNA function.<sup>20</sup>
- **PYRIDOXAL 5'-PHOSPHATE:** Aging results in the formation of **advanced glycation end products** throughout the body. **Pyridoxal 5'-phosphate** is the active form of vitamin B6 that has been shown to protect against both lipid and protein **glycation** reactions.<sup>21-24</sup>

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

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

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

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

<b>Carnosine</b>	<b>1000 mg</b>
<b>ArginoCarn® Acetyl-L-carnitine arginate DiHCl</b>	<b>675 mg</b>
<b>R-Lipoic acid (as microencapsulated Bio-Enhanced®)</b>	<b>150 mg</b>
<b>Benfotiamine</b>	<b>150 mg</b>
<b>Vitamin B6 (as pyridoxal 5'-phosphate)</b>	<b>100 mg</b>
<b>BioPQQ® Pyrroloquinoline quinone disodium salt</b>	<b>10 mg</b>
<b>Luteolin</b>	<b>8 mg</b>
<b>Calcium</b>	<b>230 mg</b>
<b>Sodium</b>	<b>25 mg</b>



Item # 01768

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**To order Mitochondrial Energy Optimizer with BioPQQ®, 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.

**H**undreds of published studies validate the neurological properties of the individual ingredients contained in **Cognitex**<sup>®</sup>.

Scientists wondered what would happen if these cognitive-enhancing nutrients were combined into one formula. An open label study was performed to assess the effects of **Cognitex**<sup>®</sup> on the brain health of elderly human subjects.

Here is a summary from a study that was published in the *Journal of Dietary Supplements* in June 2011:

**Study design:** 26 elderly participants with memory complaints completed the study. Participants were given three capsules daily of **Cognitex**<sup>®</sup> for 12 weeks with assessments at two weeks and 12 weeks.

**Memory** at two weeks:

- Recall: +11.15 points vs. baseline—a **15%** improvement
- Recognition: +8.68 points vs. baseline—a **11%** improvement
- Spatial short-term memory: +19.85 points vs. baseline—a **42%** improvement

**Attention** (sustained and focused) at two weeks:

- Sustained attention: +9.46 points vs. baseline—a **12%** improvement
- Focused attention: +3.77 points vs. baseline—a **4%** improvement

**Visuospatial learning** at two weeks:

- +17.31 points vs. baseline—a **33%** improvement

**Activities of daily living** (executive functions and mental flexibility) scores at two weeks:

- Executive functions: +9.45 points vs. baseline—a **14%** improvement
- Mental flexibility: +9.92 points vs. baseline—a **15%** improvement

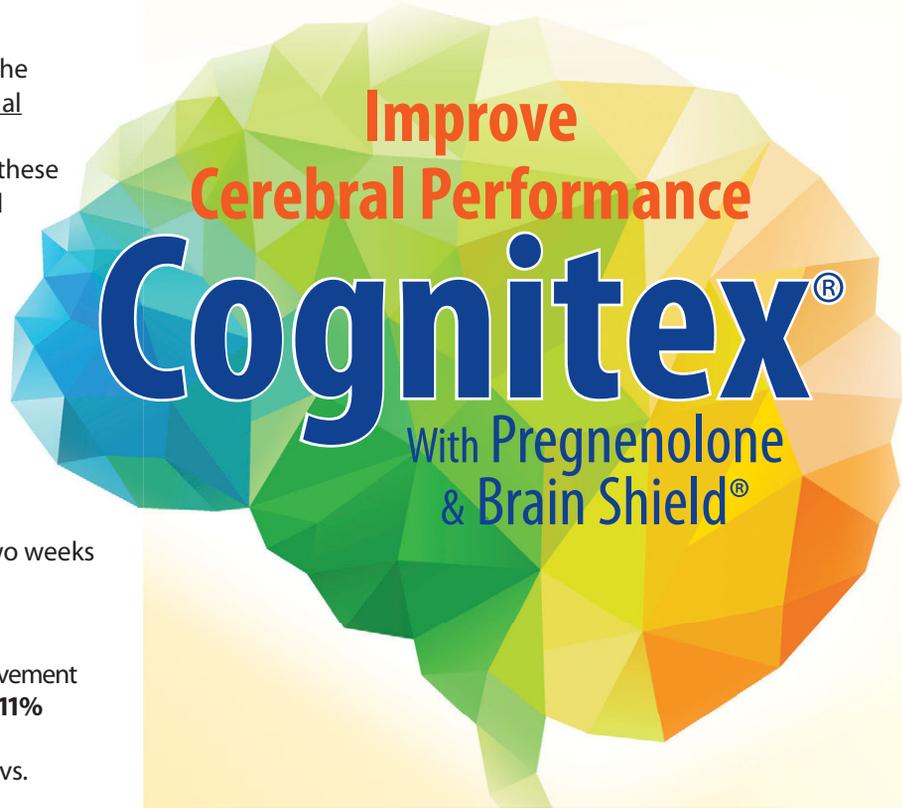
After **10 additional weeks** of **Cognitex**<sup>®</sup> supplementation, further statistically significant improvements in **activities of daily living** (executive functions and mental flexibility) were observed:

- Executive function: +9.15 points vs. two-week scores—a **12%** improvement
- Mental flexibility: +9.73 points vs. two-week scores—a **13%** improvement

**Cognitex**<sup>®</sup> is designed to improve cerebral performance and protect against neurological problems over the long term. This study evaluated the effects of **Cognitex**<sup>®</sup> on boosting brain function over a short-term period.

Sharp-PS<sup>®</sup> is a registered trademark of Enzymotec Ltd. Leucoselect<sup>®</sup> is a registered trademark of Indena S.p.A. Perluxan<sup>®</sup> is used with permission.

Sensoril<sup>®</sup> is protected under US Patents Nos. 6,153,198 and 6,713,092 and is a registered trademark of Natreon, Inc.



The suggested daily dose of three **Cognitex**<sup>®</sup> with **Pregnenolone & Brain Shield**<sup>®</sup> softgel caps provides:

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

**Cognitex**<sup>®</sup> with **Pregnenolone & Brain Shield**<sup>®</sup> (Gastrodin)

Item #01897 • 90 softgels

	Retail Price	Member Price
1 bottle	\$62	<b>\$46.50</b>
4 bottles	\$53 each	<b>\$39.75 each</b>
8 bottles	\$50 each	<b>\$37.50 each</b>

To order **Cognitex**<sup>®</sup> with **Pregnenolone & Brain Shield**<sup>®</sup>, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)



Enjoy the *Health Benefits of a Mediterranean Diet*

# The Most Advanced Omega-3 Available

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

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

## Fish Oil + Olive Fruit Extract

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

## + Sesame Lignans

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

## = Health Benefits of a Mediterranean Diet

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

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



## Super Omega-3

Item #01482 • 120 softgels • Non-GMO

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



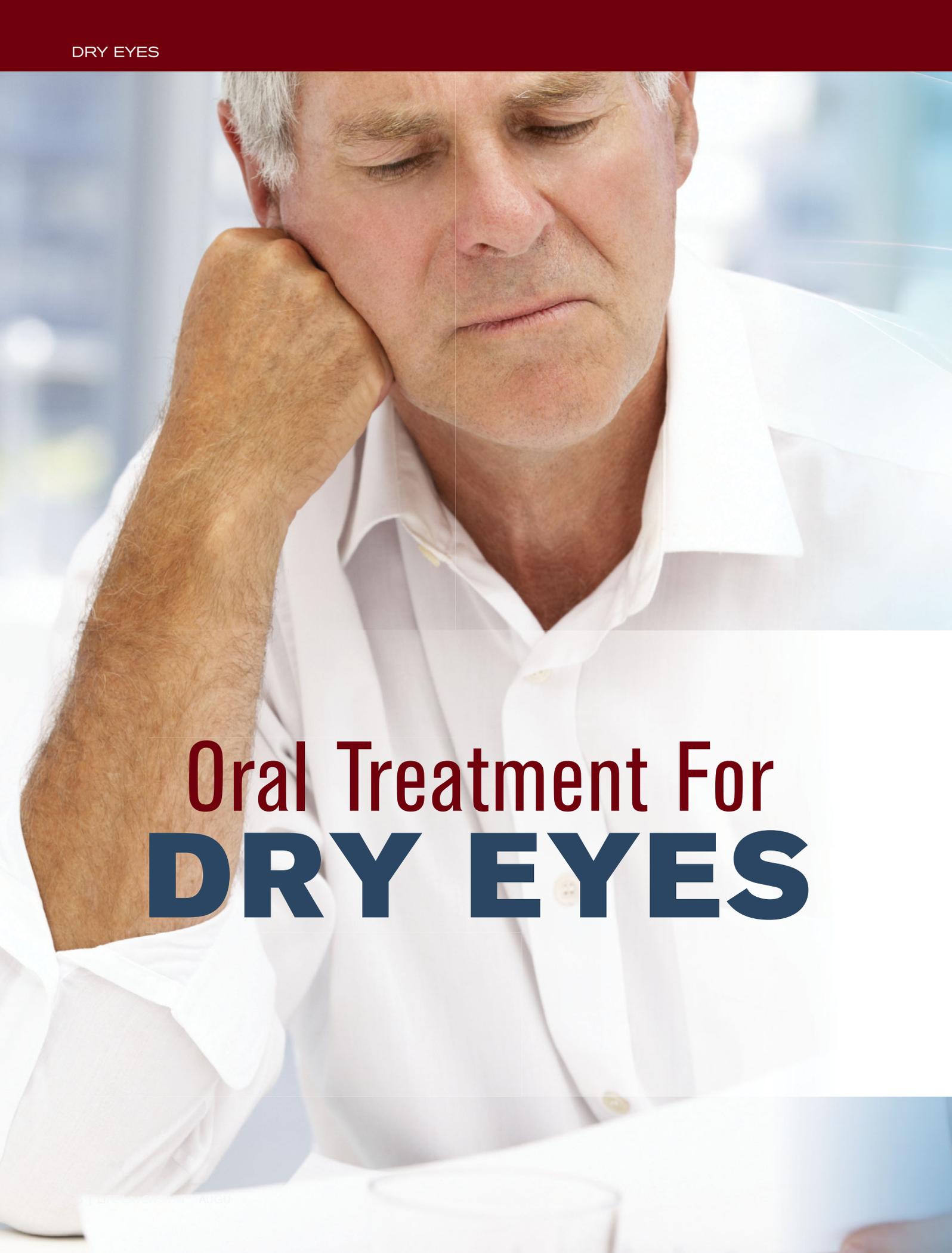
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**Note:** While the health benefits of omega-3s from fish oil are universally recognized, the critical importance of olive oil in maintaining healthy vascular function remains largely overlooked.

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

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# Oral Treatment For **DRY EYES**



Scientists in Japan have made an important discovery that could revolutionize treatment for people suffering from **dry eye syndrome**.

Researchers found that an extract from the South American **maqui berry** can mitigate an underlying factor in **dry eye** syndrome—leading to *significant improvements* in symptoms *and* quality of life.

This represents a noteworthy improvement over commercial **eye drops**, which contain ingredients that some people are allergic to and only provide temporary relief.<sup>1</sup>

This unique **oral approach** is capable of relieving dry eyes by supporting natural tear production. That means you can take a single capsule once daily and experience soothing, youthful tear production day in and day out.

No other known natural oral treatment is capable of boosting **aqueous tear fluid secretion** and enhancing the function of the tear film like this. Patients with **dry eye** symptoms have found lasting improvements in eye comfort.

Compelling scientific studies demonstrate how **maqui berry extract** capitalizes on your body's own natural mechanisms to boost tear output, restore comfort, and add a youthful shine to your eyes.

## What Is Dry Eye Syndrome?

Dry eye syndrome occurs when your body doesn't produce enough tears to keep your eyes moist. The resulting stinging, itching, sensitive eyes can lead to eye damage<sup>2</sup>—and can negatively impact your quality of life. A 2014 study found that people with dry eye syndrome had significantly lower scores on a standard mental health scale and lower quality of life.<sup>3,4</sup>

Dry eye syndrome is incredibly common, especially with advancing age and most especially in older women.<sup>5-7</sup> Recent studies show that dry eye syndrome is on the rise both in America<sup>2,8</sup> and around the world<sup>9</sup>—especially as more and more adults use computers, wear contact lenses, and undergo vision-correcting LASIK or cataract surgery.<sup>2,6,10-13</sup>

Untreated or inadequately treated dry eye syndrome can lead to damage to the **cornea** (the thin outermost region over the lens) and **conjunctiva** (the lubricating cell layer that lines the eyeball and inner surfaces of the lids).<sup>2</sup> Making matters worse, corneal injuries (even a slight scratch) don't heal as well when the eye is dry to begin with.<sup>14</sup>

In fact, dry eye syndrome can produce a vicious cycle in which poor tear production leads to inflammation that damages the eye surface and tear glands, leading to further loss of tear production and further damage.<sup>15</sup>

While no single biological cause of dry eye syndrome is yet known, we do know that chemical stresses and those induced by the high ultraviolet light exposure of the eye are at least in part to blame.<sup>16,17</sup>

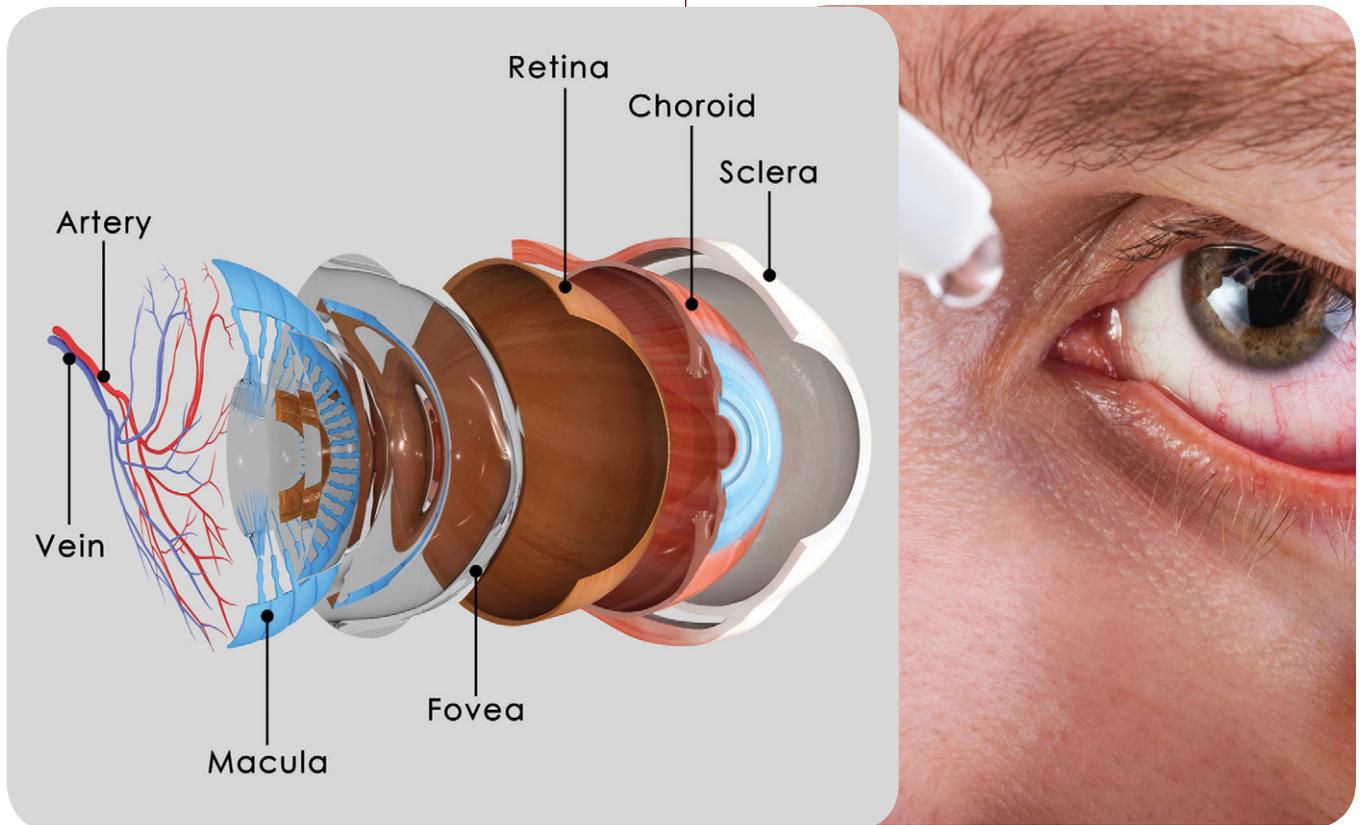
But regardless of the trigger, dry eyes ultimately result from a simple imbalance: too little production of tears, or too rapid evaporation of tears on the surface of the eye.<sup>2,18,19</sup>

That's what makes research into **maqui berry extract** so exciting: This extract directly enhances your body's ability to make tears. This treatment has been found to address the cause of dry eyes—with research proving its use leads to long-lasting improvements in eye comfort.<sup>9</sup>

## The Problem With Eye Drops

It can be difficult to imagine an **oral treatment** having such a profound impact on tear production. This is because mainstream medicine's preferred treatments for dry eye syndrome are in the form of eye drops, both over-the-counter and prescription.

In fact, according to a recent estimate, Americans spend about a third of a **billion** dollars on over-the-counter eye drops, or "artificial tears," each year.<sup>2</sup> That's a substantial investment in a product that produces only short-term relief but that has no long-lasting effect.<sup>20,21</sup>



Eye drops are the most recommended solution mainstream medicine offers for dry eye syndrome. This is problematic for multiple reasons. For starters, commercial, synthetic eye drops are often loaded with chemicals which may cause stinging and other unpleasant side effects.<sup>22,23</sup> They often require frequent re-application in order to provide any relief at all. But that's the least of their problems.

Some eye drops contain a *vasoconstrictor* in order to help with the discomfort of dry eyes. The main ingredient in such drops is usually *tetrahydrozoline*. While it has been shown to improve the redness associated with dry eyes after a single use, its effectiveness diminishes over a 10-day period, potentially encouraging overuse of the product.<sup>24</sup>

Chronic use of tetrahydrozoline has been shown to induce *clinically important* changes to the cornea in up to **27%** of users.<sup>25</sup> Worse, studies show that these eye drops can produce both acute and chronic *conjunctivitis* (inflammation of the conjunctiva, or mucosal layer that surrounds the eyeball).<sup>26</sup> Tetrahydrozoline also has significant toxicity if ingested.<sup>27</sup>

Aside from being extremely expensive, prescription eye treatments such as Restasis® come with side effects ranging from eye redness and discharge to watery eyes, eye pain, feeling of a foreign body in the eye, itching, stinging, and blurred vision. In one study, **54.2%** of subjects experienced eye discomfort while using these drops, and **4.2%** discontinued use entirely because of side effects.<sup>28</sup>

### Getting To The Bottom Of Dry Eyes

The super-thin layer of moisture that covers our eyes is crucial for proper eye lubrication and function. The **tear film**, as it is called, consists of three layers that are interactive: mucous, water, and oil.<sup>2</sup>

- Closest to the eye, directly over the cornea, lies the *mucin* layer, which provides lubrication and protection to the cornea. Insufficient mucous can lead to dry spots on the surface of the eye.<sup>2,29</sup>
- Next, moving outward, is the *watery* layer, which consists of water and salt, and is produced by the **lacrimal glands**.<sup>30</sup>
- At the outermost surface lies the *oily lipid* layer, which is secreted from glands on the edge of your eyelids called the **Meibomian glands**.<sup>31,32</sup>

Two leading characteristics of dry eye syndrome are either insufficient watery tear production from the lacrimal (tear-producing) gland or insufficient oil



What You Need To Know

### Oral Treatment For Dry Eyes

- Dry eye syndrome is common, especially as we grow older.
- Loss of moisture from the eye can lead to serious medical consequences, as well as producing frustration, anxiety, and even depression.
- Over-the-counter eye drops produce only temporary relief.
- Prescription eye drops can be expensive, and may produce side effects.
- Recent discoveries show that protective plant compounds from the rugged South American maqui berry can reduce light-induced damage to the tear glands, enhance tear production, and improve quality of life.
- Omega-3 fatty acids are the perfect pairing with maqui berry extract because they boost production of the oily layer, thereby improving the integrity of the tear film and slowing the evaporation of tears.
- This scientific breakthrough now allows you to soothe dry, irritated eyes with an oral, once-a-day supplement made from maqui berries.

## Why Tears Are Important For Eye Health

We conventionally think of tears as the fluid our eyes produce when we cry. In reality, tear fluid constantly flows across the surface of your eye and is essential for the health of the eye.

Tear fluid contains numerous compounds that are essential for a healthy eye.

Tear fluid contains **glucose**, which nourishes the *cornea*, the clear layer that covers the lens, iris, and pupil.<sup>9</sup> Because the cornea lacks its own blood vessels,<sup>42,43</sup> nutrition only comes from the fluids that have direct contact such as tears and fluid inside the eyes.<sup>44</sup>

Tears are also rich in protective compounds such as **ascorbic acid** (vitamin C), **glutathione** (a sulfur-containing, free-radical fighting compound essential in most tissues), and several vital **amino acids** with the capacity to fight free radicals. This is important because the corneal surface, which is devoid of blood flow, is directly exposed to air, where oxidation is brisk.<sup>9,45</sup>

In addition, tear fluid also contains **antimicrobial compounds**, particularly a protein called *lipocalin*, which tightly binds to compounds secreted by bacteria and scavenges foreign oily materials that could otherwise damage the cornea.<sup>9</sup>

With this in mind, you can see how simply adding saline drops to your eyes to treat dry eye syndrome, while adding moisture to the eye, would do nothing to support the nourishment necessary for eye health. The only way to do that is to increase your body's own natural tear production *from the inside out*.

That's exactly what **maqui berry** does, boosting tear fluid secretion and enhancing the actual function of the tear film.



MAQUI BERRY

production from the Meibomian (oil-producing) glands.<sup>17</sup> The oily layer covers the watery layer in order to prevent evaporation of water from the surface of the eye. Insufficient oil production, then, permits excessively rapid loss of watery tears from the layer below.

The most obvious and most natural way to relieve dry eye symptoms is to increase the rate of tear production in the lacrimal glands. Recent studies show that **maqui berry extract** can get to the root of dry eye syndrome by *boosting* tear production. This is accomplished from inside your body—no eye drops, no side effects, no discomfort—just soothing relief for dry, irritated eyes.

## How Maqui Berry Extracts Boost Tear Production To Soothe Dry Eyes

**Maqui berries** are hardy natives of temperate rainforest regions of Chile and adjacent regions of southern Argentina.<sup>33-35</sup> While little known in North America, these small berries have a long history of use in traditional medical systems of the region, where they have been used to treat diarrhea, inflammation, and fever.<sup>34,36</sup>

Japanese scientists were the first to isolate the active components and to show their power in fighting dry eye syndrome.<sup>9,37</sup>

Research now shows that a standardized extract of **maqui berries** (*Aristotelia chilensis*) contains plant chemical compounds (anthocyanins) known as **delphinidins** that have two powerful eye-protective actions:

- They inhibit damage to delicate tissues like the **photoreceptor cells**, caused by light stimulation, and
- They shield eye structures from constant exposure to reactive oxygen species.<sup>37</sup>

Together, these effects reduce chronic low-grade injury to the **lacrimal glands**, improving its ability to make tears. Additional mechanisms are not yet known, but animal studies show that delphinidins restore tear production by the lacrimal glands.<sup>19</sup>

Researchers examined the effects of maqui berry extract in a rat model of dry eye, in which animals' blink reflex was suppressed to allow excessive evaporation from the eye surface. They found that pre-treatment with maqui berry extract *significantly prevented* reduction of tear secretion that was seen in a control group.<sup>19</sup> The larger the dose, the greater the effect of the extract, with **40 mg/kg** per day demonstrating the maximum effect. And, while control animals

experienced considerable damage to their corneas in terms of corneal opacity from the prolonged dry eye periods, the animals treated with **maqui berry** extract had clear eyes and no additional corneal opacities throughout the study period.

### Human Study Demonstrates Long-Term Benefits

People who suffer from dry eye syndrome know that its symptoms—including burning, eye fatigue, sensitivity to light, blurred vision, and stringy mucous—can have a significant impact on their quality of life.<sup>2</sup> With this in mind, Japanese researchers wanted to determine if **maqui extract** could positively impact quality of life and eye comfort in addition to increasing tear production. They found it can do both.

For this impressive study, 13 healthy volunteers with moderately dry eyes (according to Schirmer's test) took either **30** or **60 mg** of maqui extract daily and were evaluated at 30 and 60 days.<sup>9</sup>

After 30 days, subjects in both groups experienced similar improvement in tear production, with the **30 mg** group experiencing a **50%** improvement, and the **60 mg** group experiencing a **48%** improvement. However, after 60 days, it became clear that the higher dose was more effective for long-term use.

After 60 days of treatment, tear production decreased towards baseline levels in the **30 mg** group. By contrast, subjects taking **60 mg** daily experienced a *significant, sustained improvement* from baseline of **45%** in tear production.



### How Blinking Impacts Dry Eye Syndrome

Dry eye syndrome is a common age-related eye problem. However, a number of increasingly common factors have led to skyrocketing numbers of dry eye syndrome sufferers even in much younger individuals. These include dry environments, contact lens use, LASIK surgery, computer use—and even eye drops themselves.

What many of these triggers have in common is that they lead to an *increase in tear concentration* ultimately caused by a reduction in blinking rate.<sup>5,6,11,12,15,52,53</sup>

Blinking is nature's own squeegee. With each blink, the eyelid sweeps across the eye, distributing tear fluid and brushing away microscopic residue. But intense mental concentration—especially on a computer screen, for example—slows the blinking rate significantly.<sup>13,54</sup>

Reduction in blinking rate leads to excess evaporation of tear water from the surface of the eye.<sup>53</sup> Contact lenses are also strongly associated with increased evaporation of tear water.<sup>52</sup>

Air pollution, tobacco smoke (both first- and second-hand), and some drugs increase the oxidative stress at the eye's surface, while LASIK surgery, a miraculous boon to millions, has the side effect of reducing tear production.<sup>2</sup>

The total amount of tears produced per day is tiny, normally ranging from less than **1 mL** to just over **3 mL** per eye.<sup>9</sup> That minute rate of tear production, coupled with the surface area of the eye, poses a huge problem in physics: Rapid evaporation of pure water can leave the tear fluid excessively **concentrated**.<sup>5,15,55</sup> And that, in turn, impairs many of the tear film's functions, not the least of which is an insufficient amount of liquid on the delicate eye surface.

By boosting tear fluid secretion and enhancing the actual function of the tear film, **South American maqui berry extract** is able to restore the composition of your tears, leading to relief from the symptoms of dry eye syndrome.



### Improvements In Quality Of Life

These same patients also completed a “dry eye-related quality of life score” test (DEQS), designed to measure the impact of bothersome eye symptoms themselves, as well as their impact on daily life.<sup>9</sup> The lower the **score** the better, with a maximum total score of 60.

Both dosing groups had a total composite score (eye and daily life symptoms) of about 40 at the beginning of the study.<sup>4</sup> Once treatment began, the scores fell rapidly in both groups.

In the group taking **30 mg** per day, the score dropped to almost **22** after 30 days, but only dropped an additional **2 points** by 60 days. The higher dose group saw continued improvement as time went on. In the group taking **60 mg** per day, the score dropped to almost **27** after 30 days—and further dropped down to just **11 points** after 60 days. That represents a **72% reduction** (improvement) from baseline!

This supports the longer-lasting effects of the *higher* dosage seen on the test of tear production as well.

This human study documented dramatic enhancement in both tear fluid secretion and eye comfort using an **oral extract** preparation instead of eye drops. **Maqui berry extract** is a natural approach

that is capable of changing the way the lacrimal glands function to boost tear fluid secretion and enhance the actual function of the tear film. Clinical results show lasting improvements in eye comfort.

But there’s evidence that you may be able to add still another layer of protection for your eyes, in the form of **omega-3 fatty acids**, as we’ll now see.

### The Perfect Pairing: Maqui Extract And Omega-3s

Omega-3 fatty acids are primarily known for their cardiovascular and neuroprotective benefits.<sup>38</sup> But recent data show that supplementation with omega-3s can have a beneficial impact on dry eye syndrome by improving tear film breakup time and enhancing oily tear secretions (as measured by Schirmer’s test).<sup>39</sup>

“Tear film breakup time” is a term ophthalmologists use to indicate how rapidly the normally smooth tear layer disperses, leaving the eye exposed to dryness and potential injury.<sup>2,40,41</sup> When the tear film breakup time is *less* than the rate of blinking, the eye suffers intermittent periods of exposure, leading to the symptoms of dry eye syndrome.

In a compelling study, patients with **dry eye syndrome** took a **500 mg** dose (**325 mg** EPA and **175 mg** DHA) of omega-3 fatty acids twice daily. After three months, the supplemented patients experienced a near **20-fold increase** in tear film breakup time and a more than **4-fold** improvement in symptom scores compared to placebo.<sup>41</sup>

### Schirmer’s Test

Schirmer’s Test is a simple test that determines the amount of watery fluid produced by the lacrimal glands.<sup>56</sup> It determines if the eye is producing enough tears to keep it moist. Schirmer’s Test determines tear production rate and can be used to evaluate therapies that aim to increase lacrimal glands secretion or increase Meibomian glands function—either will increase the amount of fluid on the eye surface.<sup>57</sup>

To conduct the Schirmer’s Test, the clinician places a thin strip of filter paper against the inner surface of the lower eyelid, which then draws the liquid up like a wick. The distance that the liquid travels (measured in mm over a fixed period of time) is an indicator of the amount of liquid in the eye—the greater the distance the liquid travels, the more abundant the moisture in the tear film.

These findings make perfect sense in light of the importance of the lipid layer secreted by the **Meibomian glands**, and suggests that pairing omega-3 supplementation with maqui berry extract would improve the overall tear layer composition by enhancing watery tear production (maqui extract) and improving the quality of the lipid layer (omega-3 fatty acids).

## Summary

**Dry eye syndrome** is common, especially in older adults. Its effects can impact your mental and physical well-being.

The underlying issues involved in dry eye syndrome are simple: Too little watery tear production in the lacrimal glands means not enough water gets into your tears to fully moisten the eye surface, while too little oil production in the Meibomian glands means too much water evaporates from the eye surface, again leaving it exposed to damage.

These forces can change the very composition of your tears, leaving them overconcentrated and incapable of properly lubricating the surface of your eyes.

Now a natural, orally-administered nutrient can soothe your eyes from the inside out by stimulating healthy tear production to restore your eye's delicate ecosystem.

Extracts of the South American **maqui berry** have been found to **boost tear fluid** secretion and enhance the actual function of the **tear film**. For additional support, omega-3 fatty acids have been found to help slow tear evaporation from the eye.

**Maqui berry extract** represents an effective approach to restore comfort and composition of one's tears and eye moisture. ●

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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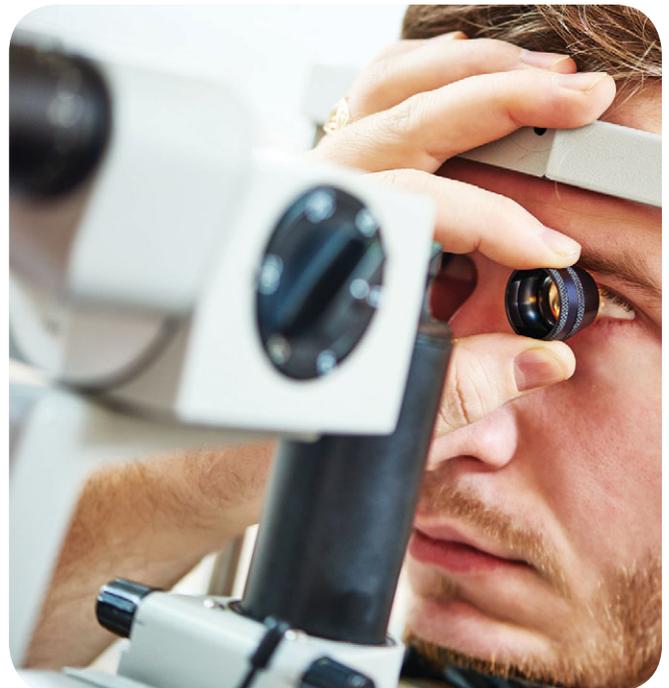
## Common Causes Of Dry Eye Syndrome

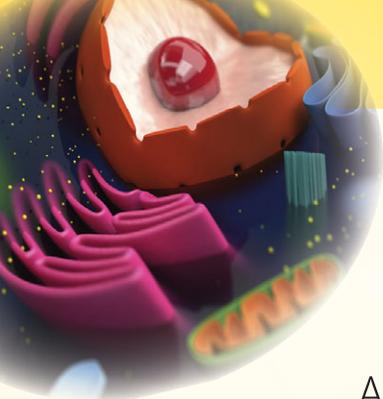
Dry eye syndrome has a host of triggers and potential causes, which include the following factors:<sup>2,16,18,46-51</sup>

- Aging
- Dry environment (low relative humidity/high or low temperatures)
- Hormonal changes, including menopause
- Contact lens use
- Eyelid inflammation (e.g., from allergies)
- LASIK surgery
- Auto-immune diseases (e.g., rheumatoid arthritis, lupus, Sjogren syndrome)
- Alcohol use
- Pollution (including smoking)
- Computer or other screen use
- Medications (e.g., antihistamines, antidepressants)
- Preservatives in eye drops

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# AMPK Activator

## A NEW PARADIGM IN CONTROLLING AGING

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

### Importance Of AMPK

Studies show **increased** AMPK activity supports reduced fat storage,<sup>6</sup> new mitochondria production,<sup>7</sup> and the promotion of healthy blood glucose and lipids already within normal range.<sup>4</sup>

### Gynostemma Pentaphyllum

An extract of the plant *Gynostemma pentaphyllum* promotes **AMPK** activation!<sup>8-10</sup> In one of many studies showing a wide variety of benefits, researchers documented a 1-inch reduction in **abdominal circumference** in overweight individuals who took **450 mg** daily of *G. pentaphyllum* extract for 12 weeks.<sup>11</sup>

### Trans-Tiliroside

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

### The Anti-Aging Discovery That Cannot Be Overlooked

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

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

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



Item # 01907

#### References

1. *J Proteome Res.* 2011 Apr 1;10(4):1690-7.
2. *Circ Res.* 2007 Feb 16;100(3):328-41.
3. *J Mol Med (Berl).* 2011 Jul;89(7):667-76.
4. *Physiol Rev* 2009 89:1025-78.
5. *Age (Dordr).* 2014 Apr;36(2):641-63.
6. *Clin Sci (Lond).* 2013 Apr;124(8):491-507.
7. *Proc Natl Acad Sci USA.* 2002 Dec 10;99(25):15983-7.
8. *Bioorg Med Chem.* 2011 Nov 1;19(21):6254-60.
9. *Carbohydr Polym.* 2012 Jul 1;89(3):942-7.
10. *Biotechnol Lett.* 2012 Sep;34(9):1607-16.
11. *Obesity (Silver Spring).* 2014 Jan;22(1):63-71.
12. *Diabetes Res Clin Pract.* 2011 May;92(2):e41-6.
13. *Prev Nutr Food Sci.* 2013 Jun;18(2):85-91.
14. *J Nutr Biochem.* 2012 Jul;23(7):768-76.
15. *Bioorg Med Chem Lett* 2007;17(11):3059-64.

#### Non-GMO

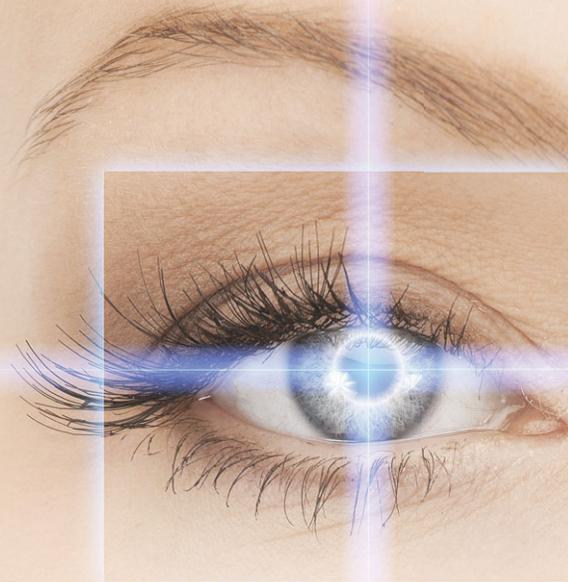
ActivAMP® is a registered trademark of Gencor.

To order AMPK Activator,  
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.

# MacuGuard<sup>®</sup>

Provides  
Powerful  
Eye Protection



It's not easy to get all the vital nutrients you need to take care of your eyes from food alone. Fortunately, **MacuGuard<sup>®</sup> Ocular Support with Astaxanthin** contains the nutritional building blocks necessary to maintain the structural integrity of your eyes.

**MacuGuard<sup>®</sup> Ocular Support with Astaxanthin** maintains eye health in many ways:<sup>1-7</sup>

- Supports lutein concentration in the eye
- Supports efficient absorption of lutein in the bloodstream
- Provides phospholipids to enhance lutein in the cell membrane
- Maintains zeaxanthin concentrations in the eye
- Provides *meso*-zeaxanthin, which is difficult to obtain from dietary sources
- Contains cyanidin-3-glucoside, shown to help with night vision.
- Provides astaxanthin to protect against free radical-induced DNA damage, which may play a protective role against eye fatigue.

**Contains soybeans.**

**LuteinPlus<sup>®</sup>** and **Mz<sup>®</sup>** are registered trademarks of Nutriproducts Ltd., UK, licensed under U.S. Patent 8,623,428.

## MacuGuard<sup>®</sup> Ocular Support with Astaxanthin

Item #01886 • 60 softgels

	Retail Price	Member Price
1 bottle	\$42	<b>\$31.50</b>
4 bottles	\$38 each	<b>\$28.50 each</b>

Suggested dose is one softgel daily with or without food. Each bottle of **MacuGuard** provides a **two-month** supply.



**References:**

1. *Photochem Photobiol.* 2002;68(1):39-44
2. *Nutrients.* 2013 April;5(4):1169-1185.
3. *Nutr Res.* 2009;29(8):588-95.
4. *Nutrition.* 2011 Sep;27(9):960-6.
5. *Lipids.* 2009 Sep;44(9):799-806.
6. *Mol Cell Biochem.* 2006 Jan;281(1-2):103-10.
7. *J Pharm.* 2011 Jun 30;412(1-2):99-105.

To order **MacuGuard<sup>®</sup> Ocular Support with Astaxanthin**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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

# Promote Tear Production From The Inside Out

A common problem affecting people as they age is the onset of eye discomfort.

Environmental factors, computer use, and contact lenses also increase the chances of dry, irritated, itchy eyes.<sup>1-4</sup>

Life Extension® introduces **Tear Support with MaquiBright®**, a unique *oral* supplement that supports eye health from the inside out for systemic, continuous comfort.

Instead of repeatedly adding artificial tears in the form of drops throughout the day, you can now take one vegetarian capsule in the morning to help support eye health for an entire day!<sup>5</sup> **Tear Support with MaquiBright®** supports your body's natural mechanisms to promote production of your own *natural* tears.

The secret lies in this proprietary **maqui berry extract's** supply of compounds called *delphinidins*, which support natural defenses against chemical and light stimulation and ultraviolet (UV) light.<sup>5</sup> In one study, healthy volunteers taking **60 mg** of this extract daily experienced a **45%** increase in tear production.<sup>6</sup>

**Tear Support with MaquiBright®** allows you to get your eyes back to feeling and looking their best.

#### Non-GMO

#### References

1. *BMC Res Notes*. 2014;7:420.
2. *Drugs Aging*. 2008;25(2):105-18.
3. *Clin Ophthalmol*. 2009;3:405-12.
4. *Eur J Ophthalmol*. 2015 Feb 12;25(2):85-9.
5. *Food Chem*. 2013 Aug 15;139(1-4):129-37.
6. *Panminerva Med*. 2014 Sep;56(3 Suppl 1):1-6.

**MaquiBright®** is a registered trademark of Maqui New Life S.A, Chile and Oryza Oil & Fat Chemical Co., Ltd., Japan.



To order **Tear Support with MaquiBright®**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

#### Tear Support with MaquiBright®

Item #01918 • 30 vegetarian capsules

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



# HUMAN Age-Reversal Research





For the first time in medical history, **human** studies are being designed for the purpose of inducing meaningful reversal of pathological aging processes. Said differently, these clinical trials aim to alter older humans so that they function as much **younger** individuals.

Even modest success of these studies will result in a paradigm shift that will impart enormous societal benefits, such as sparing Medicare from insolvency.

If I were asked even a few years ago if significant human **age-reversal** research was feasible, I would have said no. Virtually all attempts to slow aging are conducted in the laboratory setting, far removed from delivery to elderly people who have only a few years of life remaining.

To give you an idea of advances happening at prestigious universities, a protein found in the blood of young animals called **GDF-11** is inducing systemic **rejuvenation** effects on bone, muscle, heart, blood vessels, and brains of older animals.

“GDF” stands for **growth differentiating factor**. It functions to turn “on” senescent **stem cells**, which results in a restoration of youthful structure and function to senile tissues. This same protein (GDF-11) is found in young **humans** as well as animals.

**Harvard, Stanford**, and other universities are conducting remarkable studies showing **age reversal** in animal models. Researchers from these centers of medical innovation are optimistic that this approach might be applicable to **humans**.

We at **Life Extension®** will not stand by while **6,000** Americans perish each day from **age-related** illnesses. Fortunately, we are no longer alone in wanting to **accelerate** the pace of human **age-reversal** research. Joining us are physician-scientists and some prominent individuals who are aggressively seeking to hurry up these technologies for people who are **“aging to death.”**

The PowerPoint presentation that follows next describes an *age-reversal* study that offers potential for quick clinical results, meaning the therapy could be readily implemented to spare aging individuals from premature extinction.

While the **Life Extension Foundation** is committing funding for these projects, we need help from our supporters.

I look forward to hearing your feedback after seeing the following PowerPoint presentation that begins on the next page.

To receive regular updates about this unprecedented human age-reversal study, sign up at:

**[LifeExtension.com/stem](http://LifeExtension.com/stem)**

## Historic Human Clinical Study— Scientists On Verge Of Something Big!

In the **January 2015** edition of *Life Extension*® magazine, you were promised announcements about breakthrough opportunities for the reversal of age-related disease.

While supplements that Life Extension members have been taking for decades provide substantial protection, never before have we had such an arsenal to counteract the multiple underlying factors that characterize **degenerative aging**.

A radical shift has emerged on the scientific front. This has prompted *Life Extension* to help coordinate the first clinical study of its kind that will attempt to significantly reverse aging in frail elderly humans.

The method employed will be to recruit **young** donors and mobilize their bone marrow stem cells.

The blood of these **stem cell-mobilized** individuals will be separated into a plasma concentrate that will contain factors thought to convey youthful health and vitality.

These **youth factors** will then be *transfused* into **elderly** individuals with the objective of inducing meaningful and sustained restoration of youthful function and tissue structure.

To date, the **Life Extension Foundation** has donated **\$800,000** to the **South Florida Bone Marrow/Stem Cell Institute** to study the use of this technology in advanced **cancer** patients. Life Extension is providing additional funding to get this project off the ground. In order to aggressively move this project forward, we need to raise pledges from those who want to see this game-changing technology emerge for humanity and themselves.

The following pages are a PowerPoint presentation that provides an overview of the **scientific rationale** for conducting this unprecedented age-reversal clinical study.

### Novel Age-Related Human Clinical Study



## We Know More About Aging Than Our Ancestors Did About Smallpox

Scientists today have considerably more knowledge about **aging** than what doctors knew about smallpox when the **smallpox vaccine** was discovered in **1796**. Yet aging is still the leading cause of disease and death in the civilized world. The good news is that there are at least some ways to slow down pathological aging, but no practical protocol to meaningfully reverse it.

Stem cell deactivation

Endothelial dysfunction

Telomere attrition

Gene expression

Inflammation

Glycation

AMPK activity

DNA repair

Lipofuscin deposition

Loss of protein synthesis

Immune senescence

Mitochondrial dysfunction



## Smallpox And Aging

Smallpox was eradicated in regions of the world where universal vaccination was employed. This was accomplished before scientists knew there was a smallpox **virus**. There may be a way to reverse aging before knowing what specific components of young blood are responsible.

- **Edward Jenner** and **Louis Pasteur** developed the first **vaccines** to protect against **viral** infections.
- They did not know that **viruses** existed.
- There may be a way to treat human **aging** using mobilized bone marrow components from young blood donors.
- If this succeeds in **reversing aging**, we may not know what **young** blood components are responsible.
- If old people are made younger, does it matter?



Edward Jenner



Louis Pasteur

## What is Parabiosis?

**Parabiosis** describes the surgical attachment of two living organisms, so that they share a common vascular system with continuous exchange of soluble factors at physiological levels.

- Para means: “alongside.”
- Bios means: “life.”

**When young blood is circulated into old animals, there is a systemic *rejuvenation* effect.**

Parabiosis research has demonstrated profound **age-reversal** effects in laboratory **animals**. It may do the same for **humans**.

## Two Ways Of Deriving Parabiosis Rejuvenation

Heterochronic Parabiosis



Young Plasma Injection



A proposed human study will inject stem cell-mobilized plasma components (and other pro-youth factors) into elderly people with the objective of inducing meaningful age reversal.

For the proposed human clinical trial, bone marrow-enriched plasma from young donors will be injected into elderly people. Other “**pro-youth**” factors may be added.

## Parabiosis Induces Longevity

- Researchers at the University of California in **1972** studied the life spans of old-young rat pairs.
- Older partners lived four to five months longer than controls, suggesting that circulation of young blood might affect longevity.
- This life span extension is the equivalent of **10 to 12 human years**.

*New York Academy of Sciences. 1972 Nov;34(7):582-7.*

Parabiosis was shown to confer longevity 43 years ago. Newer studies have identified specific rejuvenating factors contained in young blood.

**nature**  
the international weekly journal of science

January 21, 2015

*International Weekly Journal of Sciences*

“By splicing animals together, scientists have shown that **young** blood *rejuvenates* old tissues. Now, they are testing whether it works for humans.”

Recent studies are demonstrating a powerful age-reversal effect in response to delivering young blood to old animals.

**nature**  
the international weekly journal of science

January 21, 2015  
*International Weekly Journal of Science*

“By joining the circulatory system of an old mouse to that of a young mouse, scientists have produced some remarkable results. In the **heart, brain, muscle,** and almost every other tissue examined, the blood of young mice seems to bring **new life to aging organs,** making old mice stronger, smarter, and healthier.”

These results indicate the potential for systemic (whole body) age reversal.

**nature**  
the international weekly journal of science

January 21, 2015  
*International Weekly Journal of Science*

**“I think it is rejuvenation...  
We are restarting the aging clock.”**  
Tony Wyss-Coray, neurologist at Stanford University.

**“We’re not de-aging animals...but are  
instead helping them to repair damage...  
We’re restoring function to tissues.”**  
Amy Wager, a stem-cell researcher at Harvard University.

Mainstream scientists opine on potential of parabiosis-type technology.

nature  
the international weekly journal of science

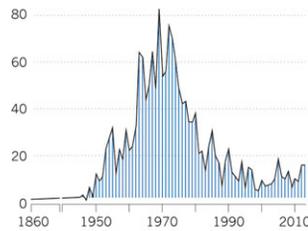
January 21, 2015 • International Weekly Journal of Science

## Share and share alike

Parabiotic experiments, in which two animals share a common bloodstream, were first attempted in the 1860s. By connecting animals with different qualities or conditions, scientists can investigate how blood factors, such as cells, proteins or hormones, influence health. In recent years, a few researchers have looked at heterochronic (old and young) mouse pairs to understand how young blood helps to repair many tissues.

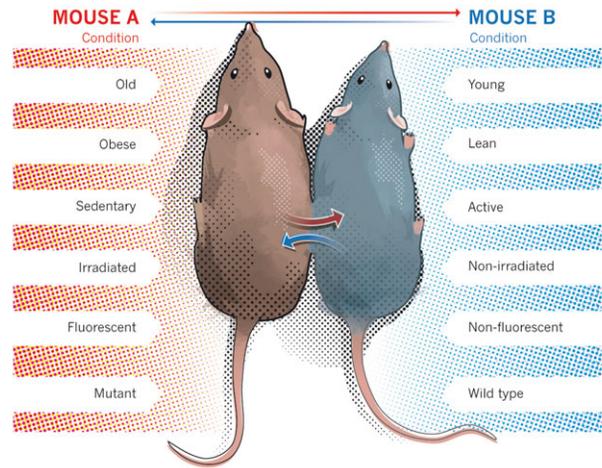
### Publications on parabiosis

Parabiosis gained popularity during the 1960s and 1970s, but eventually fell out of wide practice.



### A simple surgery

A veterinary surgeon will anaesthetize the animals, peel away a thin layer of skin along their sides and stitch or staple the exposed surfaces together. Wound-healing processes join the bloodstreams through a capillary network, and in one to two weeks, the animals are pumping each other's blood.



Parabiosis research peaked in the early 1970s and then stopped inexplicably. A resurgence of interest has ensued over the past three years.

## What We Know Today:

# Young Blood Rejuvenates Old Animals

Numerous published studies now validate the rejuvenating effects when young blood is infused into old animals.

## Parabiosis = Rejuvenation

Young blood restored **muscle** and **liver cells** in the older mice. Young blood factors caused aged **stem cells** to start dividing again.

Young blood also resulted in enhanced growth of **brain cells** in the old mice.

*Nature*. 2005 Feb 17;433(7027):760-4.

Young blood contains proteins that prompt old stem cells to start dividing again, which has a systemic age-reversal effect in animal studies.

## Systemic Rejuvenation

**University of Cambridge** and **Harvard** researchers show that young blood promotes repair of damaged spinal cords in older mice.<sup>1</sup>

**Harvard** neuroscientist finds that young blood sparks the formation of new neurons in the brain and olfactory system.<sup>2</sup>

**Brigham and Women's Hospital** in Boston, Massachusetts, cardiologists find that parabiosis reverses age-related thickening of the walls of the heart.<sup>3</sup>

1. *Cell Stem Cell*. 2012;10:96-103.

2. *Science*. 2014;344:630-4.

3. *Cell*. 2013;153:828-39.

Researchers at prominent universities are validating multiple age-reversal effects that occur when young blood is transfused into old animals.

## Rejuvenation Proteins In Young Blood

**GDF-11** (growth difference factor 11) is abundant in young blood but not old blood. It causes **stem cells** in old animals to turn back on.

Infusions of GDF-11 physically increase the strength and stamina of muscles.

Infusions of GDF-11 reverse DNA damage inside muscle **stem cells**.<sup>1</sup>

A similar protein in fruit flies was shown to **extend life span** and prevent muscular degeneration.<sup>2</sup>

1. *Cell*. 2013;153:828-39.

2. *Cell*. 2014;7:1481-94.

**GDF-11** is a protein found in young human blood that disappears as people age. Transfusing bone marrow-mobilized young blood components into older people is likely to yield high levels of GDF-11.

## Regenerating Heart Muscle

**Bone marrow**-borne hematopoietic cells have been shown to benefit the ischemic myocardium.

A **2015** published study combined pulse-chase labeling and parabiosis in the mouse model to show that circulating cells derived from the parabiont expressed cardiac-specific markers in the injured myocardium.\*

\* *Circ Res*. 2015 Feb 13;116(4):633-41.

Five million Americans suffer today with congestive heart failure. Bone marrow-mobilized young blood may reverse this pathology.

## Rejuvenating Old Blood Vessels

- Young blood reinvigorated blood vessels of the neurogenic niche in the brain of old mice.
- The volume of cerebral blood vessels almost doubled. They formed new branches and allowed more blood to flow through.
- This, in turn, supported a robust increase in the number of neural stem cells in a brain area that is a source of new neurons throughout life but runs dry in aging.

In Revival of Parabiosis, Young Blood Rejuvenates Aging Microglia, Cognition ALZFORUM, May 5, 2014.

Endothelial dysfunction is the Achilles tendon of aging humans and a causative factor in most strokes. Young blood may reverse this pathological condition.

## HARVARDgazette

Harvard stem cell researchers say a protein can make body parts function in old mice much as they did when younger.

Harvard Stem Cell Institute-May 4, 2014

Making old tissues function in a younger fashion.

## Reversing Muscle Loss

Beneficial effects are not limited to the brain and the operative factors can be identified, as one study reports that growth differentiation factor (GDF-11) empowers young blood to bestow regenerative oomph to old muscle.

In Revival of Parabiosis, Young Blood Rejuvenates Aging Microglia, Cognition ALZFORUM, May 5, 2014.

Sarcopenia (loss of muscle mass) is epidemic in elderly populations and is a factor in frailty encountered by humans as they grow old. Young blood components might reverse sarcopenia.

## Restoring Youthful Cerebral Structure

Pairing an 18-month-old mouse with a 3-month-old mouse reversed **microglial aging** in the brain. In the electron microscope, the **old** mice's microglia looked like those of **young** mice.

In Revival of Parabiosis, Young Blood Rejuvenates Aging Microglia, Cognition ALZFORUM, May 5, 2014.

Microglia are a type of cell of the brain and spinal cord that act as the first and main form of active immune defense in the central nervous system.

## Extending The Lives Of Pets

- Jonathan Jarvik, PhD, is a biochemist at Carnegie Mellon University.
- Dr. Jarvik plans to expand on the age discoveries made last year by researchers at Harvard.
- He wants to reverse aging in pets.

Dr. Jarvik wants to try transfusing young blood components into old pets to reverse their aging process.

## Parabiosis Research Goes Mainstream

Johnson and Johnson signs **\$50 million** deal with Stanford University researchers to identify blood factors responsible for **age reversal** in **parabiosis** studies:

*“By working together, we hope to translate our data from animal studies to humans...”*

*“..If we are successful, it could mean new therapeutic approaches for treating numerous diseases associated with aging, including neural dysfunction and dementias such as Alzheimer’s disease.”*

-Stanford University professor Tony Wyss-Coray, PhD  
March 4, 2015



Mainstream pharmaceutical company is seeking to develop patented drugs to mimic parabiosis research.

## Age Reversal Clinical Study

- Young donors (around age 21) will be recruited. Their bone marrow will be mobilized to release abundant quantities of functional stem cells, immune cells, and other youth proteins.
- The blood of these stem-cell mobilized individuals will be separated into a plasma concentration that will contain many of the factors thought to convey youthful health and vitality.
- These youth factors will then be transfused into elderly individuals with the objective of inducing meaningful and sustained age reversal.

Cost of this study is about \$10 million over a three-year period.

Study to be conducted at: **South Florida Bone Marrow/Stem Cell Transplant Institute**  
10301 Hagen Ranch Road, Suite 700  
Boynton Beach, FL 33437

First proposed human clinical study to reverse aging.

## Financial Resources Needed To Launch This Age-Reversal Human Study

- The cost will be \$10 million over a three-year period.
- Disbursements of donated/invested funds would be made based on predefined milestones being met by the researchers.
- Life Extension Foundation has already contributed \$800,000 towards a pilot study of this novel approach by testing it on advanced cancer patients.
- To receive updates about this study, visit [LifeExtension.com/stem](http://LifeExtension.com/stem)

Funding needed to consummate study that seeks to reverse aging in elderly humans.

### Smallpox And Aging

- Smallpox killed as many as **30%** of those infected.
- In 18th century Europe, a third of all reported cases of blindness were due to smallpox. Today, aging-related disease is the leading cause of blindness.
- Smallpox is now eradicated.
- We know more about aging today than Edward Jenner did about smallpox.
- Aging too can be eliminated...if enough people with resources choose to make age-reversal research the number one priority.



### Smallpox Killed Millions Of Humans For 3,000 Years

- Smallpox described in Egypt: 1200 BC
- Jenner's vaccine demonstrated: 1796 AD
- Universal vaccination (England): 1840 AD
- Eradication of smallpox (worldwide): 1979 AD
- **Elimination of pathologic aging: (?) AD**

**Can any of us afford to wait?**

**[LifeExtension.com/stem](http://LifeExtension.com/stem)**

If systemic age reversal can be documented in this study, the race to translate these findings into practical medical applications will begin.



### Summary

**Life Extension Foundation** is contributing funds for this study, but we need help from like-minded individuals to afford the high cost of conducting this study over a three-year period.

The reason the expense of this 30+ subject study is so high is because of the costs associated with enrolling young compensated donors, the extensive blood testing, the stem cell-mobilizing drugs, and close medical supervision over the course of the study.

Elderly participants in this age-reversal study will require a monthly visit to the **South Florida Bone Marrow/Stem Cell Institute** for an infusion of stem cell-mobilized components from young blood donors.

From a convenience standpoint, supporters living in **South Florida** are the most likely beneficiaries, though individuals with only a short time to live may consider flying to South Florida monthly for the youth factor infusions.

The **South Florida Bone Marrow/Stem Cell Institute** is located in **Boynton Beach**, Florida, which is about a one hour drive north of Ft. Lauderdale and less than 45 minutes away for most residents of Palm Beach County.

Those wanting to help support this ground breaking study should log on to **LifeExtension.com/stem**. Those making pledges might also be able to participate as recipients of the youth factor infusions if they satisfy the study's eligibility criteria.

If this study is successful, it will be impossible to meet the demand that may occur as tens of millions of elderly individuals will clamor to get it. (Think of the movie "Cocoon.") Longtime **Life Extension** supporters will be given priority whenever possible.

To make a pledge and/or inquire about participating as a compensated young donor (under age 23) or elderly study participant, log on to: **LifeExtension.com/stem** or call **1-800-544-4440** (24 hours). ●

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





# SUPPORT FOR THE AGING IMMUNE SYSTEM

## DUAL-MECHANISM IMMUNE SENESCENCE FORMULA

As we age, our once-vigorous immune system begins to decline. The result is **immune senescence**, which has been linked to problematic outcomes in aging.<sup>1</sup>

A vital immune system is composed of a healthy balance of **naïve T-cells** that attack new invaders and **memory T-cells** that attack previously known invaders. However, after a **naïve T-cell** attacks a new threat, it becomes a **memory T-cell**, which will only go after a threat that it remembers.<sup>2,3</sup>

The result is that the delicate immune balance tips and we have a surplus of **memory T-cells** and a deficit of **naïve T-cells**. With this imbalance, our body is less able to defend itself against new invasions. This produces a less-vigilant immune system—or **immune senescence**.<sup>4</sup>

Life Extension® researchers have developed an innovative, *dual-mechanism* formula designed to combat **immune senescence**.

**Immune Senescence Protection Formula™** is composed of two botanical compounds that support both adaptive (e.g. **naïve T-cells**) and innate (e.g. macrophages and neutrophils) immune response cells. Together, these nutrients work in a complementary fashion to rejuvenate both major arms of the aging immune system through unique mechanisms.

### **Cistanche Rejuvenates Aging Immune System**

Scientists have discovered that the *echinacoside* compound found in **Cistanche** plant extract stimulates the development of **naïve T-cells** and leads to a lower amount of **memory T-cells**, thereby creating a more balanced immune response. **Cistanche** also increases Natural Killer (NK) cell activity—resulting in a **15%** life span increase in animal research!<sup>5</sup>

A 12-week human study of a dietary supplement containing standardized **Cistanche**, resulted in impressive gains in immune factors after supplementation. Subjects had significant improvements, including an **11.7%** increase in natural killer (NK) cell activity and a **20.2%** improvement in the ratio of CD4 to CD8 cells. An increased CD4/CD8 ratio is indicative of healthy, youthful immune function.<sup>6</sup>

### **Reishi Mushroom Combats Immune Senescence**

The numerous bioactive components of the **Reishi** mushroom exert powerful effects that may reverse many of the factors of immune senescence.<sup>7</sup>

**Reishi** extracts boost the function of innate immune cells, the immune system's first line of defense.<sup>7-9</sup>

It has long been known that **Reishi's** unique polysaccharides, triterpenes, and other constituents<sup>10</sup> enhance the body's hematopoietic stem cells, macrophages, and other crucial immune factors.<sup>11-13</sup> Animal research shows **Reishi** supports multiple aspects of immune function and longevity.<sup>14</sup>

### Ultra-Potent, *Dual-Extract* Formulation

Now, both **Cistanche** and **Reishi** are available in one powerful, dual-extract formulation, specifically created for year-round support of the aging immune system!

**Immune Senescence Protection Formula™** with standardized **Cistanche** and **Reishi** is our maximum dual-extract defense against immune senescence.

The suggested serving of two vegetarian capsules daily of **Immune Senescence Protection Formula™** provides:

<b>Cistanche tubulosa extract</b> (stem and leaf) [std. to 22% echinacosides (46.2 mg)]	<b>210 mg</b>
<b>Reishi mushroom</b> ( <i>Ganoderma lucidum</i> ) extract (fruit body) [std to 13.5% polysaccharides (132.3 mg) and 6% triterpenes (58.8 mg)]	<b>980 mg</b>
<b>Shell Broken Reishi mushroom</b> ( <i>Ganoderma lucidum</i> ) spore	<b>150 mg</b>

#### Non-GMO

A bottle of 60 vegetarian capsules of **Life Extension® Immune Senescence Protection Formula™** retails for \$40. If a member buys four bottles, the price is reduced to **\$27** per bottle.

### Standardized *Cistanche*

For those seeking the effects of **Cistanche** only, **Life Extension®** has created a standalone **Standardized Cistanche** that contains the same echinacosides as in the **Immune Senescence Protection Formula™**. For a very low price, a member can obtain the recommended **210 mg** daily **Cistanche** dosage in a single, high-potency capsule providing a potent **46.2 mg** dose of echinacosides.

**Standardized Cistanche** provides powerful support against immune senescence.

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<b>Vitamin C</b> (as ascorbyl palmitate)	<b>2 mg</b>

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Item # 01905



Item # 01906

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# TOX-SICK

## From Toxic To Not Sick

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### An Interview With Suzanne Somers

In her new book, *Tox-Sick, From Toxic to Not Sick*, best-selling author Suzanne Somers investigates environmental toxins as the underlying cause of so many of today's chronic diseases. Her exhaustive research and interviews with leading

physicians can help protect us from the incessant and invisible threat of environmental toxins. In this interview with *Life Extension*® Magazine, Suzanne discusses some of the important highlights from her new book.

**LE:** What do you believe is a leading cause of the degenerative diseases affecting the aging population?

**SS:** The problem is sugar. A high-sugar diet raises your risk for heart disease by promoting metabolic syndrome—a cluster of health conditions that includes high blood pressure, insulin and leptin resistance, high triglycerides, liver dysfunction, and visceral fat accumulation. Insulin and leptin resistance is caused by factors inherent in our modern lifestyle, including diets heavy in processed carbohydrates, sugars such as fructose, refined flours, and industrial seed oils.

Making matters worse, the average American gets inadequate exercise to offset consumption of sugar and processed foods, suffers from chronic stress and sleep deprivation, is exposed to environmental toxins, and has poor gut health (dysbiosis). This is the perfect storm for chronic disease.

**LE:** You firmly believe that drugs are not the solution to restoring health.

**SS:** As Americans we have been brainwashed into believing the only way to treat a disease or a condition is with a drug. So many individuals wake up each day and start with a bagel, or toast, or muffin with margarine. And then they grab their antacids, statin pill, diet pill, diuretic, diabetes medication, synthetic hormones, antidepressant, and more. And they wonder why they aren't feeling well?

We have to ask ourselves, how is the allopathic approach working out? Are people better off as a result of taking the billions of dollars' worth of drugs we collectively take yearly? Are people cured as a result? An honest assessment would be: No.

Drugs seldom cure. Drugs are for the most part a Band-Aid®, requiring in many cases a lifelong addiction to “maintain” your status quo. Now, granted, I would not want to live in a world without pharmaceuticals, in particular for pain, infection, mental illness, and other things outside my scope.

**LE:** Why is it so important to avoid pharmaceuticals and over-the-counter medicines unless absolutely necessary?

**SS:** Every time you take a chemical pharmaceutical pill, you are now compromising your GI tract and weakening the integrity of your intestinal barrier wall. Since your gut is your first line of immune defense, this comprises most of your immune system.

The pill actually masks the symptom, while doing damage to the body. In allopathic medicine the focus is on treating the symptoms. If your symptom is, for instance, high blood pressure, you get a pill to lower it. As I said, allopathic medicine is exactly that, a pill for every symptom. Rarely does orthodox medicine dig deep to find what is causing the symptom.

**LE:** There's been a lot of discussion, perhaps even controversy, regarding cell phones and the potential for causing damage to the body. What is your take on this technology that we just can't live without?

**SS:** Cell phones are not safe . . . research now shows the connection of cell phones' electromagnetic rads to brain tumors. After an extensive 11-year report came out squashing the link between mobile phone usage and cancer, a new report from French scientists may turn that on its head. However, although it





may raise a specter previously thought banished, the emphasis this time is on cancer and heavy use. In the *British Journal of Occupational and Environmental Medicine*, researchers write that people who used their mobiles for “more than 15 hours each month over five years on average had between two and three times greater risk of developing glioma and meningioma tumors compared with people who rarely used their phones.” The link between glioma—a type of tumor made from gliol cells that account for **80%** of all brain tumors—and long-term mobile phone use has been hard to prove, but the new study aims to tackle that. The new study looked at 253 cases of glioma and 194 cases of meningioma from four French departments between 2004 and 2006. Scientists then compared these to 892 healthy people from the same local population. According to the newspaper *The Guardian*, the comparison “found a higher risk among those who used their phone intensively, especially among those who used it for their work, such as in sales. The duration of use in this category ranged from between two and 10 years, averaging at five years.”

In the 20<sup>th</sup> century, thousands of manmade chemicals were introduced into our environment. Now in the twenty-first century, excessive EMF radiation is bombarding our already chemically burdened bodies. These two assaults are creating a perfect storm challenging our bodies’ defense systems. We know that our immune systems are already seriously compromised

from toxins entering the GI tract and the liver; now we have to contend with this as well. The simple solution is not to hold your cell phone up to your head. Use the speaker option whenever possible and there will be no excess EMFs entering your brain.

**LE:** We’ve discussed some of the threats that are out there. Let’s talk about protecting the body. Where do we start?

**SS:** Health begins and ends with the GI tract. It’s our first and most important protector. If your gut is inflamed, then you are not healthy. As a result, you will be lacking energy, as well as be more susceptible to disease, including autoimmune diseases that will now have the opportunity to flourish. This toxic GI distress will affect every part of your body, including your bones, joints, organs, glands, skin, hormones, and, most important, your brain!

Nature is truly a miracle worker. The entire length of the GI tract is coated with a bacterial layer—like a mucus—surrounding the gut lining to provide a natural barrier against harmful invaders. If this protective bacterial lining gets damaged, your gut wall suffers.

A poor high-carb diet of processed, sugar-laden, nonorganic food; the overuse of pharmaceutical drugs (especially antibiotics); as well as the toxic environment, and the switch so many have made over the years to chemical household toxic cleaners, fluoride, and chlorine . . . all contribute to digestive tract damage.

These toxins “eat” away at the mucus lining. When this happens, your health degrades. Think about this with every food choice you make. It doesn’t take much in the form of toxins to reach the tipping point, because you, like the rest of us, most likely are already toxic to some degree.

**LE:** What can we do to protect the digestive tract from toxins?

**SS:** Balance in the GI tract is essential for good health; that means an equal balance of the good pathogens and the bad. We need both. The good guys (gut flora) neutralize toxic substances like nitrates, indoles, phenols, skatols, antibiotics, and lots of other toxic substances. These “good guys” inactivate histamines and chelate heavy metals and other poisons. The cell walls of beneficial bacteria absorb many carcinogenic substances, making them inactive. They also suppress hyperplastic processes in the gut, which is the basis of all cancer formation.

**LE:** When you say “good guys,” do you mean probiotics?

**SS:** I have come to believe that probiotics are the most important supplement one can take, more important than a multivitamin or any other supplement (and

you know I am a big believer in supplementation), due to environmental toxins, the damaged soil, and the resulting degradation of our food supply. Probiotics provide balance, allowing for an equal distribution of the good and the bad, and the necessary ecobalance in the human system.

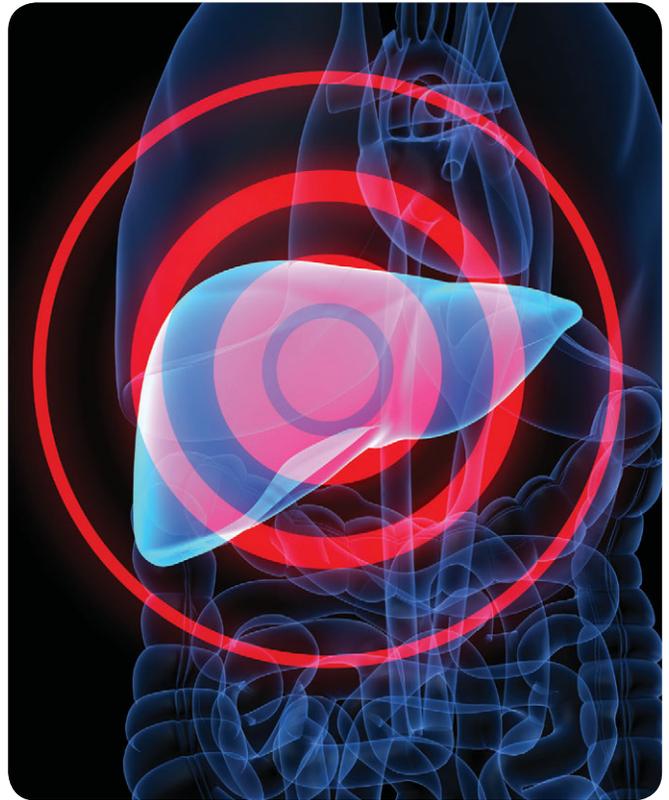
Probiotics will be as life-changing to medicine in the twenty-first century as antibiotics were when they came on the scene in the twentieth century. Today's doctors who are on the front lines of medicine are recognizing the limitations of conventional medicine, and in particular the overuse of antibiotics. In many cases, these drugs have been rendered ineffective just when they are needed most. A number of harmful bacteria, such as certain strains of *Staphylococcus aureus*, are becoming resistant to them.

**LE:** Earlier, you mentioned that the GI tract is extremely influential on the brain. Can you speak of this in more detail?

**SS:** The GI tract speaks directly to the brain at all times; when the tract is off and not working properly, it can explain away a lot of the forgetfulness, depression, and hormonal deficiencies that plague so many. How would hormones be affected by the GI tract you ask? It's all about the gut/brain connection. Some of the important "feel good" hormones such as serotonin, are made in the intestinal tract. The rest are made in the brain. Serotonin "speaks" to the epicenter of the hormone system, the hypothalamus, which resides, you guessed it, in the brain. If the GI tract is distressed and not working properly, then serotonin does not get delivered to the brain, so the HPA axis, (hypothalamus/pituitary axis) does not get the proper signals to activate the hormonal system through its conductor, the thyroid. If the thyroid is not activated properly, the rest of the hormones in the body don't know what to do. Now you've got chaos, mood swings, fatigue, no libido, depression, and a body out of control. All because your stomach is in distress.

**LE:** Another key to keeping the body toxin-free is the liver, which—since it acts like a filter—is one of the hardest-working organs in the body.

**SS:** The liver, which deserves great respect, performs over a thousand tasks daily and filters every drop of blood that flows through it. The liver produces chemicals to combat viruses and bacteria, supports phagocytosis (cell-eating), and produces antihistamines to neutralize substances that promote the growth of cancer. It is such a powerhouse that scientists estimate that up to **80%** of the liver can be damaged without producing any symptoms! Plus, the liver regenerates itself every six weeks.



The liver is key for detoxification, but with the onslaught of chemicals from the environment almost no one has a well-working liver. Yet as stated above, the liver can be **80%** toxic without your feeling any symptoms.

**LE:** What happens when the liver is constantly overworked?

**SS:** The liver will work overtime for you until it becomes chronically fatigued; then the body starts experiencing an array of negative side effects. Since the liver has had to do much more than its share, most likely because of toxic blood caused by a clogged large intestine, the liver now has to pass on this burden to the kidneys. But your kidneys are weak from the added pressure of your colon being dysfunctional prior to your sluggish liver situation. Chronic low-back pain can set in due to all the unwanted toxic poisons, and then other symptoms appear: sweaty palms, bags under the eyes, frequent urination, and bladder infections. When the kidneys can no longer handle the toxic load, the bladder gets stressed. This is the domino effect. It starts with a toxic colon, then the blood gets "dirty" from toxemia, then the liver is affected, then the kidneys, then the bladder, and now the lymph system becomes toxic.

At this point the only thing you can do is cleanse and detox. And eliminate fast foods, processed foods, sugars, and all avoidable toxins.

**LE:** You've made a connection between hormone replacement therapy and the liver. What is the correlation between the two?

**SS:** So many women write me and tell me that "hormones don't work for them." I took this concern seriously and discussed it with my top doctors. It's clear from those discussions that in reality, it's their livers that cannot tolerate BHRT (bioidentical hormone replacement therapy). So they should focus first on detoxification of the liver, so they can benefit and tolerate hormone replacement. Hormones are metabolized in the liver, but if your liver is damaged, toxic, or sluggish, as was said before, your hormones don't get metabolized and then they back up into the blood; then, of course, you can end up overdosed and toxic from excessive hormones. That explains why some women start on hormone replacement and freak out because they suddenly feel worse, or they gain weight and suffer a myriad of other symptoms. Again, a toxic liver won't metabolize hormones when it is full up with contaminants.

**LE:** We briefly touched on how toxins in the GI tract affect the brain. But you devote an entire chapter to toxins and their effects on the brain. Can you elaborate on this connection?

**SS:** The gut/brain connection is essential to understand, especially in how one affects the other, how these organs talk to each other, and the signaling that goes on between them.

When the gut is working right, then so too is the brain; in reverse they both take the hit. We are bombarded by toxins, and they are making their way up to our brains, usually starting in the gut. The very young and the very elderly are the first to succumb, the young

because their brains are not fully formed until ages 25 to 27, and the old because they have been under toxic attack for over 50 years.

It isn't natural to lose your brain as we age, but under the circumstances, is it any wonder that our brains haven't done so well under this assault?

The brain is the most complex tissue in the human body. It weighs about three to five pounds and is the most oxygen-demanding organ, as well as using up to 30% of the body's glucose supply to function.

**LE:** You link a sensitivity to gluten to diseases of the brain. What is the connection between the two?

**SS:** If your brain is not working right, it's most likely due to toxic exposure and toxic burden; and if you have ADD, ADHD, OCD, autism, bipolar disorder, or even schizophrenia, it's likely that sensitivity to gluten could be causing an immune assault on your brain and creating symptoms or worsening an existing condition. This will lead to brain inflammation and increase the risk for an autoimmune attack on your brain tissue.

Today's gluten is not the gluten of yesterday. There used to be 80 different strains of wheat. Today those 80 strains have been "engineered" to five strains, and their gluten content is now off the charts. If you suspect you have a sensitivity to gluten, you can get tested. The test is for anyone who suspects that grains like wheat, spelt, rye, and barley may be affecting their health. It is also suggested that the Food Safe™ Allergy Test be done as well since a person can react to wheat/grains in different ways. Gluten sensitivity testing looks at the autoimmune mediated reaction component, while the food safe test looks at a delayed food sensitivity reaction.



The fact is many people are allergic to many foods that might not have bothered them 50 years ago, and many cannot tolerate even one bite of gluten due to their severe reactions.

Consuming gluten causes leaky gut syndrome, allowing for the bad pathogens to make their way up to the brain, causing brain fog and worse. The high gluten content of today is caused by engineering. Often the chemical process of making the wheat or soy “Roundup® ready” (a chemical weed killer in most GMO foods) is enough to put anyone’s body into a sickly tailspin.

Also, many people with gluten sensitivity have silent celiac disease, meaning their symptoms are not intestinal. Instead they experience reactions to gluten in the brain, thyroid, joints, skin, or other tissues. The most common area of nonintestinal manifestation of gluten sensitivity is the brain and nervous system. One study of patients who manifested gluten sensitivity in the brain found that only a third of them also suffered from gastrointestinal disorders.

No single dietary protein is a more potent trigger of neurological dysfunction and neurological autoimmunity than gluten. By hybridizing and creating a “new” wheat, we’ve triggered severe immune reactions, especially in the brain and nervous system.

**LE:** One thing we can’t seem to avoid is sugar—it’s everywhere, especially in packaged or processed foods. From diabetes to cancer to heart disease, sugar has been connected to so many of today’s modern epidemics.

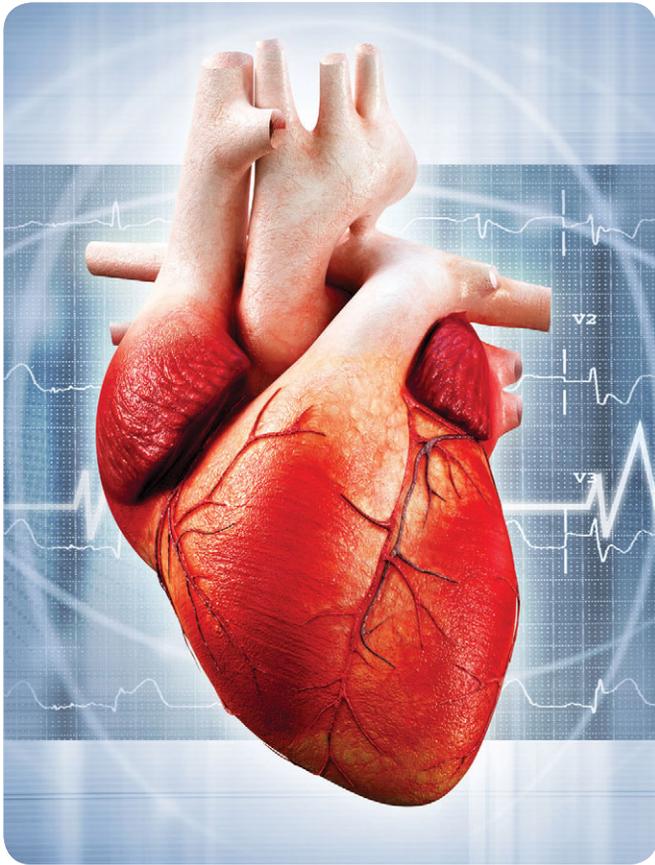
**SS:** [A] huge component in your not being able to get well and thrive is sugar consumption. The American diet is composed mainly of nonfood, manufactured, processed chemicals. High-fructose corn syrup is used in virtually all packaged and processed food in America today. In essence, it means we are eating huge doses of sugar, most often in the form of high-fructose corn syrup. In recent history, we’ve gone from 20 teaspoons of sugar per person, per year (in the form of fruit), to about 150 pounds of sugar, per person, per year. That’s a half pound a day, for every man, woman, and child. In addition, we stopped eating essential healthy fats.

Sugar at that dose is a toxin. And, high-fructose corn syrup is the worst toxin. It is the real driver behind our current epidemic of obesity, type II diabetes, fatty liver, heart disease, cancer, and dementia. It contains mercury and other contaminants and is a marker of poor-quality, processed food.

**LE:** How does this connect to the brain?

**SS:** If the brain is malnourished and shrinking, then it’s not working correctly. The chemicals are “off.” Imbalanced chemicals in the brain can express themselves in symptoms that run the gamut from moodiness to brain fog, difficulty concentrating, to depression, rage, and, yes...insanity! Brain fog alone makes the normal course of going to school virtually impossible for some. Our children have been exposed to chemicals and toxins from birth and the negative effects are coming to their logical conclusion.





As you now know, sugar, in all its forms, and toxins have destroyed the lining of our GI tracts by eating little holes in the epithelium, allowing for leaks into the bloodstream. As these toxins roam through the bloodstream looking for a new home, they search out the fattiest organs. Our livers are already groaning from the toxic overload, so the toxins start looking around to choose their new homes. Perhaps it's the largest organ, the skin (causing eczema), or the pancreas (triggering diabetes), or the lungs (cancer), or the sex glands (halted hormones). But what they really are after is the fattiest organ of all . . . the brain.

**LE:** Heart disease is the number one cause of death in the US and around the world. You make the connection between toxins, heart disease, bad fat, and inflammation.

**SS:** The medical community has finally begun to realize that inflammation is an underlying cause of or contributor to most chronic diseases, especially coronary artery disease. Diabetes is an inflammatory disease, smoking cigarettes is inflammatory: The results of both are linked to heart attack risk. Inflammation can get turned on systemically: in all your tissues, in your blood, and in your organs. Whatever system is weakest in you will break down first with chronic inflammation.

With age, toxic substances begin to accumulate in tissues and organs, kicking off the process of atherosclerosis. Special structures within cells remove damaged or abnormal proteins and other cellular debris in a process called “autophagy.” However, we are starting to learn that as people age, this process becomes defective.

In addition, the energy-producing parts of cells called mitochondria start to wear out, which greatly increases production of “free radicals.”

Lowering your inflammation levels is your responsibility. Toxins create higher levels. You know they are out there; we are all being bombarded by them every moment of every day. So taking the proper supplements and thinking carefully about your dietary choices is imperative. In today's world we have to eat as though our lives depend on it. Healthy foods—fruits and vegetables along with quality fats and protein—all are anti-inflammatory and will help you to lower your inflammation levels.

A high-sugar diet raises your risk for heart disease by promoting metabolic syndrome—a cluster of health conditions that includes high blood pressure, insulin and leptin resistance, high triglycerides, liver dysfunction, and visceral fat accumulation. Insulin and leptin resistance is caused by factors inherent in our modern lifestyle, including diets heavy in processed carbohydrates, sugars/fructose, refined flours, and industrial seed oils.

**LE:** You've devoted entire books to hormone replacement therapy and how well it works. But just as it starts to become effective, it can, in your words, “hit a wall” due to toxicity. Let's discuss hormone replacement therapy and its link to toxins.

**SS:** Toxins affect your entire body, but the hormone system takes a major hit, and the effects are uncomfortable and difficult to explain. You go to a doctor who is not up on environmental illness and you will be treated for everything with allopathic medicine, meaning: Here's the pill to fix it. If in fact, it did “fix” it, you could rationalize the use of these chemicals, but it doesn't fix or cure. In many if not most cases the doctors' allopathic arsenal aggravates the condition. Hypothyroidism, Graves' disease, Hashimoto's thyroiditis, infertility, prostatic hypertrophy, endometriosis, cancers of the prostate or breast, polycystic ovaries, and abnormal Pap smears are all linked to or rooted in today's toxicity.

Toxins blunt hormone production, and toxins overload our livers so the individualized, prescribed, as-per-lab-work hormone creams that have revived quality of life and health for so many are now getting “kicked out” of the liver due to toxicity, leaving these hormones to roam around in the bloodstream.

The effect is a hormone “overdose.” If you are symptomatic again—gaining weight, itching, sweating, and more—a toxic liver is most likely your issue.

For those who are in actual hormonal decline due to age, the remedy is not to stop taking your hormones. The answer, and the only answer, is to detox your liver so your body can clean out and go back to normal.

Environmental plasticizers or phthalates can damage thyroid glands (major hormone) and make them hyper- or hypoactive. Environmental chemicals can sit in every cell membrane hormone receptor, blocking the activity of hormones. The body may be able to make sufficient hormones on its own were it not affected so negatively by chemical toxins. This explains why younger and younger women experience severe hormonal decline. Children and teens are now tragically experiencing imbalanced hormones due to chemical exposure, and their doctors are stymied as to what to do. This hormonal roller coaster causes emotional problems, from rage to depression, brain fog, premature menses, and breasts and bodies these children are not ready to handle.

**LE:** You concentrate quite heavily on the thyroid and how it’s under constant assault from toxins. Why is the thyroid so vital for good health?

**SS:** A well-working thyroid is so crucial. But the thyroid is under attack from toxicity, and doctors once again are for the most part guessing at how to handle the problem. So many people are walking around with false diagnoses of MS, fibromyalgia, or lupus when in fact their problem is a dysfunctional GI tract, leaking toxins into their bloodstream and then finding their way to the thyroid or the hypothalamus in the brain. The hypothalamus is located in the brain along with the pituitary gland. I like to call them the president and the vice president. They are “command central” for all the other hormones. In other words, they are responsible for telling all the hormones what to do.

They have an “executive assistant” who does the day-to-day work, and that is the thyroid. The hypothalamus speaks directly to the thyroid, and the thyroid obediently goes into action and directs the minor hormones: estrogen, progesterone, testosterone, DHEA, and pregnenolone. There are other minor hormones, but these are the key ones. When they are low or missing, you feel awful, and not in control of your body; weight gain appears, as well as hot flashes and night sweats; you may experience body pain and joint aches, headaches, and a loss of interest in sex. All because the thyroid has gone awry. When the thyroid is “off” in a child or a teenager, these children don’t grow properly. Very short people usually have thyroid or other hormonal deficiencies like human growth hormone (HGH).

**LE:** What does the thyroid gland do?

**SS:** Just a few key things, like:

- Controls and maintains your body temperature, which is why when the thyroid hormone is low, your hands and feet are always cold.
- Helps get rid of cellular waste; if the thyroid isn’t working correctly you get puffy skin on the face, arms, and thighs.
- Provides critical immune function; when low or too high, you get chronic colds and flus.
- Stimulates increased blood flow, but if the hormone is low, you get brain fog and cognitive impairment because low thyroid slows blood flow to the brain.
- Stimulates oxygen consumption in the heart, liver, skeletal muscles, and kidneys.
- Helps with sleep and mood; if your thyroid levels are too high (hyperthyroid), you can’t sleep and feel agitated and slightly “crazed” all the time. If your thyroid levels are too low or too high, you fatigue easily and feel very tired.

That’s a thumbnail of why the thyroid is so important. People with chronic low or high thyroid hormones have a very poor quality of life. And here we are under this massive toxic assault; these toxins get into the bloodstream via the leaky gut, and the thyroid is often assaulted by them. It’s the same pathway taken by all the toxins. Any organ or gland that the toxins decide to attack will result in severe changes in health and quality of life.

**LE:** Thank you, Suzanne. All of this information is invaluable for our readers in their quest for longevity. ●

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

Actress and health care advocate Suzanne Somers is the author of over 24 books, including numerous *New York Times* best sellers.

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- **Vitamins K1 and K2**, including the rapidly absorbed **MK-4**<sup>1,2</sup> and the 24-hour bioavailable **MK-7**,<sup>1</sup> to keep calcium in the bones and out of the arteries.
- **MacuGuard™ Carotenoid Phospholipid Blend**, which contains **trans-zeaxanthin**, **meso-zeaxanthin**, and **lutein** to support eye health and healthy vision.
- **Gamma tocopherol**, a highly effective form of vitamin E, which quenches a dangerous free radical (peroxynitrite) that plays a major role in age-related decline.<sup>3,4</sup>
- **Vitamin E as D-alpha tocopherol** to suppress lipid peroxidation.<sup>5,6</sup>
- **Blueberry extract** to boost DNA repair and sustain healthy blood sugar levels already within normal range.<sup>7,8</sup>
- **Sesame lignans** to boost tissue levels of **gamma tocopherol**.<sup>9</sup>
- **Lycopene** to support prostate health and guard against LDL oxidation.<sup>10,11</sup>
- **Chlorophyllin**, which offers protection against environmentally induced DNA damage.<sup>12</sup>
- **Black currant extract** anthocyanins to promote eye health.<sup>13</sup>
- **Vitamin B12** to help maintain a healthy nervous system and metabolism.<sup>14</sup>

Just one softgel of the new **Health Booster** taken with a heavy meal provides optimized potencies of **fat-soluble** vitamins, carotenoids, and other nutrients needed by maturing individuals. Taken separately, the individual ingredients in **Once-Daily Health Booster** would cost **two to three times** more!



### Once-Daily Health Booster

Item #01981 • 60 softgels (two-month supply)

	Retail Price	Member Price
1 bottle	\$52	<b>\$39</b>
4 bottles	\$48 each	<b>\$36 each</b>

To order **Once-Daily Health Booster**, call **1-800-544-4440** or visit **www.LifeExtension.com**

1. *Nutr J.* 2012 Nov 12;11:93.
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#### Contains soybeans.

**Caution:** if taking anticoagulant or antiplatelet medication, consult your health care provider before taking this product. Those with inborn errors of copper metabolism (e.g. Wilson's disease) should avoid daily, chronic use of this product.

**Tomat-O-Red®** is a registered trademark of LycoRed, LTD. **LuteinPlus®** and **Mz®** are registered trademarks of NutriProducts Ltd., UK, licensed under U.S. Patent 8,623,428.

# Jump Start Your Weight-Loss Program with Mediterranean Trim

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

## Jump-Start Your Weight-Loss Program

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

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

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

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

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

### References

1. *Phytomedicine*. 2008;15:783-92.
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### Non-GMO

Sinetrol™ is a trademark of Fytexia®.

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

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

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

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

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

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

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

## Mediterranean Trim with Sinetrol™-XPur

Item #01908 • 60 vegetarian capsules

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



To order **Mediterranean Trim with Sinetrol™-XPur**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

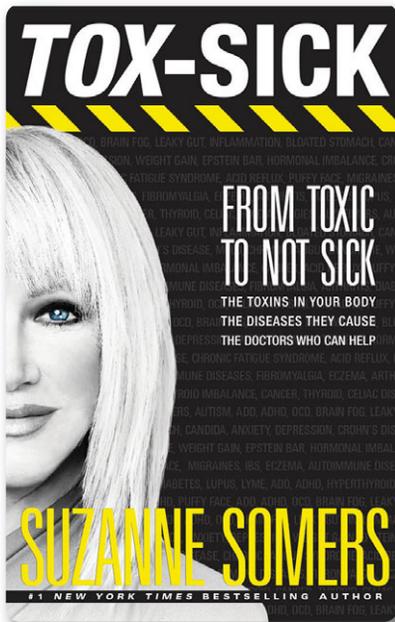
These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

# Tox-Sick

## From Toxic To Not Sick

BY SUZANNE SOMERS

*"It's time to detox your life to save it"*



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In her new book, *TOX-SICK*, **Suzanne Somers** interviews America's top environmental doctors to get to the bottom of what is causing so many life-altering illnesses—and more importantly, describes how you can reclaim your own good health.

From mold to GMOs to antibiotic overload and more, Suzanne reveals in detail a whole-life detox that can bring balance—and good health—back into one's life.

Your health is under constant assault from the world around you. **Toxic overload** can be caused by ...

- Pesticides
- Processed foods
- Antibiotics
- Solvents and scented detergents
- GMOs
- Mold

**Toxic syndrome** is behind many of the illnesses that plague the modern world. The "new normal" facing patients today includes:

- Obesity and weight gain,
- Migraine,
- Autoimmune disease,
- Depression,
- Food allergies,
- Hormone imbalances,
- Asthma, and
- Cancers induced by environmental toxins.







# *Novel Lipid Complex Revitalizes Aging Facial Skin*

As you get older, you may notice that your smooth, luminous complexion is giving way to leathery, dry skin with wrinkles and age spots.

Even though these undesirable features seem to appear overnight, they are actually the cumulative effects of repeated exposure to ultraviolet radiation (UV),<sup>1</sup> and to a lesser degree other environmental elements. The sun's rays generate free radicals and oxidative stress that induce lipid peroxidation and alter the structure of key molecules responsible for keeping skin firm and supple.<sup>1-5</sup>

If you tend to avoid face oils due to common fears of clogged pores and breakouts, you're missing out on a way to offset the negative effects of ultraviolet radiation exposure and combat premature skin aging.

A novel lipid complex—formulated with clinically proven ingredients including essential fatty acids, palmitoyl oligopeptide, vitamin A, and marula oil—deeply penetrates and nourishes the different layers of the skin to produce age-reversal effects without the potential downside.

In this article, you will learn how applying this oil to the vulnerable areas of the face improves the appearance of mature, sun-damaged, dry skin, while replenishing lost lipids to restore moisture for a smoother, more youthful complexion.

## Essential Fatty Acids Relieve Dry And Scaly Skin

The outermost layer of the epidermis (stratum corneum) consists of dead protein-rich cells that overlap one another to form a brick wall,<sup>6</sup> with a lipid matrix of cholesterol, ceramides, and fatty acids acting as cement to hold it together.<sup>7,8</sup> This “brick and mortar” structure provides a protective shield against environmental insults, while locking in key nutrients and moisture to keep skin soft and moist.<sup>9</sup>

Although the epidermis is highly active in lipid production, it cannot synthesize two polyunsaturated fatty acids: linoleic acid (omega-6) and alpha-linolenic acid (omega-3).<sup>10,11</sup> Therefore, these essential fatty acids must be acquired from the diet or supplementation.

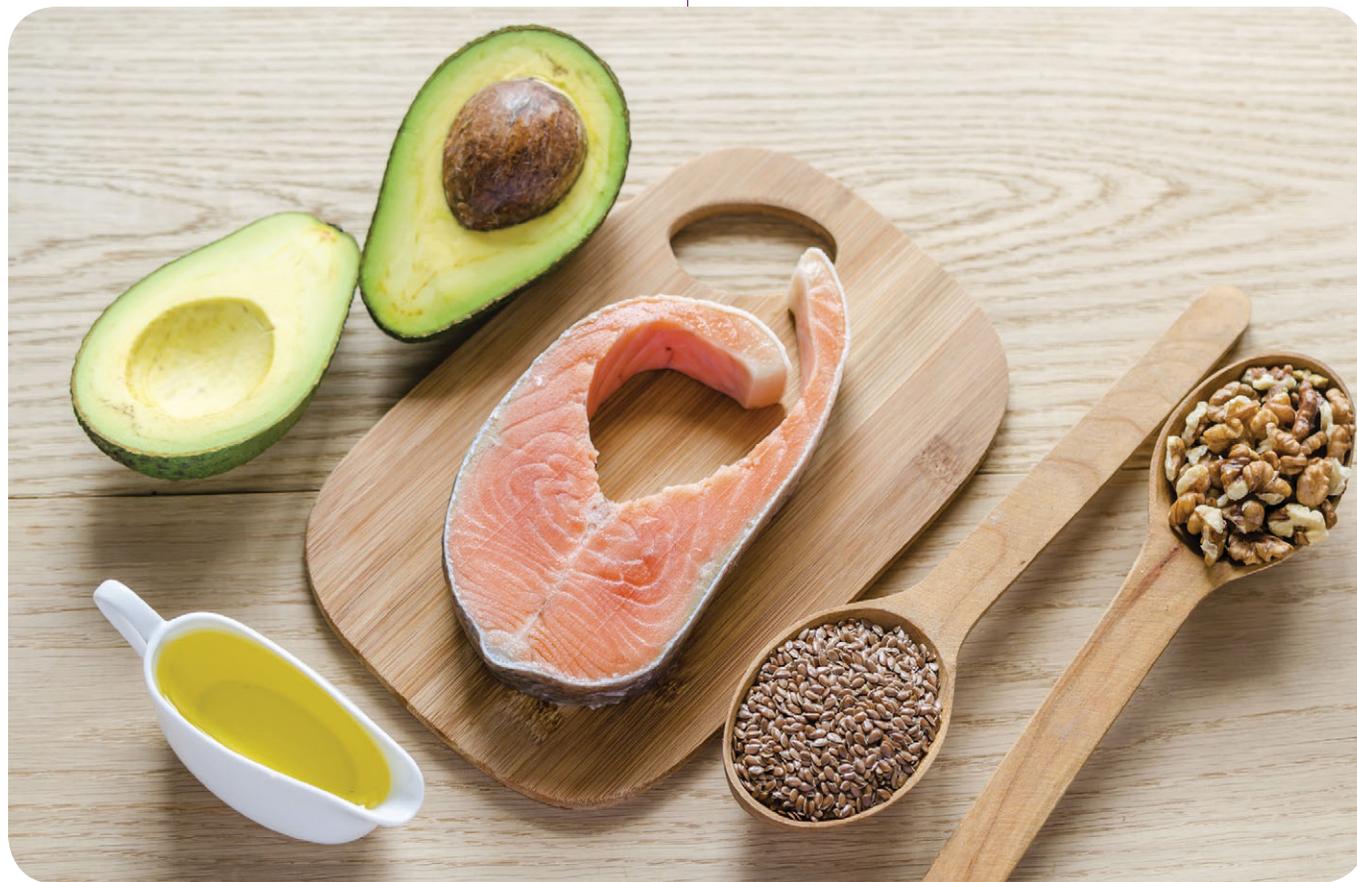
Most omega-6 fats are derived from vegetable oils like corn, soybean, and safflower,<sup>12</sup> whereas omega-3s are found in flaxseed, walnuts, oily fish, and supplemental fish oil.<sup>13-15</sup>

Linoleic acid (LA) contributes to the formation of **ceramides** on the skin’s surface, maintaining epidermal barrier function and hydration to prevent age-related drying and flaking.<sup>16,17</sup> When applied topically to linoleic acid-deficient humans, linoleic acid-rich oils completely reversed the clinical manifestations of skin dryness and scaliness associated with its

deficiency.<sup>18,19</sup> In addition, linoleic acid is a precursor for the synthesis of gamma-linolenic acid, which provides welcome relief from inflammatory skin conditions like eczema and acne.<sup>20-22</sup> Lastly, linoleic acid can be converted to arachidonic acid, a main constituent of cell membranes, which acts to regulate inflammatory responses.<sup>23,24</sup>

Although omega-3s comprise only a small proportion of total fatty acids in the skin,<sup>25,26</sup> alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA) play an important role in skin health.

Omega-3s have been shown to reinforce the skin by protecting it from dryness and reducing skin sensitivity.<sup>27</sup> Research shows that EPA competes with arachidonic acid for incorporation into cell membranes and for the enzyme cyclooxygenase-2 (COX-2),<sup>28-31</sup> with increased EPA producing less inflammatory compounds in response to sun exposure.<sup>32</sup> This explains the result of a human study in which topical application of **omega-3 rich sardine oil extract** decreased UVB-induced skin redness by **24.5%**.<sup>33</sup> Additional research shows that omega-3s modulate the immune response of the epidermis to sunlight, protecting against autoimmune skin disorders including psoriasis, systemic lupus erythematosus, and melanoma.<sup>34</sup>





As we age, essential fatty acids are depleted due to UV exposure,<sup>35</sup> dry air, and harsh soaps,<sup>36,37</sup> making their replenishment vital for preserving healthy, youthful skin.<sup>38</sup>

A drawback of essential fatty acids is their high susceptibility toward oxidation, which limits their stability in topical formulations and often causes an undesirable odor or skin discoloration.<sup>39-42</sup> However, scientists have developed a unique topical blend of **olus** and **Camelina sativa seed oils** with natural tocopherols that increase its oxidative stability.<sup>40</sup> This topical oil blend takes **twice** as long to oxidize when exposed to UV light compared to a control oil mixture with the same content of polyunsaturated fatty acids.<sup>40</sup> The result is a safe and efficient delivery of an optimal ratio of essential fatty acids directly to the skin, replenishing lipid content to relieve scaliness and dryness for a more youthful facial appearance.

### Palmitoyl Oligopeptide Reverses Wrinkling In Humans

Many of the skin changes associated with premature aging of the face stem from repeated sun exposure. The sun's rays generate reactive oxygen species and oxidative stress that eventually overwhelm the natural defense mechanisms in the skin, leading to wrinkles, loss of elasticity, dry texture, and irregular pigmentation that characterize photoaging.<sup>2,3,43,44</sup>

While essential fatty acids provide substantial photoprotection, an oil-soluble peptide called **palmitoyl oligopeptide** has been shown to kick start the repair process of sun-damaged skin by triggering new production of key molecules such as collagen and hyaluronic acid.<sup>45,46</sup> In an interesting *ex vivo* study, meaning research performed on living tissues outside the body,

## Restore A Youthful Complexion

- Long-term exposure to sunlight degrades essential lipids and alters the structure of key molecules that keeps skin firm and supple, resulting in the telltale signs of photoaging such as wrinkles, irregular pigmentation, and loss of elasticity.
- A novel lipid complex has been formulated with clinically proven ingredients that, when applied to the face, improves the appearance of mature, dry, sun-damaged skin, restoring moisture for a smoother, more youthful complexion.
- Essential polyunsaturated fatty acids linoleic acid (omega-6) and alpha-linolenic acid (omega-3) support the skin's barrier function and improve hydration to relieve dry and scaly skin.
- Palmitoyl oligopeptide reverses skin wrinkling in humans, with one study showing a mean **reduction** of nearly **20%** in wrinkle depth, while the mean volume of a primary wrinkle and the surface area occupied by wrinkles over 200 microns diminished by **23%** and **39%**, respectively.
- Marula oil has outstanding soothing and hydrating properties, as well as powerful free radical-fighting phytonutrients that protect the skin against free radicals and oxidative stress.
- Vitamin A enhances the skin's capacity to renew itself, in turn reducing the visible signs of aging.

scientists found that human skin biopsies irradiated with UVA light showed a significant degradation of collagen. But after being treated with *palmitoyl oligopeptide*, these skin samples exhibited increased collagen **density** compared to a control. Remarkably, this skin regeneration was observed in just **one week!**<sup>47</sup>

When topically tested on humans in randomized clinical trials, *palmitoyl oligopeptide* shows a tremendous ability to rejuvenate photoaged facial skin.<sup>45,46,48,49</sup> The visible improvements were especially noteworthy in one study involving 24 participants aged 34-79 with crow's feet. Compared to a placebo, researchers observed that a cream containing *palmitoyl oligopeptide*

applied twice daily to the targeted area for two months reduced mean wrinkle depth by nearly **20%**, while the mean volume of a primary wrinkle was diminished by **23%**, and the surface area occupied by wrinkles over **200 microns** decreased by **39%**. There was also a beneficial effect on skin roughness, with an average decrease of **16%**.<sup>45,46</sup>

### Naturally Soothe And Hydrate With Marula Oil

For centuries, oil extracted from the fruit of the marula tree (*Sclerocarya birrea*) has been prized among South African women for its outstanding soothing and hydrating properties that result from its high content of fatty acids, especially oleic acid.<sup>50</sup> With powerful nutrients such as flavonoids, vitamin C, and catechins, **marula oil** neutralizes free radicals that wreak havoc on the skin's underlying architecture.<sup>51</sup> Furthermore, its wealth of vitamin C suggests that **marula oil** boosts collagen production to revitalize aging skin and reduce the appearance of wrinkles.<sup>50-53</sup> As a rich source of phytonutrients that fight free radicals, marula oil strongly resists oxidation and, therefore, is highly stable in topical preparations.<sup>50</sup>

### Vitamin A Enhances Skin Renewal

Retinol, a form of vitamin A, increases keratinocyte proliferation and epidermal thickness to combat wrinkles and fine lines, as well as improve evenness of skin tone.<sup>54</sup> In the deeper layer of the skin known as the dermis, retinol halts the breakdown of collagen and stimulates its synthesis in both naturally aged and photoaged skin.<sup>55</sup> These beneficial effects are related to the conversion of retinol to retinoic acid inside cells, where it facilitates cell-signaling to enhance the skin's capacity to renew itself.<sup>56</sup>

### Summary

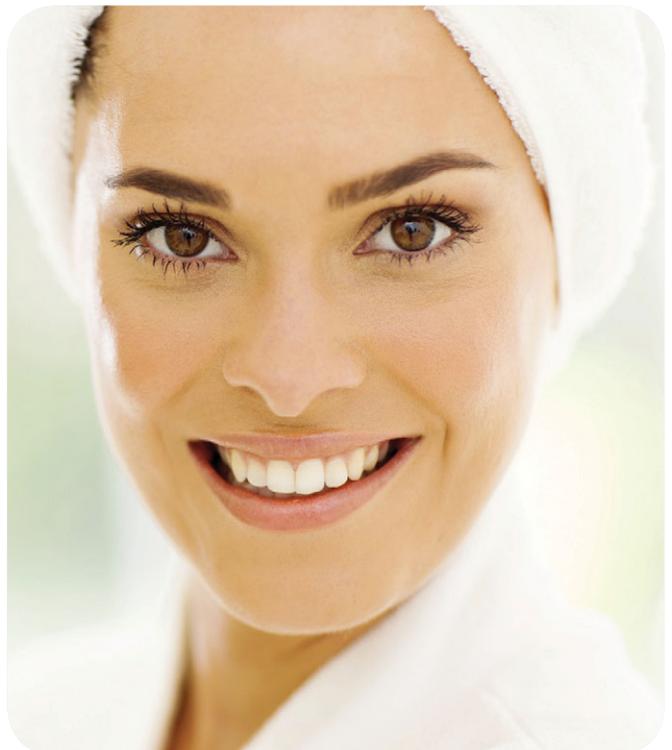
The sun's harmful ultraviolet rays generate free radicals and oxidative stress that induce lipid peroxidation and alter the structure of key molecules responsible for keeping the skin firm and supple. The result is the tell-tale signs of photoaging—wrinkles, mottled pigmentation, and loss of elasticity. Fortunately, a novel lipid complex has been formulated with clinically proven ingredients, including essential fatty acids, palmitoyl oligopeptide, vitamin A, and marula oil. This facial oil visibly improves the appearance of sun-damaged, mature, dry skin, while replenishing lipids to restore moisture for a smoother, more youthful complexion. ●

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

Gary Goldfaden, MD, is a clinical dermatologist and lifetime member of the American Academy of Dermatology. He is the founder of Academy Dermatology in Hollywood, FL, and Cosmesis Skin Care. Dr. Goldfaden is a member of the **Life Extension®** Foundation's Medical Advisory Board. All Cosmesis products are available online.

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**SolarShield®** sunglasses are recognized as the **number-one doctor-recommended sunglasses** in the world, with more than 50 million pairs sold to date. Patented **SolarShield®** sunglasses with **durable polycarbonate lenses** and **100% UV protection** fit **comfortably over prescription eyewear**, providing convenient protection from the harmful effects of ultraviolet radiation.

SolarShield® sunglasses retail for **\$12.99** for one pair, and the member price is **\$9.74**. If a member buys two pairs, the price is reduced to only **\$8.63** a pair.

Compare this **low price** to sunglasses sold in stores and see savings exceeding **90%**!

SolarShield® is a registered trademark Dioptics, Inc.

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

# Unique Face Oil Breathes New Life Into Aging Skin

Cumulative exposure to sunlight damages structural proteins and other molecules needed to keep skin firm and supple. This photo-aging of skin eventually results in wrinkles, pigment spots, and a sagging, aged appearance.<sup>1-5</sup>

**Cosmesis Anti-Aging Face Oil** seals in vital moisture while nourishing skin with supportive lipids. Formulated with ingredients clinically proven to penetrate and nourish the different layers of skin at the cellular level, **Cosmesis Anti-Aging Face Oil** restores a smoother, more youthful-looking complexion:

- **Olus and Camelina sativa Seed Oils:** This unique botanical blend, with its natural tocopherols, supports skin barrier function and hydration better than other essential fatty acids that are more susceptible to oxidation<sup>6</sup>—*protecting against dry and scaly skin.*
- **Palmitoyl Oligopeptide:** This oil-soluble peptide promotes production of the key molecules collagen and hyaluronic acid<sup>7</sup>—*shown to result in a near 20% reduction in mean wrinkle depth.*<sup>7</sup>
- **Marula Oil:** This fruit extract of the marula tree (*Sclerocarya birrea*) is rich in oxidation-resistant compounds that support collagen production<sup>8</sup>—*proven to revitalize skin and reduce the appearance of wrinkles.*<sup>9-11</sup>
- **Retinyl Palmitate:** This retinol form of vitamin A inhibits collagen breakdown, stimulates collagen formation, and promotes keratinocyte production and epidermal thickness—*resulting in reduced wrinkles and improved evenness of skin tone.*<sup>12,13</sup>

Applying one to two drops of **Cosmesis Anti-Aging Face Oil** morning and night to clean, dry areas of the face results in rejuvenation of the appearance of photo-aged skin for a vibrant, more youthful appearance!

## Cosmesis Anti-Aging Face Oil

Item #80158 • 1-ounce bottle

	Retail Price	Member Price
1 bottle	\$59	<b>\$44.25</b>
2 bottles	\$52 each	<b>\$39 each</b>



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To order **Cosmesis Anti-Aging Face Oil**,  
call **1-800-544-4440**  
or visit **www.LifeExtension.com**

FOR WHOLE-BODY SUPPORT

# Highly Absorbable CURCUMIN

Used medicinally for over 4,000 years, **curcumin** benefits almost every organ in the body.<sup>1,3</sup> The challenge in obtaining these benefits is that most supplements are poorly **absorbed** into the bloodstream and are not well retained in the body.

**Life Extension**®'s curcumin supplements utilize a patented, bio-enhanced curcumin preparation that can reach up to **7 times** higher concentrations in the blood than standard curcumin.<sup>4</sup>

Studies comparing standard curcumin to **Super Bio-Curcumin**® and **Advanced Bio-Curcumin**® with **Ginger & Turmerones** found:<sup>5,6</sup>

- Nearly **2 times** the support for **immune health**,
- Nearly **twice** the support for **inflammatory issues**, and
- Approximately **double** the **free-radical fighting** support.

Life Extension® offers the choice of two super-**absorbing** curcumin formulas that require only one capsule a day dosing:

- **Super Bio-Curcumin**® provides optimal potency of highly absorbable curcumin.
- **Advanced Bio-Curcumin**® with **Ginger & Turmerones** provides the following additional nutrients for those seeking more comprehensive support for prolonged functional inflammatory issues:
  - ∞ **Ginger** to complement health benefits,<sup>7</sup>
  - ∞ **Turmerones** to increase the amount of curcumin inside cells, and
  - ∞ **Phospholipids** to further enhance absorption.<sup>8</sup>



## Super Bio-Curcumin®

Item #00407 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$38	<b>\$28.50</b>
4 bottles	\$35 each	<b>\$26.25 each</b>



## Advanced Bio-Curcumin® with Ginger & Turmerones

Item #01808 • 30 softgels

	Retail Price	Member Price
1 bottle	\$30	<b>\$22.50</b>
4 bottles	\$27 each	<b>\$20.25 each</b>



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

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

# BONE RESTORE

WITH VITAMIN K2

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

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

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

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

## Just four capsules of Bone Restore provide:

<b>Highly Absorbable Calcium</b> (as DimaCal® dicalcium malate, TRAACS® calcium bisglycinate chelate, calcium fructoborate)	<b>700 mg</b>
<b>Magnesium</b> (as magnesium oxide)	<b>300 mg</b>
<b>Vitamin D3</b>	<b>1,000 IU</b>
<b>Vitamin K2</b> (as menaquinone-7)	<b>200 mcg</b>
<b>Boron</b> (calcium fructoborate as patented FruiteX B® OsteoBoron®)	<b>3 mg</b>
<b>Zinc</b> (as zinc amino acid chelate)	<b>2 mg</b>
<b>Manganese</b> (as amino acid chelate)	<b>1 mg</b>
<b>Silicon</b> [from horsetail extract (herb)]	<b>5 mg</b>



Item #01727

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

FruiteX B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049. DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. Patent 6,706,904 and patents pending.

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

Not Eating Enough Veggies? No Problem!

# Get All The Protective Benefits Of Cruciferous Vegetables

In One Easy-To-Take Supplement

Scientists continue to find healthy benefits—including DNA protection—in cruciferous plants.

But it's not always easy to get in five servings of cruciferous vegetables a day—and even if you do, cooking can destroy many of the protective compounds found in **broccoli, Brussels sprouts, cauliflower, and cabbage.**

Life Extension®'s **Triple Action Cruciferous Vegetable Extract** combines vital plant extracts into a comprehensive formula to provide optimal DNA protection. Each capsule also contains:<sup>1-9</sup>

- **Indole-3-carbinol (I3C)** and **di-indolyl-methane (DIM)** to encourage liver detoxification and modulate estrogen metabolism
- Bioactive **cruciferous** compounds like **glucosinolates** have favorable effects on healthy cell division
- **Apigenin**, a powerful plant flavonoid, that boosts cell protection<sup>1-9</sup>

Those who want the additional benefits of *trans*-resveratrol can order **Triple Action Cruciferous Vegetable Extract with Resveratrol**. Each vegetarian capsule contains **20 mg** of *trans*-resveratrol in addition to the vegetable extract.

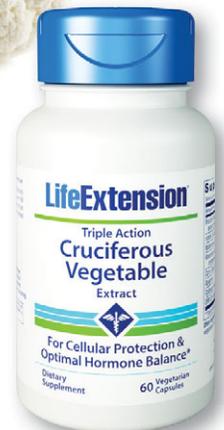
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### Triple Action Cruciferous Vegetable Extract

Item #01468 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$24	<b>\$18</b>
4 bottles	\$22 each	<b>\$16.50 each</b>



### Triple Action Cruciferous Vegetable Extract with Resveratrol

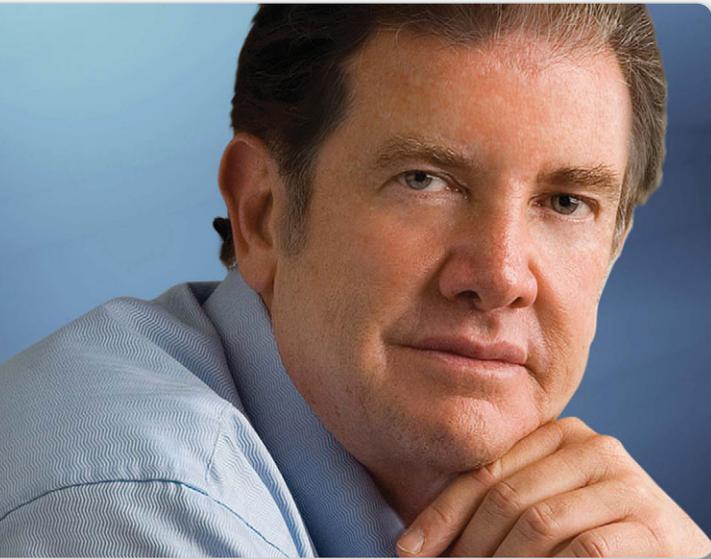
Item #01469 • 60 vegetarian capsules

	Retail Price	Member Price
1 bottle	\$32	<b>\$24</b>
4 bottles	\$29.60 each	<b>\$22.20 each</b>



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

BY ASTRID DERFLER KESSLER

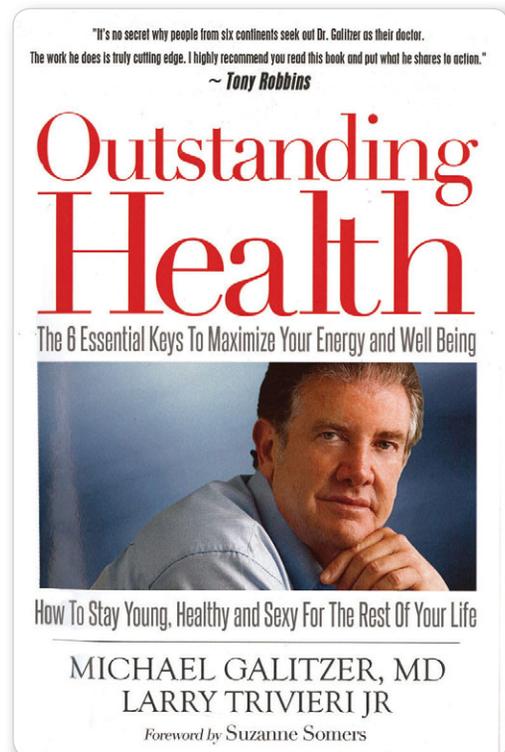


## An Interview With Michael Galitzer, MD

For over a quarter of a century, Hollywood's top celebrities—including actress, health advocate, and best-selling author Suzanne Somers—have been flocking to the Santa Monica, California, clinic of cutting-edge physician Dr. Michael Galitzer, one of the country's most respected experts in the fields of Energy Medicine, integrative medicine, and bio-identical hormone replacement therapy. For more than 40 years, he has been acknowledged as a key player when it comes to longevity and anti-aging medicine.

According to Suzanne Somers, "Dr. Galitzer is the best kind of doctor... He has kept me well for over a decade. I lead an active and stressful life, constantly traveling, which wears down the body. Before and after every trip, I go to his office and utilize protocols that protect and build up. As a result, I never get sick."

## Outstanding Health: The 6 Essential Keys To Maximize Your Energy And Well Being



"We work together, rarely resort to drugs, and his approach allows me to enjoy superb health. He keeps my insides healthy, which manifests on the outside, making me look and feel young."

In this exclusive interview with *Life Extension*<sup>®</sup>, Dr. Galitzer discusses how to turn back the clock to increase energy, improve vigor and stamina, and have the best health of your life.

**LE:** You are considered one of Hollywood's "best-kept secrets." What is it that you do that keeps the movers and shakers of the movie industry flocking to your door?

**MG:** Simple—I've developed a program that consistently helps people look and feel younger than their actual age. The sad truth is that poor health is something most people in this country are struggling with. They may not necessarily be suffering from specific illnesses, but they certainly lack the energy they had when they were younger to do the things they most enjoy. In fact, lack of energy is the number one complaint among my patients. Add to that chronic stress, low libido, memory problems and "foggy" thinking, joint pain, and lack of flexibility, and you have the potpourri of symptoms that the majority of Americans experience each and every day.

**LE:** One of the biggest complaints we as a nation have is that we're always tired. You believe this exhaustion is toxin based.

**MG:** One of the primary causes of energy loss and energetic imbalances in the body, and therefore disease, is toxins. Toxin-related imbalances can result in a wide range of physical, emotional, and mental health issues. Conventional medicine recognizes two classes of toxins: exogenous and endogenous. I add a third class: toxic emotions.

**LE:** Can you provide examples of each kind of toxin?

**MG:** Exogenous, or external, toxins are those present in the outside environment. Most exogenous toxins that affect us include tap water,

smog, alcohol, sugar and artificial sweeteners, food preservatives, additives and artificial flavorings, tobacco, pesticides, petrochemicals, heavy metals, viruses, bacteria, prescription medicines, and over-the-counter medicines.

Endogenous toxins are internal toxins produced in the body as a result of compromised digestion and inefficient metabolism. They result from pancreatic digestive deficiency, poor eating habits, and wrong food combinations.

Toxins are discharged by the liver, kidneys, lymph, colon, lungs, and skin. As more and more toxins accumulate, they place severe stress on these organs of elimination. With continued accumulation, the liver, kidneys, and lymph system become less efficient in their ability to excrete these waste products, causing toxins to accumulate in the connective tissues and then in the organs. Your body tries to compensate by having the endocrine or hormonal glands secrete hormones to help stimulate detoxification. Over time these glands become inefficient and tired. The end result is an inefficient elimination system with toxin accumulation, coupled with reduced organ function, producing an ideal environment for illness to flourish.

**LE:** Let's get specific and discuss the best ways to "drain" or detox various organs in the body. We'll start with the kidneys.

**MG:** Drink healthy, non-distilled pure filtered water each day. One of the world's leading authorities on water and its relationship to health was the late Dr. Fereydoon Batmanghelidj. Based on his findings, he recommended a person divide their weight in half, and then drink that amount of water

in ounces each day. For example, a woman weighing 120 pounds would need to drink 60 ounces. To increase hydration from water, Dr. Batman, as he liked to be called, advised adding a pinch of sea salt to each glass of water. Doing so helps carry water more efficiently into the cells, thus improving the cells' ability to flush out toxins.

Avoid both tap water, unless it's first filtered through a good quality filter, and distilled water, which is dead and has no minerals. I've found that Volvic water from France can be helpful because it's slightly alkaline and contains both healthy electrons and the right amount of minerals. Fiji water is also good. Alkaline water has also become popular.

**LE:** What about foods that detox the kidneys?

**MG:** Eat a plentiful supply of organic fresh fruits and vegetables that act as natural cleansers because they're high in fiber. Kidney-friendly foods include asparagus, blueberries, cranberries, cucumber, grapes, kale, spinach, string beans, and watermelon. Herbs such as dandelion, ginger, nettles, and parsley are also recommended. Horsetail tea also promotes kidney drainage.

**LE:** What do you recommend for the liver?

**MG:** In addition to fresh-squeezed lemon water upon arising, incorporate apples, beets, broccoli, cabbage, carrots, citrus, dandelion greens, squash, watercress, and zucchini. Cruciferous vegetables are also important because they contain compounds called glucosinolates, which aid in enzyme production in the liver. These liver enzymes help flush

out carcinogens and other toxins, and have been shown to lower the risk of cancer. Dark leafy greens are also rich in chlorophylls to eliminate environmental toxins from the bloodstream. They also contain compounds to help neutralize heavy metals, chemicals, and pesticides. Bitter greens, such as arugula, chicory, and dandelion and mustard greens, also help increase production and flow of bile, to further help remove toxic residues.

**LE:** Before we discuss the best ways to drain the lymphatic system, please describe what it is.

**MG:** Without the lymphatic system, you could not live. The fluid circulating in the lymphatic system is called lymph and is derived from blood plasma but is clearer and more watery. The body has twice as much lymph as blood and twice as many lymph vessels. It also includes lymph nodes, the appendix, tonsils, and spleen. The lymphatic system aids immune function by filtering out disease-causing organisms, manufacturing white blood cells, and generating antibodies.

Lymph has no pump. The process of breathing creates a partial vacuum that causes blood and lymph to flow upward, and return to the blood stream from which it came. The easiest way to facilitate drainage of your lymphatic system is to take deep breaths. Try to make a point to engage in deep breathing exercises for five to 10 minutes three times a day. Another excellent measure for improving lymphatic function is skin brushing. This not only keeps lymph flowing, it helps rid the outer layer of skin of accumulated dead cells and debris, improving overall circulation and helping your skin

“breathe” easier. You need a dry skin brush. Starting with your arms and hands, brush towards your heart in long, firm strokes. Then do the same with feet and legs, brushing upwards. Then brush along your chest and abdomen, again moving towards your heart. Be sure to take deep, full breaths.

**LE:** After the drainage stage, the next step is detoxification, which you recommend people inform their health care provider they are doing. Can you outline the steps involved in detoxifying the body?

**MG:** The first component is to adhere to a detoxification diet. Foods and beverages to include are sesame, and almond milk; organic apples, berries, lemon, watermelon; organic non-starchy vegetables, that comprise the bulk of your food intake each day; wheatgrass and other green juices, almonds, tempeh, tofu, stevia sweetener, and alkalizing spices like chili, cinnamon, curry, ginger, sea salt, mustard, and tamari; black, pinto, and kidney beans, lean poultry, lamb, wild-caught fish; quinoa, brown rice, millet, and non-GMO corn.

**LE:** What foods must you avoid?

**MG:** Sugar, artificial sweeteners, wheat and wheat products, simple carbohydrates, white flour, vinegar (except apple cider), dairy, processed or preserved foods, and coffee, alcohol, and soda.

**LE:** Another key to outstanding health is improving the health of your gastrointestinal tract, or gut. What makes this such a vital part of overall health?

**MG:** The health of the gut is just as important as the health of

your brain, liver, and other organs. When gut health is compromised, it soon places a burden on these organs and can trigger a host of other health problems.

**LE:** What are the causes of an unhealthy gut?

**MG:** Poor diet and nutritional deficiencies due to the standard American diet, which is devoid of many essential vitamins, minerals, and other nutrients, and loaded with unhealthy fats, sugar, and simple carbs. It’s also lacking in fiber, which is necessary for proper elimination of waste and toxins, and naturally occurring enzymes necessary for proper digestion.

Another cause of unhealthy gut is food sensitivity, including chemical, pharmacological, enzyme deficiency, immunoglobulin reaction, and food intolerance or allergy. Infections and malabsorption, stomach acid imbalance, the overuse of pharmaceutical drugs, stress, and lack of exercise also contribute to an unhealthy gut.

**LE:** You have a long list of easy-to-follow rules for improving gut health.



**MG:** Don't skip breakfast and eat no later than 8 p.m.; eat meals that contain **70 to 80%** alkalizing foods and only **20 to 30%** acidifying foods; on average, limit total protein to **50 grams**; follow a ratio of **40%** protein, **20 to 40%** complex carbs, and **20 to 40%** healthy fats; consume essential fatty acids (cold-water fish and extra virgin olive oil); avoid cooking at high temperatures; eat fruits by themselves either a half-hour before a meal or two hours after; avoid artificial sweeteners; cut down on total carbs; and give thanks for your food before eating.

**LE:** What supplements do you recommend for lasting gut health?

**MG:** Digestive and proteolytic enzymes. Digestive enzymes include amylase, cellulase, lactase, lipase, and protease, which help digest carbohydrates, fibers, dairy, fats and proteins. Proteolytic enzymes are also produced by the pancreas, as well as bromelain, papain, lumbrokinase, nattokinase, and serrapeptase.

Probiotics support the more than 400 species of life- and health-enhancing bacteria that live in the gut. They include *L. acidophilus*, bifidobacteria, *L. bulgaricus*, *L. casei*, and *Streptococcus thermophilus*. Used as supplements, probiotics help keep harmful bacteria and other microorganisms in check, protect against food poisoning, mitigate side effects of antibiotic drugs, improve immune function, aid in the manufacture of B vitamins, reduce high cholesterol, and improve overall health and efficiency of the gastrointestinal tract.

You can increase your body's own supply of gut probiotics by regularly consuming fermented foods, such as sauerkraut, kimchi, and miso soup.

**LE:** How about recommended herbs for gut health?

**MG:** Herbs have been used for centuries to maintain and restore gut health. They fall into categories such as anti-inflammatories, [like] chamomile; astringents like meadowsweet to prevent and heal GI bleeding; bitters, such as gentian and yarrow root to improve digestion; carminatives like peppermint, spearmint, and valerian to prevent and relieve gas and bloating; demulcents, such as marshmallow and slippery elm to soothe the lining of GI tract; and nervines like hops to ease stress.

**LE:** You are considered an expert in the field of bioidentical hormone replacement therapy. Can you discuss in detail your position on this topic?

**MG:** Anti-aging physicians with an expertise in hormone therapy, including myself, prefer to use bioidentical hormones when treating patients because of how closely they mimic hormones that are naturally produced in the body. Doing so both increases the effectiveness of hormone therapy and greatly minimizes the risk of side effects.

Synthetic hormones are patented substances manufactured by drug companies and represent one of the most prescribed class of drugs by doctors. Such hormones are produced by altering the structure of the hormone so that drug companies can patent them. This change in structure, however, also alters how the hormones affect the body when they are used. In many cases, synthetic hormones are derived from the natural hormones and other substances of animals, then structurally altered. Premarin®, one of the most common unnatural-to-the-body hor-

mones, is derived from the urine of pregnant mares. It's natural to a horse, but not to a woman [and] it is not the same as human estrogen. It carries the risk of toxicity that all chemical drugs have.

**LE:** With such a horrific list of health risks and side effects, it makes you wonder why anyone would choose a synthetic hormone replacement. Please discuss the natural alternatives.

**MG:** No studies have associated bioidentical hormone replacement therapy with increased risk of cancer. Bioidentical hormones and progesterone are bioengineered from natural plant products (wild yams), and contain the exact same chemical structure as natural female sex hormones. They most closely mimic natural human physiology.

This makes them much safer to use, in addition to increasing their effectiveness. Most importantly, bioidentical hormones are responsible to all of the body's enzymes and other cofactors that regulate their function and make them so efficient. There have been several studies in menstruating women that showed that the higher the progesterone level during her second half of the cycle, the lower the incidence of breast cancer. Unfortunately, many people, including most physicians, believe that estrogen and progesterone cause female cancers. In the 28 years I've been using bioidentical hormones in thousands of patients, I have only seen two cases of breast cancer. I have concluded bioidentical hormone replacement therapy does not cause cancer, and more importantly, helps you feel well, look well, and be well by improving your sleep, energy, mood, and outlook on life.

**LE:** Aside from hot flashes, what are some of the signs of estrogen deficiency?

**MG:** Menstrual problems, vaginal dryness, painful intercourse, low libido, sagging breasts and loss of fullness, insomnia, dry eyes, night sweats, bone loss, urinary tract infections, joint pain, hair loss, palpitations, migraines, mood swings, anxiety, depression, and impaired mental function, or brain fog.

**LE:** Are there any self-care steps women can take to address an estrogen deficiency?

**MG:** Steps include eating enough protein and estrogenic foods, and when appropriate, the use of natural bioidentical estrogen creams. Estrogenic foods help raise estrogen levels in the body and include animal proteins, apples, barley, brown rice, carrots, cherries, coconuts, peanuts, olives, plums, and nightshade vegetables like eggplant, tomatoes, as well as sweet and hot peppers.

**LE:** What kind of cream do you recommend?

**MG:** There are three main types of estrogen: estradiol, which [is the most abundant]; estrone, which is the most potent, and estriol. I prescribe Biest Cream, which contains **80%** estriol, the safest form of estrogen, and **20%** estradiol. Numerous studies show the benefits of estriol: It offers breast cancer protection, controls menopausal symptoms without causing growth of the lining of the uterus, it maintains a healthy vaginal flora; it maintains a healthy pH of the vagina, and it helps prevent urinary tract infections. It prevents vaginal dryness, helps treat pain on intercourse, and helps reduce

incontinence. It also maintains and improves skin tone, helps prevent bone loss, and helps reduce the risk of heart attack. In addition, it reduces the risk of new onset diabetes.

**LE:** That's incredibly impressive. What is the role of progesterone?

**MG:** Progesterone plays a vital role in keeping estrogen levels in the body in check. Progesterone also helps to regulate blood sugar levels and is a natural diuretic. It's an antidepressant, improves the function of the thyroid gland, normalizes blood clotting, stimulates bone growth, and helps restore normal sleep patterns. Progesterone decreases blood pressure, relaxes the coronary arteries, and is now being used to stabilize brain function after traumatic injury. It's also essential for a healthy libido.

Symptoms of progesterone deficiency include anxiety and agitation, menstrual irregularities, sleep problems, loss of interest in sex, and water retention.

**LE:** What's the best way to boost progesterone and keep estrogen levels in balance?

**MG:** With the use of a natural progesterone cream, applied topically. Such creams contain natural progesterone, made from yams, that's absorbed through the skin.

**LE:** If a woman is experiencing symptoms, and wants to start bio-identical hormone therapy replacement, what does she need to do?

**MG:** Women should have the following blood tests: CBC, chem profile, insulin, Free T3, TSH, thyroid peroxidase, thyroglobulin

antibody, estradiol, progesterone, SHBG, IgF1, IGFBP3, prolactin, HsCRP, FSH, LH, testosterone/free testosterone, DHEA-S, 25-OH vitamin D, cortisol, and HbA1c.

**LE:** Thank you for the information, Dr. Galitzer, and your time. ●

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Dr. Michael Galitzer is a nationally recognized expert in Energy Medicine, integrative medicine, and bioidentical hormone replacement therapy. For over 40 years, he has been a leading figure and innovator in the field of longevity. For the past decade, he has been a featured contributor to nine bestselling books by Suzanne Somers. His own publications include *Re-ignite Your Spark*, *No Batteries Required*, and a chapter on bio-identical hormones in *Alternative Medicine, The Definitive Guide 2002*. For more information about Dr. Galitzer, visit [www.DrGalitzer.com](http://www.DrGalitzer.com).

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

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Item #: 33880  
Retail Price: \$24.95  
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Advanced Defense Against Cellular Aging

# OPTIMIZED RESVERATROL

## with NAD+ Cell Regenerator

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

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

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

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

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

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## The Modern Chiropractic Holistic Approach

BY MICHAEL DOWNEY



**Dr. Jonathan Ozner**

Dr. Jonathan Ozner is a board-certified chiropractic physician, a certified personal trainer, a Life Extension® member, and the clinical director at Broward Health and Rehab in Sunrise, Florida. Most recently, Dr. Ozner co-authored a study on the benefit of chiropractic treatment on trigeminal and glossopharyngeal neuralgia, which was published in the *Journal of Upper Cervical Chiropractic Research*.

Very active in sports as well the fitness and health communities—and with a passion for nutrition and proper supplementation—Dr. Ozner truly practices what he preaches and lives a healthy, holistic lifestyle. We recently met with him at his clinic to ask about the broad range of health problems now being treated by modern chiropractic's latest diagnostic and therapeutic techniques.

**LE:** Most people understand that chiropractic treatment focuses on correcting spinal misalignments that can, over time, lead to dysfunction and a variety of diseases. What are the origins of these misalignments in the first place?

**JO:** A “vertebral subluxation” is misalignment of a vertebra—or spinal misalignment—that puts pressure on the nerve root corresponding to that segment, affecting the neuronal impulse. Every body aspect is directly controlled by the nervous system and subluxations can result from chemical, physical, and especially, emotional stress. [If left] uncorrected, health issues arise. Research shows that **80 to 90%** of subluxations go undetected, as we usually don’t “feel anything.” Many patients first turn to chiropractic care to resolve back and neck pain and headaches. But pain—usually the last thing to manifest from a subluxation—is the body’s way of saying: “Emergency! There’s a major problem that’s been occurring for quite some time now.”

**LE:** What are the specific benefits of correcting subluxations?

**JO:** Treating subluxations can provide reduced stress, anxiety, and fatigue, allergy resolution,

and improved sleep and gastrointestinal function. When the spine is aligned, we’re healthy. When it’s not, and it puts pressure on nerves, we’re in a dysfunctional state.

**LE:** Modern chiropractic education involves a number of new types of training and methods. Can you explain how training has expanded to include nutrition, oncology, or cardiology education?

**JO:** Chiropractic education includes the same classroom hours as medical school. While classes such as nutrition, pathology, microbiology, and biochemistry are taught, there’s a strong emphasis on anatomy and physiology, spinal biomechanics, and radiology, as well as chiropractic-specific adjusting technique.

**LE:** Chiropractors are evolving to become more “holistic.” Can you elaborate?

**JO:** Chiropractors deal with the entire function of the body as it relates to the health of the spine and

nervous system. The profession is ever-evolving as emerging research explains scientifically what we’ve known to be true for 100 years. One recently published study dealt with the wellness aspect of chiropractic. This study looked at the retention rate of addiction patients. Patients who received chiropractic care via a technique called “torque release” had the best results by a significant margin. Another long-term seven-year study, which yielded incredible results, showed that patients under regular chiropractic care experienced **60%** fewer hospital admissions, **59%** fewer days in the hospital, **62%** fewer outpatient surgeries, and **85%** reduced pharmaceutical costs!

**LE:** Spinal degeneration can develop with age, limiting mobility and causing pain and headaches. How does it occur, what conditions can it cause, and how can it be treated?

**JO:** We’re constantly putting our bodies through stressors—physical, chemical, and emotional. Eventually, this causes body wear and tear, notably in the spine. Distorted biomechanics and movement patterns, as well as a sedentary lifestyle, cause alterations in the joint stability in the spine itself. Attempting to stabilize these joints, the body deposits calcium there, furthering joint immobilization and degeneration. We see “osteophytic formations”—bony spurs that eventually impede the spinal cord and nerves, causing health issues. Each spinal segment—consisting of vertebral bodies, intervertebral discs, and surrounding muscles and ligaments—gets its nutrition via spinal movement itself. Movement diffuses nutrients into the discs, keeping them hydrated and well-maintained. At



least 30 minutes daily exercise and sufficient water intake can have profound, positive effects on spine health, and thus, the body.

**LE:** If spinal degeneration has already caused calcium deposits and bone spurs, is it too late to reverse?

**JO:** Chiropractic adjustments break up adhesions—many due to calcium deposits—and increase mobility in subluxated spinal segments. This relieves pressure on the exiting spinal nerve, reducing stress and irritation body-wide. It only takes the pressure of a dime on a spinal nerve to diminish nerve impulse. Correcting these minor misalignments can have a major impact on overall health and well-being.

**LE:** There has been research into chiropractic's capacity to address difficult-to-treat conditions such as Ménière's disease, tinnitus, and even hypertension. Can you please elaborate?

**JO:** In essence, we don't actually "treat" anything. However, by analyzing the patient for vertebral subluxations and correcting them, we restore the body to a homeostatic state or "balance out" the nervous system, and many health issues then resolve naturally. Conditions such as Ménière's, tinnitus, and high blood pressure have been seen to normalize under chiropractic care. Ménière's is an inner-ear disorder that affects hearing and balance. The vestibular nerve, a cranial nerve, plays a role in balance and coordination of the inner ear. The brainstem, sitting within the "foramen magnum of the atlas"—or C1 vertebra—directly links to all cranial nerves, including the vestibular nerve. When we see

a subluxation in the atlas [the first vertebra, which supports the head] putting pressure on the brainstem, this can profoundly affect function of the vestibular nerve, ultimately serving to cause inner-ear dysfunction, which can include tinnitus, vertigo, and hearing loss—the triad known as Ménière's disease. As for blood pressure, the lumen [channel] of the blood vessels is directly controlled by the sympathetic nervous system. Taking pressure off the spinal cord and nerves can reduce the sympathetic response on the blood vessel itself, decreasing vasoconstriction and increasing vasodilation, ultimately improving blood pressure.

**LE:** Aside from the spine—accidents or sports injuries frequently damage muscles and joints throughout the body. Does such damage fall within chiropractic's sphere?

**JO:** Car accidents and sports injuries significantly impact not only the spine, but also surrounding muscles and ligaments. Chiropractors are licensed in physiotherapy, which includes soft-tissue mobilization therapy and prescribing exercises that strengthen weak muscles and stretch hypertonic muscles and ligaments. Also, deep-tissue laser therapy is an exciting, new therapy that works by what's called "photo-bio-modulation." Most soft-tissue injuries involve extensive inflammation and edema. The deep-tissue laser sends photon light energy into the damaged tissue cell, helping repair mitochondria and restore cell functionality. This increases ATP and vasodilation and decreases the injury's inflammatory response. We've seen some incredible results in patients suffering from arthritis, tendonitis,

neuropathy, and other conditions. Within a few treatments, patients report decreased or eliminated pain and increased range of motion. And deep-tissue laser therapy is completely noninvasive, backed by controlled trials, and costs significantly less than surgery. We provide this therapy for soft tissue injuries, in addition to chiropractic care.

**LE:** Modern chiropractic utilizes broader techniques than *manual* manipulation of vertebrae. Can you provide an example?

**JO:** While there is nothing wrong with the manual adjustment, an innovative technique called torque release deals with the entire spine as one unit and looks at specific segments of direct dural/meningeal [membranes surrounding the spine] attachment, which ultimately control alignment and function of the spine and body.

**LE:** Tell us about chiropractic's modern diagnostic techniques.

**JO:** Chiropractic will always use traditional radiographic images to evaluate osseous [bone] issues, MRI to evaluate soft tissue pathology, and paraspinal thermography, which detects patterns of heat [adjacent to the spine] and gives us a "window in" as to where their vertebral subluxation may exist. It's a great tool to show patients that they have an inflammatory response at a given segment in their spine.

**LE:** What role does corrective exercise play in modern chiropractic?

**JO:** We know most people are walking around with hypertonicity [high pressure] of some sort, distorting overall posture and affecting health. When we have muscle spasms and hypertonic muscles and

## ASK THE CHIROPRACTOR

ligaments, we create weak muscles on the opposite side, creating an imbalance in the body. This can put the spine out of alignment as ligaments and muscles with direct attachments become taut, and we begin developing nerve pressure. This snowball effect can be avoided by performing daily stretches and exercises. We arrange programs tailored to address these areas.

**LE:** Can you explain how nutrition supports modern chiropractic?

**JO:** I make sure my patients supplement with a good multi-vitamin, such as Life Extension® brand, especially one providing adequate vitamins D3, A, and C. We know that inflammation contributes significantly to disease. I [tell] patients to take a supplement such Life Extension®'s **Super Omega-3**—I use it myself—which enhances joint function, including that of the spinal column. For patients who are athletes or those who don't get adequate protein, I recommend quality protein powder. The Life Extension® brand is

terrific, because it doesn't contain BGH, and it's all natural—zero artificial colors or sweeteners, which have been linked to adverse health issues.

**LE:** Should individuals undergo regular chiropractic testing to prevent disorders? And how frequently?

**JO:** Whether in pain or not, getting checked regularly by a doctor of chiropractic can help prevent future health issues. Many patients come into my practice in pain and after their care plan, get amazing results. An initial care plan may include several visits per week depending on the condition, and we reduce those visits as needed until a stage of maintenance is achieved. When out of pain, I recommend patients come in on a wellness basis to ensure they'll function at their highest potential. It's like taking your car in for maintenance—you wouldn't wait until the car breaks down! We should have routine follow up visits to ensure we're in proper alignment. You wouldn't put junk fuel into your car, so you

should eat the right types of foods. And lastly, if you never drove your car, it would eventually break down—we need light-to-moderate exercise at least 30 minutes daily so we don't break down! By utilizing exercise, nutrition, supplementation, positive mental outlook, and most important, chiropractic care, patients report back to me with amazing results in their overall health and well-being!

**LE:** Thank you, Dr. Ozner.

**JO:** Thank you. ●

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Readers interested in learning more about chiropractic and about Dr. Ozner's work can visit his clinic website at <http://www.broward-healthandrehab.com>. To book an appointment with Dr. Ozner, readers can reach his office at 1-954-748-3700.

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



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- MALE ELITE PANEL\* (LC100016) \$575**  
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- FEMALE ELITE PANEL\* (LC100017) \$575**  
**Chem/CBC profile**, Free and Total Testosterone, Total Estrogens, Estradiol, Estrone, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, Ferritin, Homocysteine
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**Pregnenolone and Total Estrogens**  
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- FEMALE COMPREHENSIVE HORMONE PANEL\* (LC100011) \$299**  
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- MALE COMPREHENSIVE HORMONE PANEL\* (LC100010) \$299**  
**CBC/Chemistry Profile** (see description above right), **DHEA-S**, **Estradiol**, **DHT**, **PSA**, **Pregnenolone**, **Total and Free Testosterone**, **SHBG**, **TSH**, **Free T3**, **Free T4**, **Cortisol**.
- THE CBC/CHEMISTRY PROFILE (LC381822) \$35**  
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**HDL Cholesterol**      **Estimated CHD Risk**  
**LDL Cholesterol**      **Glucose**  
**Triglycerides**      **Iron**
- LIVER FUNCTION PANEL**  
**AST (SGOT)**      **Total Bilirubin**  
**ALT (SGPT)**      **Alkaline Phosphatase**  
**LDH**
- KIDNEY FUNCTION PANEL**  
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**Creatinine**      **Uric Acid**
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**Lymphs (Absolute)**      **MCV**  
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- HEALTHY AGING PANEL-BASIC\* (LC100025) \$149**  
**CBC/Chemistry profile** (see description above), **C-Reactive Protein (high sensitivity)**, **Vitamin B12**, **Folate**, **Vitamin D 25-hydroxy**, **Hemoglobin A1c**, **TSH**, **Ferritin**, and **Insulin**.
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| <p><input type="radio"/> <b>NUTRIENT PANEL* (LC100024)</b> <b>\$349</b><br/>Vitamin B12, Folate, Vitamin D 25-hydroxy, Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC Magnesium.</p> <p><input type="radio"/> <b>ENERGY PROFILE (LC100005)</b> <b>\$375</b><br/>CBC/Chemistry Profile (see description previous page), 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.</p> <p><input type="radio"/> <b>ANEMIA PANEL* (LC100006)</b> <b>\$79</b><br/>CBC/Chemistry Profile (see description previous page), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.</p> <p><input type="radio"/> <b>AUTOIMMUNE DISEASE SCREEN* (L100041)</b> <b>\$199</b><br/>ANA screen, hs-CRP, TNF, Immunoglobulins, IgA, IgG, IgM</p> <p><input type="radio"/> <b>DIABETES MANAGEMENT PROFILE – COMPREHENSIVE (LC100040)</b> <b>\$129</b><br/>Hemoglobin A1C, Glucose, Insulin, Lipid Panel, Glycomark</p> <p><input type="radio"/> <b>DIABETES MANAGEMENT PROFILE – BASIC (LC100039)</b> <b>\$39</b><br/>Hemoglobin A1C, Glucose, Insulin</p> <p><b>ADVANCED CARDIAC BIOMARKERS</b></p> <p><input type="radio"/> <b>ADVANCED OXIDIZED LDL PANEL* (LC100035)</b> <b>\$285</b><br/>This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase, and Oxidized LDL.</p> <p><input type="radio"/> <b>OXIDIZED LDL PANEL* (LC100034)</b> <b>\$175</b><br/>This panel looks at vascular inflammatory biomarkers, beginning with the development of metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: Myeloperoxidase and Oxidized LDL.</p> <p><input type="radio"/> <b>OXIDIZED LDL* (LC817472)</b> <b>\$75</b><br/>OxLDL is a powerful initiator of inflammatory changes in the artery wall, which eventually lead to the formation of plaque.</p> | <p><b>HORMONES</b></p> <p><input type="radio"/> <b>DHEA-SULFATE (LC004020)</b> <b>\$61</b><br/>This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.</p> <p><input type="radio"/> <b>MALE BASIC HORMONE PANEL (LC100012)</b> <b>\$75</b><br/>DHEA-S, Estradiol, Free and Total Testosterone, PSA</p> <p><input type="radio"/> <b>FEMALE BASIC HORMONE PANEL (LC100013)</b> <b>\$75</b><br/>DHEA-S, Estradiol, Free and Total Testosterone, Progesterone</p> <p><input type="radio"/> <b>DIHYDROTESTOSTERONE (DHT)* (LC500142)</b> <b>\$99</b><br/>Measures serum concentrations of DHT.</p> <p><input type="radio"/> <b>ESTRADIOL (LC004515)</b> <b>\$33</b><br/>For men and women. Determines the proper amount in the body.</p> <p><input type="radio"/> <b>INSULIN FASTING (LC004333)</b> <b>\$25</b><br/>Can predict those at risk of diabetes, obesity, heart and other diseases.</p> <p><input type="radio"/> <b>PREGNENOLONE* (LC140707)</b> <b>\$116</b><br/>Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.</p> <p><input type="radio"/> <b>PROGESTERONE (LC004317)</b> <b>\$55</b><br/>Primarily for women. Determines the proper amount in the body.</p> <p><input type="radio"/> <b>SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)</b> <b>\$33</b><br/>This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.</p> <p><b>GENERAL HEALTH</b></p> <p><input type="radio"/> <b>VITAMIN D (25OH) (LC081950)</b> <b>\$47</b><br/>This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.</p> <p><input type="radio"/> <b>FERRITIN (LC004598)</b> <b>\$28</b><br/>Ferritin levels reflect your body's iron stores and is also a biomarker for insulin resistance.</p> <p><input type="radio"/> <b>VITAMIN B12/FOLATE* (LC000810)</b> <b>\$79</b><br/>Measurements of B12 and Folate help evaluate your general health and nutritional status since the B vitamins are important for cardiac health as well as energy production.</p> <p><input type="radio"/> <b>PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322)</b> <b>\$31</b><br/>Screening test for prostate disorders and possible cancer.</p> |
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Fax your order to: 1-866-728-1050

**Amino Acids**

Arginine/L-Ornithine Capsules  
 Arginine Ornithine Powder  
 Branched Chain Amino Acids  
 D,L-Phenylalanine Capsules  
 L-Arginine Caps  
 L-Carnitine  
 L-Glutamine  
 L-Glutamine Powder  
 L-Lysine  
 L-Taurine Powder  
 L-Tyrosine Powder  
 Super Carnosine  
 Taurine

**Blood Pressure & Vascular Support**

Advanced Olive Leaf Vascular Support  
 with Celery Seed Extract  
 Blood Pressure Monitor Arm Cuff  
 Natural BP Management

**Bone Health**

Bone Restore  
 Bone Restore with Vitamin K2  
 Bone Strength Formula with KoAct®  
 Bone-Up  
 Calcium Citrate with Vitamin D  
 Dr. Strum's Intensive Bone Formula  
 Strontium Caps

**Books and Media**

CR Way Edition Advanced Dietary Software

**Brain Health**

Acetyl-L-Carnitine  
 Acetyl-L-Carnitine Arginate  
 Blast  
 Brain Shield® Gastrodin  
 Cognitex® Basics  
 Cognitex® with Brain Shield®  
 Cognitex® with Pregnenolone & Brain Shield®  
 Cognizin® CDP-Choline Caps  
 DMAE Bitartrate (dimethylaminoethanol)  
 Ginkgo Biloba Certified Extract™  
 Huperzine A  
 Lecithin Granules  
 Migra-Eeze™  
 Migra-Mag with Brain Shield®  
 Neuro-Mag™ Magnesium L-Threonate  
 Neuro-Mag™ Magnesium L-Threonate  
 with Calcium and Vitamin D3  
 Optimized Ashwagandha Extract  
 Prevagen  
 PS (Phosphatidylserine) Caps  
 Super Ginkgo Extract 28/7  
 Vinpocetine

**Cholesterol Management**

Advanced Lipid Control  
 Cho-Less™  
 CHOL-Support™  
 Endothelial Defense™ with Full-Spectrum  
 Pomegranate™  
 Endothelial Defense™ with GliSODin®  
 Full-Spectrum Pomegranate™  
 Policosanol  
 Pomegranate Extract Capsules  
 Red Yeast Rice  
 Theaflavins Standardized Extract  
 Vitamin B3 Niacin Capsules

**Digestion Support**

Artichoke Leaf Extract  
 Carnosoothe with PicroProtect™  
 Digest RC®  
 Effervescent Vitamin C - Magnesium Crystals  
 Enhanced Super Digestive Enzymes  
 Esophageal Guardian  
 Extraordinary Enzymes  
 Fem Dophilus

Ginger Force  
 Gutsy Chewy Digestive Tablets  
 Organic Golden Flax Seed  
 Pancreatin  
 Regimint  
 Specially-Coated Bromelain  
 Tranquil Tract™  
 TruFiber™  
 WellBetX PGX plus Mulberry

**Energy Management**

Adrenal Energy Formula  
 Asian Energy Boost  
 D-Ribose Powder  
 D-Ribose Tablets  
 Forskolin  
 Mitochondrial Basics with BioPQQ®  
 Mitochondrial Energy Optimizer with BioPQQ®  
 NAD+ Cell Regenerator™  
 Peak ATP® with GlycoCarn®  
 PQQ Caps with BioPQQ®  
 Rhodiola Extract  
 RiboGen™ French Oak Wood Extract

**Eye Health**

Astaxanthin with Phospholipids  
 Brite Eyes III  
 Certified European Bilberry Extract  
 Eye Pressure Support with Mirtogenol®  
 MacuGuard® Ocular Support  
 MacuGuard® Ocular Support with Astaxanthin  
 Tear Support with MaquiBright®

**Food**

Rich Rewards® Breakfast Blend  
 Rich Rewards® Breakfast Blend  
 Natural Mocha Flavor  
 Rich Rewards® Breakfast Blend  
 Natural Vanilla Flavor  
 Rich Rewards® Breakfast Blend  
 Whole Bean Coffee  
 Rich Rewards® Cruciferous Vegetable Soup  
 Rich Rewards® Decaf Roast  
 Stevia Extract

**Glucose Management**

CinSulin® with InSea2® and Crominex® 3+  
 CoffeeGenic® Green Coffee Extract  
 Glycation Protection Formula  
 Mega Benfotiamine  
 Natural Glucose Absorption Control  
 Super Alpha-Lipoic Acid w/ Biotin  
 Super R-Lipoic Acid  
 Tri Sugar Shield™

**Heart Health**

Aspirin (Enteric Coated)  
 Cardio Peak™ with Standardized Hawthorn  
 and Arjunaz  
 Fibrinogen Resist™ with Nattokinase  
 FlorAssist® Heart Health Probiotic  
 Super Ubiquinol CoQ10  
 Super Ubiquinol CoQ10 with BioPQQ®  
 Super Ubiquinol CoQ10 with Enhanced  
 Mitochondrial Support™  
 Super-Absorbable CoQ10 Ubiquinone with  
 d-Limonene  
 TMG Powder  
 TMG Liquid Capsules  
 Vegetarian Sourced DHA

**Hormone Balance**

DHEA (Dehydroepiandrosterone)  
 DHEA Complete  
 Inner Power  
 Pregnenolone  
 Triple Action Cruciferous Vegetable Extract  
 with Resveratrol  
 Triple Action Cruciferous Vegetable Extract

**Immune Support**

AHCC  
 Echinacea Extract  
 Enhanced Zinc Lozenges  
 i26 Hyperimmune Egg  
 Immune Modulator with Tinofend®  
 Immune Protect with PARACTIN®  
 Immune Senescence Protection Formula™  
 Kyolic® Garlic Formula 102  
 Kyolic® Garlic Formula 105  
 Kyolic® Reserve  
 Lactoferrin (apolactoferrin) Caps  
 NK Cell Activator™  
 Optimized Garlic  
 Optimized Quercetin  
 Peony Immune  
 ProBoost Thymic Protein A  
 Reishi Extract Mushroom Complex  
 Standardized Cistanche  
 Ten Mushroom Formula  
 Zinc Lozenges

**Inflammation Management**

5-LOX Inhibitor with AprèsFlex®  
 Advanced Bio-Curcumin® with Ginger &  
 Turmerones  
 Black Cumin Seed Oil with Bio-Curcumin®  
 Black Cumin Seed Oil  
 Boswellia  
 Cytokine Suppress™ with EGCG  
 Nervia®  
 Serrafazyme  
 Super Bio-Curcumin®  
 Zyflamend® Whole Body

**Joint Support**

Arthro-Immune Joint Support  
 Arthromax® Advanced with UC-II® & AprèsFlex®  
 ArthroMax® with Theaflavins & AprèsFlex®  
 Bio-Collagen with Patented UC-II®  
 Fast-Acting Joint Formula  
 Glucosamine/Chondroitin Capsules  
 Krill Healthy Joint Formula  
 MSM (Methylsulfonylmethane)

**Kidney & Bladder Support**

Cran-max® Cranberry Whole Fruit Concentrate  
 Optimized Cran-Max with Ellirose™  
 Water-Soluble Pumpkin Seed Extract

**Liver Health & Detoxification**

Anti-Alcohol Antioxidants with HepatoProtection  
 Complex  
 Calcium D-Glucarate  
 Chlorella  
 Chlorophyllin  
 European Milk Thistle  
 Glutathione, Cysteine & C  
 HepatoPro  
 Liver Efficiency Formula  
 Mega L-Glutathione Capsules  
 N-Acetyl-L-Cysteine  
 PectaSol-C®  
 Silymarin  
 SODzyme® with GliSODin® & Wolfberry

**Longevity & Wellness**

AMPK Activator  
 AppleWise Polyphenol Extract  
 Berry Complete  
 Blueberry Extract  
 Blueberry Extract with Pomegranate  
 CR Mimetic Longevity Formula  
 DNA Protection Formula  
 Enhanced Berry Complete with Acai  
 Essential Daily Nutrients  
 GrapeSeed Extract with  
 Resveratrol & Pterostilbene  
 Mega Green Tea Extract (decaffeinated)  
 Mega Green Tea Extract (lightly caffeinated)

Once-Daily Health Booster  
Optimized Fucoidan with Maritech® 926  
Optimized Resveratrol with NAD+  
Cell Regenerator™  
Optimized Resveratrol with Synergistic  
Grape-Berry Actives  
pTeroPure®  
Pycnogenol® French Maritime  
Pink Bark Extract  
Resveratrol with Pterostilbene  
RNA (Ribonucleic Acid)  
Whole Grape Extract

### Men's Health

Mega Lycopene Extract  
PalmettoGuard® Saw Palmetto with  
Beta-Sitosterol  
PalmettoGuard® Saw Palmetto/Nettle Root  
Formula with Beta-Sitosterol  
Pomi-T®  
Prelox® Natural Sex for Men®  
Super MiraForte with Standardized Lignans  
Triple Strength ProstaPollen™  
Ultra Natural Prostate

### Minerals

Boron  
Chromium Ultra  
Copper  
Iron Protein Plus  
Magnesium (Citrate)  
Magnesium Caps  
Only Trace Minerals  
Optimized Chromium with Crominex® 3+  
Sea-Iodine™  
Se-Methyl L-Selenocysteine  
Super Selenium Complex  
Vanadyl Sulfate  
High Potency Zinc

### Miscellaneous

Advanced Iodine Complete  
Potassium Iodide  
Solarshield Sunglasses

### Mood & Stress Management

5 HTP  
L-Theanine  
Natural Stress Relief  
SAME (S-Adenosyl-Methionine)

### Multivitamins

Children's Formula Life Extension Mix™  
Comprehensive Nutrient Packs ADVANCED  
Life Extension Mix™ Capsules without Copper  
Life Extension Mix™ Capsules  
Life Extension Mix™ Powder without Copper  
Life Extension Mix™ Powder  
Life Extension Mix™ Tablets with Extra Niacin  
Life Extension Mix™ Tablets without Copper  
Life Extension Mix™ Tablets  
One-Per-Day Tablets  
Two-Per-Day Capsules  
Two-Per-Day Tablets

### Personal Care

Advanced Oral Hygiene  
Anti-Aging Rejuvenating Scalp Serum  
Biosil  
Dr. Proctor's Advanced Hair Formula  
Dr. Proctor's Shampoo  
European Leg Solution Featuring Certified  
Diosmin 95  
Face Master Platinum  
Hair Suppress Formula  
Life Extension Toothpaste  
Sinus Cleanser  
Venotone  
Xyliwhite Mouthwash

### Pet Care

Cat Mix  
Dog Mix

### Skin Care

Advanced Lightening Cream  
Advanced Peptide Hand Therapy  
Advanced Triple Peptide Serum  
Advanced Under Eye Serum with Stem Cells  
Amber Self MicroDermAbrasion  
Anti-Aging Face Oil  
Anti-Aging Mask  
Anti-Aging Rejuvenating Face Cream  
Anti-Glycation Serum with  
Blueberry & Pomegranate Extracts  
Antioxidant Facial Mist  
Anti-Oxidant Rejuvenating Foot Cream  
Anti-Oxidant Rejuvenating Foot Scrub  
Anti-Oxidant Rejuvenating Hand Cream  
Anti-Oxidant Rejuvenating Hand Scrub  
Anti-Redness & Adult Blemish Lotion  
Bioflavonoid Cream  
Broccoli Sprout Cream  
Collagen Boosting Peptide Serum  
Corrective Clearing Mask  
DNA Repair Cream  
Dual-Action MicroDermAbrasion  
Enhanced FernBlock® with  
Red Orange Complex  
Essential Plant Lipids Reparative Serum  
Face Rejuvenating Anti-Oxidant Cream  
Fine Line-Less  
Healing Formula  
Healing Mask  
Healing Vitamin K Cream  
Hyaluronic Facial Moisturizer  
Hyaluronic Oil-Free Facial Moisturizer  
Hydrating Anti-Oxidant Facial Mist  
Hydroderm  
Lifting & Tightening Complex  
Lycopene Cream  
Melatonin Cream  
Mild Facial Cleanser  
Neck Rejuvenating Anti-Oxidant Cream  
Pigment Correcting Cream  
Rejuvenating Serum  
Rejuvenex® Body Lotion  
Rejuvenex® Factor Firming Serum  
Renewing Eye Cream  
Resveratrol Anti-Oxidant Serum  
Skin Lightening Serum  
Skin Restoring Phytoceramides with Lipowheat®  
Skin Stem Cell Serum  
Stem Cell Cream with Alpine Rose  
Tightening & Firming Neck Cream  
Ultra Lip Plumper  
Ultra Rejuvenex®  
Ultra RejuveNight®  
Ultra Wrinkle Relaxer  
Under Eye Refining Serum  
Under Eye Rescue Cream  
Vitamin C Serum  
Vitamin D Lotion  
Vitamin E-ssential Cream  
Youth Serum

### Sleep

Bioactive Milk Peptides  
Enhanced Natural Sleep® with Melatonin  
Enhanced Natural Sleep® without Melatonin  
Fast-Acting Liquid Melatonin  
Glycine  
L-Tryptophan  
Melatonin  
Optimized Tryptophan Plus

### Sports Performance

Creatine Capsules  
Creatine Whey Glutamine Powder  
(Vanilla Flavor)

DMG (N, N-dimethylglycine)  
New Zealand Whey Protein Concentrate,  
(Natural Chocolate and Vanilla Flavor)  
Pure Plant Protein  
Tart Cherry Extract  
Whey Protein Isolate  
(Chocolate and Vanilla Flavor)

### Vitamins

Ascorbyl Palmitate  
Benfotiamine with Thiamine  
Beta-Carotene  
Biotin  
Buffered Vitamin C Powder  
Complete B-Complex  
Daily C+  
Fast-C® with Dihydroquercetin  
Folate & Vitamin B12  
Gamma E Tocopherol with Sesame Lignans  
Gamma E Tocopherol/Tocotrienols  
High Potency Optimized Folate  
Inositol Caps  
Liquid Emulsified Vitamin D3  
Liquid Vitamin D3  
Low-Dose Vitamin K2  
Methylcobalamin  
MK-7  
Natural Vitamin E  
No Flush Niacin  
Optimized Folate (L-Methylfolate)  
Pantothenic Acid (Vitamin B-5)  
Pyridoxal 5'-Phosphate Caps  
Super Absorbable Tocotrienols  
Super Ascorbate C Capsules  
Super Ascorbate C Powder  
Super K with Advanced K2 Complex  
Tocotrienols with Sesame Lignans  
Vitamin B12  
Vitamin B6  
Vitamin C with Dihydroquercetin  
Vitamin D3 with Sea-Iodine™  
Vitamin D3  
Vitamins D and K with Sea-Iodine™

### Weight Management

7-Keto® DHEA Metabolite  
Advanced Anti-Adipocyte Formula  
Advanced Natural Appetite Suppress  
CalReduce Selective Fat Binder  
DHEA Complete  
Garcinia HCA  
HCAActive  
Integra-Lean®  
Mediterranean Trim with Sinetrol™-XPur  
Optimized Irvingia with Phase 3™ Calorie  
Control Complex  
Optimized Saffron with Satiereal®  
Super Citrimax®  
Super CLA Blend with Guarana and  
Sesame Lignans  
Super CLA Blend with Sesame Lignans  
Waist-Line Control™  
Weight Management Formula

### Women's Health

Advanced Natural Sex for Women® 50+  
Breast Health Formula  
Calorie Control Weight Management Formula  
Femmenessence MacaPause  
Natural Estrogen without Soy Isoflavones  
Natural Estrogen  
Natural Female Support  
ProgestaCare® for Women  
Super-Absorbable Soy Isoflavones  
Ultra Soy Extract

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>A</b>					
01524	<b>ACETYL-L-CARNITINE</b> - 500 mg, 100 veg. caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
01525	<b>ACETYL-L-CARNITINE ARGINATE</b> - 100 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	<b>ADRENAL ENERGY FORMULA</b> - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01630	<b>ADRENAL ENERGY FORMULA</b> - 120 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	42.00	31.50		
01828	<b>ADVANCED LIPID CONTROL</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	<b>ADVANCED ORAL HYGIENE</b> - 60 mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	<b>AHCC</b> - 500 mg, 30 caps	59.98	44.99		
00457	<b>ALPHA-LIPOIC ACID w/BIOTIN (SUPER)</b> - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01907	<b>AMPK ACTIVATOR</b> - 90 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01440	<b>ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO</b> - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01509	<b>ANTI-ADIPOCYTE FORMULA w/MERATRIM® &amp; INTEGRA LEAN® (ADVANCED)</b> - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01625	<b>APPLEWISE POLYPHENOL EXTRACT</b> - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	<b>ARGININE/ORNITHINE</b> - 500/250, 100 caps	17.99	13.49		
00038	<b>ARGININE/ORNITHINE POWDER</b> - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	<b>(L)-ARGININE CAPS</b> - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01617	<b>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	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01533	<b>ASCORBYL PALMITATE</b> - 500 mg, 100 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	<b>ASHWAGANDHA EXTRACT (OPTIMIZED)</b> - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01805	<b>ASIAN ENERGY BOOST</b> - 90 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01066	<b>ASPIRIN</b> - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
01720	<b>ASTAXANTHIN WITH PHOSPHOLIPIDS</b> - 4 mg, 30 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
<b>B</b>					
00920	<b>BENFOTIAMINE w/ THIAMINE</b> - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	<b>BENFOTIAMINE (MEGA)</b> - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		

**SUB-TOTAL OF COLUMN 1**

No.		Retail Each	Member Each	Qty	Total
01206	<b>BERRY COMPLETE</b> - 30 veg. caps	\$21.00	\$15.75		
	Buy 4 bottles, price each	18.67	14.00		
01496	<b>BERRY COMPLETE w/ACAI (ENHANCED)</b> - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	<b>BETA-CAROTENE</b> - 25,000 IU, 100 softgels	11.25	8.44		
01622	<b>BIFIDO GI BALANCE</b> - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	<b>BILBERRY EXTRACT</b> - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	<b>BIOACTIVE MILK PEPTIDES</b> - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	<b>BIO-COLLAGEN w/PATENTED UC-II®</b> - 40 mg, 60 small caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	<b>BIOSIL™</b> - 5 mg, 30 veg. caps	18.95	15.16		
*01007	<b>BIOSIL™</b> - 1 fl oz	31.99	25.59		
00102	<b>BIOTIN</b> - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	<b>BLACK CUMIN SEED OIL</b> - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	<b>BLACK CUMIN SEED OIL w/BIO-CURCUMIN®</b> - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	<b>BLAST™</b> - 600 grams of powder	26.95	20.21		
70000	<b>BLOOD PRESSURE MONITOR w/AC ADAPTOR</b> - MED CUFF	79.99	49.99		
70004	<b>BLOOD PRESSURE MONITOR</b> - Digital WRIST (cuff)	69.95	52.46		
01214	<b>BLUEBERRY EXTRACT</b> - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	<b>BLUEBERRY EXTRACT w/ POMEGRANATE</b> - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	<b>BONE FORMULA (DR. STRUM'S INTENSIVE)</b> - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01726	<b>BONE RESTORE</b> - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	<b>BONE RESTORE w/VITAMIN K2</b> - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	<b>BONE STRENGTH FORMULA w/KOACT®</b> - 120 caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	<b>BONE-UP®</b> - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01661	<b>BORON</b> - 3 mg, 100 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	<b>BOSWELLA</b> - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		
01802	<b>BRAIN SHIELD® GASTRODIN</b> - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	<b>BRANCHED CHAIN AMINO ACIDS</b> - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	<b>BREAST HEALTH FORMULA</b> - 60 caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	<b>BRITE EYES III</b> - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		
01203	<b>BROMELAIN (SPECIALLY-COATED)</b> - 500 mg, 60 enteric coated tablets	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		

**SUB-TOTAL OF COLUMN 2**

No.		Retail Each	Member Each	Qty	Total
<b>C</b>					
01653	<b>CALCIUM CITRATE w/VITAMIN D</b> - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	<b>CALCIUM D-GLUCARATE</b> - 200 mg, 60 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
***01823	<b>CALREDUCE SELECTIVE FAT BINDER</b> - 120 mint chewable tablets Buy 4 bottles, price each	45.00 38.00	33.75 28.50		
01700	<b>CARDIO PEAK™ w/STANDARDIZED HAWTHORN &amp; ARJUNA</b> - 120 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00916	<b>CARNITINE w/GLYCOCARN® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	<b>L-CARNITINE</b> - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01258	<b>CARNOSOOTHIE w/PICROPROTECT™</b> - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01829	<b>CARNOSINE</b> - 60 caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01687	<b>CARNOSINE (SUPER)</b> - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01830	<b>CAT MIX</b> - 100 grams powder Buy 4 jars, price each	14.00 11.00	10.50 8.25		
01891	<b>CHILDREN'S FORMULA LIFE EXTENSION MIX™</b> - 100 chewable tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00550	<b>CHLORELLA</b> - 500 mg, 200 tablets	23.50	17.63		
01571	<b>CHLOROPHYLLIN</b> - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	<b>CHO-LESS™</b> - 90 capsules	35.00	26.25		
01910	<b>CHOL-SUPPORT™</b> - 60 liquid veg. caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01477	<b>CHROMIUM ULTRA</b> - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	<b>CHROMIUM W/CROMINEX® 3+ (OPTIMIZED)</b> - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
01503	<b>CINSULIN® W/INSEA® AND CROMINEX® 3+</b> - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01906	<b>CISTANCHE (STANDARDIZED)</b> - 30 veg. caps Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01818	<b>CITRIMAX® (SUPER)</b> - 180 veg. caps Buy 4 bottles, price each	40.00 38.00	30.00 28.50		
00818	<b>CLA BLEND w/SESAME LIGNANS (SUPER)</b> - 1,000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	<b>CLA BLEND w/GUARANA &amp; SESAME (SUPER)</b> - 1,000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01896	<b>COGNITEX® w/BRAIN SHIELD®</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	60.00 52.00 48.00	45.00 39.00 36.00		
01897	<b>COGNITEX® w/PREGNENOLONE &amp; BRAIN SHIELD®</b> - 90 softgels Buy 4 bottles, price each Buy 8 bottles, price each	62.00 53.00 50.00	46.50 39.75 37.50		
01421	<b>COGNITEX® BASICS</b> - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01659	<b>COGNIZIN® CDP CHOLINE CAPS</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		

**SUB-TOTAL OF COLUMN 3**

No.		Retail Each	Member Each	Qty	Total
01835	<b>COMPLETE B-COMPLEX</b> - 60 veg. caps Buy 4 bottles, price each	\$10.00 9.00	\$7.50 6.75		
01999	<b>COMPREHENSIVE NUTRIENT PACKS ADVANCED</b> - 30 packs Buy 4 boxes, price each	90.00 82.00	67.50 61.50		
00119	<b>COPPER CAPSULES</b> - 2 mg, 100 caps	9.91	7.43		
00949	<b>COQ10 w/ α-LIMONENE (SUPER-ABSORBABLE)</b> - 50 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	25.00 22.00 20.00	18.75 16.50 15.00		
00950	<b>COQ10 w/ α-LIMONENE (SUPER-ABSORBABLE)</b> - 100 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	66.00 60.00 56.00	49.50 45.00 42.00		
01226	<b>COQ10 (SUPER-UBIQUINOL)</b> - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	56.00 48.00 44.00	42.00 36.00 33.00		
01733	<b>COQ10 w/BIOPQQ® (SUPER UBIQUINOL)</b> - 100 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	54.00 44.00 40.00	40.50 33.00 30.00		
01426	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 52.00 48.00	46.50 39.00 36.00		
01425	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 46.00 42.00	43.50 34.50 31.50		
01427	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 50 mg, 30 softgels Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01431	<b>COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL)</b> - 200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 52.00 48.00	46.50 39.00 36.00		
80154	<b>COSMESIS ADVANCED LIGHTENING CREAM</b> - 1 oz jar Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80155	<b>COSMESIS ADVANCED PEPTIDE HAND THERAPY</b> - 4 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80152	<b>COSMESIS ADVANCED TRIPLE PEPTIDE SERUM</b> - 1 oz bottle Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80140	<b>COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS</b> - .33 oz Buy 2 bottles, price each	49.00 42.00	36.75 31.50		
80139	<b>COSMESIS AMBER SELF MICRODERMABRASION</b> - 2 oz Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80158	<b>COSMESIS ANTI-AGING FACE OIL</b> - 2 oz Buy 2 jars, price each	59.00 52.00	44.25 39.00		
80118	<b>COSMESIS ANTI-AGING MASK</b> - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80151	<b>COSMESIS ANTI-AGING REJUVENATING FACE CREAM</b> - 2 oz jar Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80153	<b>COSMESIS ANTI-AGING REJUVENATING SCALP SERUM</b> - 2 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80157	<b>COSMESIS ANTI-GLYCATION PEPTIDE SERUM</b> - 1 oz Buy 2 bottles, price each	53.00 46.00	39.75 34.50		
80134	<b>COSMESIS ANTI-GLYCATION SERUM</b> - 1 oz w/BLUEBERRY & POMEGRANATE EXTRACTS Buy 2 bottles, price each	33.00 31.35	24.75 23.51		
80133	<b>COSMESIS ANTIOXIDANT FACIAL MIST</b> - 2 oz Buy 2 bottles, price each	32.00 30.40	24.00 22.80		
80127	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM</b> - 2 oz Buy 2 jars, price each	45.00 42.80	33.75 32.10		

**SUB-TOTAL OF COLUMN 4**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>C CONTINUED</b>					
80128	<b>COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz</b> Buy 2 jars, price each	\$59.00 51.92	\$44.25 38.94		
80117	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz</b> Buy 2 jars, price each	64.00 57.49	48.00 43.12		
80121	<b>COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz</b> Buy 2 jars, price each	58.00 51.04	43.50 38.28		
80105	<b>COSMESIS ANTI-REDNESS &amp; ADULT BLEMISH LOTION - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80147	<b>COSMESIS BIOFLAVONOID CREAM - 1 oz jar</b> Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80144	<b>COSMESIS BROCCOLI SPROUT CREAM - 1 oz</b> Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80156	<b>COSMESIS COLLAGEN BOOSTING PEPTIDE SERUM - 1 oz</b> Buy 2 jars, price each	59.00 52.00	44.25 39.00		
80120	<b>COSMESIS CORRECTIVE CLEARING MASK - 2 oz</b> Buy 2 jars, price each	64.50 56.76	48.38 42.57		
80141	<b>COSMESIS DNA REPAIR CREAM - 1 oz jar</b> Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80108	<b>COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz</b> Buy 2 bottles, price each	74.95 65.95	56.21 49.46		
80123	<b>COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz</b> Buy 2 jars, price each	69.50 61.16	52.13 45.87		
80107	<b>COSMESIS FINE LINE-LESS - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80131	<b>COSMESIS HAIR SUPPRESS FORMULA - 4 oz</b> Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80137	<b>COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz</b> Buy 2 jars, price each	53.00 45.43	39.75 34.07		
80115	<b>COSMESIS HEALING MASK - 2 oz</b> Buy 2 bottles, price each	64.50 56.76	48.38 42.57		
80102	<b>COSMESIS HEALING VITAMIN K CREAM - 1 oz</b> Buy 2 bottles, price each	79.50 69.96	59.63 52.47		
80109	<b>COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz</b> Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80110	<b>COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz</b> Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80138	<b>COSMESIS HYDRATING ANTIOXIDANT FACE MIST - 4 oz</b> Buy 2 bottles, price each	39.95 38.00	29.96 28.50		
80103	<b>COSMESIS LIFTING &amp; TIGHTENING COMPLEX - 1 oz</b> Buy 2 tubes, price each	74.50 65.56	55.88 49.17		
80146	<b>COSMESIS LYCOPENE CREAM - 1 oz jar</b> Buy 2 jars, price each	28.00 25.40	21.00 19.05		
80135	<b>COSMESIS MELATONIN CREAM - 1 oz</b> Buy 2 jars, price each	33.00 27.10	24.75 20.33		
80114	<b>COSMESIS MILD FACIAL CLEANSER - 8 oz</b> Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80122	<b>COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz</b> Buy 2 jars, price each	64.00 56.32	48.00 42.24		
80111	<b>COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz</b> Buy 2 bottles, price each	74.00 65.12	55.50 48.84		
80106	<b>COSMESIS REJUVENATING SERUM - 1 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		

**SUB-TOTAL OF COLUMN 5**

No.		Retail Each	Member Each	Qty	Total
80150	<b>COSMESIS RENEWING EYE CREAM - 1/2 oz</b> Buy 2 jars, price each	\$65.00 57.00	\$48.75 42.75		
80142	<b>COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz</b> Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80112	<b>COSMESIS SKIN LIGHTENING SERUM - 1/2 oz</b> Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80130	<b>COSMESIS SKIN STEM CELL SERUM - 1 oz</b> Buy 2 bottles, price each	74.00 69.00	55.50 51.75		
80143	<b>COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar</b> Buy 2 jars, price each	66.00 58.00	49.50 43.50		
80148	<b>COSMESIS TIGHTENING &amp; FIRMING NECK CREAM - 2 oz jar</b> Buy 2 jars, price each	39.00 35.00	29.25 26.25		
80116	<b>COSMESIS ULTRA LIP PLUMPER - 1/3 oz</b> Buy 2 bottles, price each	64.00 56.32	48.00 42.24		
80101	<b>COSMESIS ULTRA WRINKLE RELAXER - 1 oz</b> Buy 2 bottles, price each	89.95 79.76	67.46 59.82		
80113	<b>COSMESIS UNDER EYE REFINING SERUM - 1/2 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80104	<b>COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz</b> Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80129	<b>COSMESIS VITAMIN C SERUM - 1 oz</b> Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80136	<b>COSMESIS VITAMIN D LOTION - 4 oz</b> Buy 2 bottles, price each	36.00 33.66	27.00 25.25		
80145	<b>COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz</b> Buy 2 jars, price each	28.00 26.00	21.00 19.50		
80149	<b>COSMESIS YOUTH SERUM - 1 oz</b> Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
00862	<b>CRAN-MAX® - 500 mg, 60 veg. caps</b> Buy 4 bottles, price each	17.50 15.00	13.13 11.25		
01424	<b>CRAN-MAX® with ELLIROSE™ (OPTIMIZED) - 60 veg. caps</b> Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01529	<b>CREATINE CAPSULES - 120 veg. caps</b> Buy 4 bottles, price each	10.95 9.25	8.21 6.94		
01746	<b>CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla)</b> Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01429	<b>CR MIMETIC LONGEVITY FORMULA - 60 veg. caps</b> Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
*33840	<b>CRWAY GREAT GLUCOSE CONTROL CD</b>	98.00	82.00		
**CRWAY	<b>CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE</b>	195.00	195.00		
00407	<b>CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps</b> Buy 4 bottles, price each	38.00 35.00	28.50 26.25		
01808	<b>CURCUMIN® w/GINGER &amp; TURMERONES (ADVANCED BIO)-30 softgels</b> Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01804	<b>CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps</b> Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
<b>D</b>					
01912	<b>DAILY C+ CITRUS FLAVOR - 30 stick packs</b> Buy 4 boxes, price each	\$21.00 19.00	\$15.75 14.25		
00658	<b>7-KETO® DHEA METABOLITE - 25 mg, 100 caps</b> Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01479	<b>7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps</b> Buy 4 bottles, price each	40.00 36.00	30.00 27.00		

**SUB-TOTAL OF COLUMN 6**

To order online visit: [www.LifeExtension.com](http://www.LifeExtension.com)

# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
01640	<b>DHA (VEGETARIAN SOURCED)</b> - 30 veg. softgels Buy 4 bottles, price each	\$20.00 18.00	\$15.00 13.50		
00607	<b>DHEA</b> - 25 mg, 100 tablets (dissolve in mouth) Buy 4 bottles, price each	14.00 11.75	10.50 8.81		
01478	<b>DHEA COMPLETE</b> - 60 veg. caps Buy 4 bottles, price each	48.00 43.20	36.00 32.40		
00335	<b>DHEA</b> - 25 mg, 100 caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00454	<b>DHEA</b> - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	<b>DHEA</b> - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01689	<b>DHEA</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	<b>DIGEST RC</b> - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	<b>DIGESTIVE ENZYMES (ENHANCED SUPER)</b> - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	<b>D,L-PHENYLALANINE CAPSULES</b> - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
01540	<b>DMAE BITARTRATE</b> - 150 mg, 200 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00059	<b>DMG</b> - 125 mg, 60 tablets Buy 4 boxes, price each	24.80 22.69	18.60 17.02		
01570	<b>DNA PROTECTION FORMULA</b> - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
01831	<b>DOG MIX</b> - 100 grams powder Buy 4 jars, price each	18.00 15.00	13.50 11.25		
00321	<b>DR. PROCTOR'S ADVANCED HAIR FORMULA</b> - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	<b>DR. PROCTOR'S HAIR FORMULA SHAMPOO</b> - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	<b>DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE</b> - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
<b>E</b>					
01528	<b>ECHINACEA EXTRACT</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01498	<b>ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™</b> - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	<b>ENDOTHELIAL DEFENSE™ w/GLISODIN®</b> - 60 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00625	<b>EPA/DHA (MEGA)</b> - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01737	<b>ESOPHAGEAL GUARDIAN</b> (Berry flavor) - 60 chewable tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01042	<b>EUROPEAN LEG SOLUTION DIOSMIN 95</b> - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	<b>EXTRAORDINARY ENZYMES</b> - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
01514	<b>EYE PRESSURE SUPPORT w/MIRTOGENOL®</b> - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		

**SUB-TOTAL OF COLUMN 7**

No.		Retail Each	Member Each	Qty	Total
<b>F</b>					
01054	<b>FACE MASTER® PLATINUM</b>	\$199.00	\$199.00		
00965	<b>FAST-ACTING JOINT FORMULA</b> - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01717	<b>FAST-C® w/DIHYDROQUERCETIN</b> - 120 veg. tabs Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
20053	<b>FEM DOPHILUS®</b> - 30 caps	25.95	19.46		
20055	<b>FEM DOPHILUS®</b> - 60 caps	39.95	29.96		
01064	<b>FEMMESENCE MACAPAUSE®</b> - 120 veg. caps	34.99	26.24		
01728	<b>FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED)</b> - 30 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
00718	<b>FIBRINOGEN RESIST™</b> - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
01749	<b>FLAX SEED (ORGANIC GOLDEN GROUND)</b> - 14 oz.	11.67	8.75		
01821	<b>FLORASSIST® HEART HEALTH PROBIOTIC</b> - 60 caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01825	<b>FLORASSIST® PROBIOTIC</b> - 30 liquid caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01913	<b>FOLATE (OPTIMIZED HIGH-POTENCY)</b> 5,000 mcg, 30 veg. tablets Buy 4 bottles, price each	25.00 22.00	18.75 16.50		
01939	<b>FOLATE (OPTIMIZED) (L-METHYLFOLATE)</b> 1,000 mcg, 100 veg. tablets Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01841	<b>FOLATE + B12 CAPS</b> - 200 veg. caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01544	<b>FORSKOLIN</b> - 10 mg, 60 veg. caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01513	<b>FUCOIDAN w/MARITECH® 926 (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
<b>G</b>					
00559	<b>GAMMA E TOCOPHEROL/TOCOTRIENOLS</b> - 60 softgels Buy 4 bottles, price each	\$42.00 37.00	\$31.50 27.75		
00759	<b>GAMMA E TOCOPHEROL w/SESAME LIGNANS</b> - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	<b>(OPTIMIZED) GARLIC</b> - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
**01122	<b>GINGER FORCE®</b> - 60 liquid caps	34.95	26.21		
01658	<b>GINKGO BILOBA CERTIFIED EXTRACT™</b> - 120 mg, 365 veg. caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
01648	<b>GINKGO EXTRACT 28/7 (SUPER)</b> - 120 mg, 100 veg. caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
00756	<b>GLA WITH SESAME LIGNANS (MEGA)</b> - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	<b>(L) GLUTAMINE CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	<b>(L)-GLUTAMINE POWDER</b> - 100 grams Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00522	<b>GLUCOSAMINE/CHONDROITIN CAPSULES</b> - 100 caps Buy 4 bottles, price each	38.00 32.00	28.50 24.00		
01541	<b>GLUTATHIONE, CYSTEINE &amp; C</b> - 100 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00314	<b>L-GLUTATHIONE (MEGA)</b> - 250 mg, 60 caps	39.64	29.73		

**SUB-TOTAL OF COLUMN 8**

# 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>					
01987	<b>GLYCATION PROTECTION FORMULA</b> - 60 veg. caps	\$44.00	\$33.00		
	Buy 4 bottles, price each	39.00	29.25		
01669	<b>GLYCINE</b> - 1,000 mg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	10.80	8.10		
01091	<b>GRAPE EXTRACT w/RESVERATROL (WHOLE)</b> - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01411	<b>GRAPE SEED EXTRACT w/RESVERATROL &amp; PTEROSTILBENE</b> - 100 mg, 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
01604	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 200 mg, 90 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01620	<b>GREEN COFFEE EXTRACT COFFEEGENIC®</b> - 400 mg, 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00953	<b>GREEN TEA EXTRACT (MEGA)</b> - lightly caffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	24.00	18.00		
00954	<b>GREEN TEA EXTRACT (MEGA)</b> - decaffeinated - 100 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	24.00	18.00		
01545	<b>GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR)</b> - 8 tablets	11.50	8.63		
01546	<b>GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR)</b> - 8 tablets	11.50	8.63		
<b>H</b>					
01074	<b>5 HTP</b> - 100 mg, 60 caps	\$27.95	\$20.96		
01738	<b>HCA (GARCINIA)</b> - 90 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
29754	<b>HCACTIVE</b> - 90 caps (Jarrow)	30.00	22.50		
01393	<b>HEPATOPRO</b> - 900 mg, 60 softgels	50.00	37.50		
	Buy 4 bottles, price each	46.00	34.50		
01527	<b>HUPERZINE A</b> - 200 mcg, 60 veg caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
00661	<b>HYDRODERM®</b> - 1 oz	79.95	59.96		
	Buy 2 bottles, price each	65.33	49.00		
<b>I</b>					
*01060	<b>i26® HYPERIMMUNE EGG</b> - 140 grams powder	\$54.99	\$46.75		
01704	<b>IMMUNE MODULATOR W/TINOFEND®</b> - 60 veg. caps	17.00	12.75		
	Buy 4 bottles, price each	15.00	11.25		
00955	<b>IMMUNE PROTECT W/PRACTIN®</b> - 30 veg. caps	29.50	22.13		
	Buy 4 bottles, price each	26.55	19.91		
01905	<b>IMMUNE SENESCENCE PROTECTION FORMULA™</b> - 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
01049	<b>INNERPOWER™</b> - 530 grams powder	42.00	31.50		
01674	<b>INOSITOL CAPSULES</b> - 1,000 mg, 360 veg. caps	62.00	46.50		
	Buy 4 bottles, price each	58.00	43.50		
01292	<b>INTEGRA-LEAN® AFRICAN MANGO IRVINGIA</b> - 150 mg, 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
01248	<b>IODINE COMPLETE (ADVANCED)</b> - 180 tablets	46.00	36.50		
01677	<b>IRON PROTEIN PLUS</b> - 300 mg, 100 caps	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
01492	<b>IRVINGIA W/PHASE 3™</b> - 120 veg. caps	56.00	42.00		
	<b>CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO)</b>				
	Buy 4 bottles, price each	48.00	36.00		
<b>J, K</b>					
00056	<b>JARRO-DOPHILUS EPS™</b> - 60 veg. caps	\$22.95	\$17.21		
01759	<b>JARRO-DOPHILUS EPS™</b> - 30 caps	39.95	29.96		
01724	<b>K w/ADVANCED K2 COMPLEX (SUPER)</b> - 90 softgels	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01600	<b>KRILL HEALTHY JOINT FORMULA</b> - 30 softgels	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		

**SUB-TOTAL OF COLUMN 9**

No.		Retail Each	Member Each	Qty	Total
01050	<b>KRILL OIL PHOSPHOMEGA™</b> - 60 softgels	\$33.95	\$25.46		
00316	<b>KYOLIC® GARLIC FORMULA 102</b> - 200 veg. caps	26.45	19.84		
00214	<b>KYOLIC® GARLIC FORMULA 105</b> - 200 caps	27.45	20.59		
00789	<b>KYOLIC® RESERVE</b> - 600 mg, 120 caps	27.95	20.96		
01681	<b>LACTOFERRIN (APOLACTOFERRIN) CAPS</b> - 60 caps	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
00020	<b>LECITHIN</b> - 16 oz. granules	18.00	13.50		
	Buy 4 jars, price each	16.00	12.00		
01955	<b>LIFE EXTENSION MIX™</b> - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01957	<b>LIFE EXTENSION MIX™ W/EXTRA NIACIN</b> - 315 tablets	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01954	<b>LIFE EXTENSION MIX™</b> - 490 caps	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01956	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
01965	<b>LIFE EXTENSION MIX™</b> - 315 tablets w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	69.50	52.13		
01964	<b>LIFE EXTENSION MIX™</b> - 490 caps w/o copper	110.00	82.50		
	Buy 4 bottles, price each	98.00	73.50		
	Buy 10 bottles, price each	85.00	63.75		
01966	<b>LIFE EXTENSION MIX™ POWDER</b> - 14.81 oz w/o copper	98.00	73.50		
	Buy 4 bottles, price each	86.00	64.50		
	Buy 10 bottles, price each	72.00	54.00		
01608	<b>LIVER EFFICIENCY FORMULA</b> - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01639	<b>5-LOX INHIBITOR W/APRESFLEX®</b> - 100 mg, 60 veg. caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
01678	<b>L-LYSINE</b> - 620 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
00455	<b>LYCOPENE EXTRACT (MEGA)</b> - 15 mg, 90 softgels	35.00	26.25		
	Buy 4 bottles, price each	30.00	22.50		
<b>M</b>					
01885	<b>MACUGUARD® OCULAR SUPPORT</b> - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01886	<b>MACUGUARD® OCULAR SUPPORT w/ASTAXANTHIN</b> - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01459	<b>MAGNESIUM CAPS</b> - 500 mg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	10.00	7.50		
01682	<b>MAGNESIUM CITRATE</b> - 160 mg, 100 veg. caps	9.00	6.75		
	Buy 4 bottles, price each	7.50	5.63		
01908	<b>MEDITERRANEAN TRIM WITH SINETROL™-XPUR</b> - 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01668	<b>MELATONIN</b> - 300 mcg, 100 veg. caps	5.75	4.31		
	Buy 4 bottles, price each	5.00	3.75		
01083	<b>MELATONIN</b> - 500 mcg, 200 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		

**SUB-TOTAL OF COLUMN 10**

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# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
00329	<b>MELATONIN</b> - 1 mg, 60 caps Buy 4 bottles, price each	\$5.00 4.63	\$3.75 3.47		
00330	<b>MELATONIN</b> - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01786	<b>MELATONIN TIME RELEASE</b> - 3 mg, 60 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00331	<b>MELATONIN</b> - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	<b>MELATONIN</b> - 3 mg, 60 veg. lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01734	<b>MELATONIN</b> (Fast Acting Liquid) - 3 mg (Natural Citrus-Van) Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01787	<b>MELATONIN TIME RELEASE</b> - 300 mcg, 100 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01788	<b>MELATONIN TIME RELEASE</b> - 750 mcg, 60 veg. tablets Buy 4 bottles, price each	8.00 7.00	6.00 5.25		
01536	<b>METHYLCOBALAMIN</b> - 1 mg, 60 veg. lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	<b>METHYLCOBALAMIN</b> - 5 mg, 60 veg. lozenges (vanilla) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 25.00 23.00	24.00 18.75 17.25		
00709	<b>MIGRA-EEZE™ (BUTTERBUR)</b> - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01800	<b>MIGRA-MAG w/BRAIN SHIELD®</b> - 90 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01522	<b>MILK THISTLE (EUROPEAN)</b> - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01822	<b>MILK THISTLE (EUROPEAN)</b> - 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01817	<b>MILK THISTLE (EUROPEAN)</b> - 120 softgels Buy 4 bottles, price each	44.00 40.00	33.00 30.00		
01698	<b>MIRAFORTE w/STANDARDIZED LIGNANS (SUPER)</b> - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01769	<b>MITOCHONDRIAL BASICS w/BIOPQQ®</b> - 30 caps Buy 4 bottles, price each	52.00 42.00	39.00 31.50		
01768	<b>MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ®</b> - 120 caps Buy 4 bottles, price each	94.00 78.00	70.50 58.50		
00065	<b>MK-7</b> - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00451	<b>MSM (METHYLSULFONYLMETHANE)</b> - 1,000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		
<b>N</b>					
01534	<b>N-ACETYL-L-CYSTEINE</b> - 600 mg, 60 veg. caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
01904	<b>NAD+ CELL REGENERATOR™</b> - 100 mg, 30 veg. caps Buy 4 bottles, price each	34.00 26.00	25.50 19.50		
00066	<b>NATTOKINASE</b> - 60 softgels	25.50	19.13		
01807	<b>NATURAL APPETITE SUPPRESS (ADVANCED)</b> - 60 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00984	<b>NATURAL BP MANAGEMENT</b> - 60 tablets Buy 4 bottles, price each	44.00 40.00	33.00 30.00		
01892	<b>NATURAL ESTROGEN</b> - 60 veg. tabs Buy 4 bottles, price each	38.00 34.00	28.50 25.50		

**SUB-TOTAL OF COLUMN 11**

No.		Retail Each	Member Each	Qty	Total
01893	<b>NATURAL ESTROGEN w/o SOY ISOFLAVONES</b> - 30 veg. caps Buy 4 bottles, price each	\$32.00 28.00	\$24.00 21.00		
01221	<b>NATURAL FEMALE SUPPORT</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	<b>NATURAL GLUCOSE ABSORPTION CONTROL</b> - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01626	<b>NATURAL SEX FOR WOMEN® 50+ (ADVANCED)</b> - 90 veg. caps Buy 4 bottles, price each	59.00 45.33	44.25 34.00		
01444	<b>NATURAL SLEEP®</b> - 60 veg. caps Buy 4 bottles, price each	13.00 10.00	9.75 7.50		
01551	<b>NATURAL SLEEP® w/ MELATONIN (ENHANCED)</b> - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	<b>NATURAL SLEEP® w/o MELATONIN (ENHANCED)</b> - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01445	<b>NATURAL SLEEP® MELATONIN</b> - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	<b>NATURAL STRESS RELIEF</b> - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01121	<b>NERVIA®</b> - 60 softgels	49.95	37.46		
01603	<b>NEURO-MAG™ MAGNESIUM L-THREONATE</b> - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01602	<b>NEURO-MAG™ L-THREONATE w/CALCIUM &amp; VITAMIN D</b> 225 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01903	<b>NK CELL ACTIVATOR™</b> - 30 veg. tablets Buy 4 bottles, price each	45.00 42.00	33.75 31.50		
00373	<b>NO-FLUSH NIACIN</b> - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
<b>O</b>					
01824	<b>OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRAT(ADVANCED)</b> 500 mg, 60 veg. caps • Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
01819	<b>OMEGA WITH KRILL &amp; ASTAXANTHIN (SUPER)</b> - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	45.00 42.00 33.00	33.75 31.50 24.75		
01483	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	18.00 16.00 12.50	13.50 12.00 9.38		
01482	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 22.73	24.00 21.00 17.05		
01484	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 120 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 24.00	25.50 23.25 18.00		
01485	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER)</b> - 60 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	20.00 18.00 14.00	15.00 13.50 10.50		
01619	<b>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL)</b> Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 23.00	24.00 21.00 17.25		

**SUB-TOTAL OF COLUMN 12**

# Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
<b>CONTINUED</b>					
01981	<b>ONCE-DAILY HEALTH BOOSTER</b> - 60 softgels Buy 4 bottles, price each	\$52.00 48.00	\$39.00 36.00		
01901	<b>ONE-PER-DAY</b> - 60 tablets Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01328	<b>ONLY TRACE MINERALS</b> - 90 veg. caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
<b>P</b>					
01789	<b>PALMETTOGUARD® SAW PALMETTO w/BETA SITOSTEROL</b> - 30 softgels Buy 12 bottles, price each	\$15.00 12.00	\$11.25 9.00		
01790	<b>PALMETTOGUARD® SUPER SAW PALMETTO/- NETTLE ROOT W/BETA-SITOSTEROL</b> - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	28.00 26.00 24.00	21.00 19.50 18.00		
00073	<b>PANCREATIN</b> - 500 mg, 50 caps	13.22	9.92		
01323	<b>PEAK ATP® WITH GLYCOCARN®</b> - 60 veg. caps Buy 4 bottles, price each	54.00 50.00	40.50 37.50		
00342	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 454 grams powder	109.95	82.46		
01080	<b>PECTA SOL-C® MODIFIED CITRUS PECTIN</b> - 270 veg. caps	79.95	59.96		
01811	<b>PEONY IMMUNE</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00673	<b>PGX™ PLUS MULBERRY (WELLBETX®)</b> -180 veg. caps	34.95	26.21		
01676	<b>PHOSPHATIDYLSERINE CAPS</b> - 100 mg, 100 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
01436	<b>POLICOSANOL</b> - 10 mg, 60 veg. caps Buy 4 bottles, price each	20.00 15.00	15.00 11.25		
01423	<b>POMEGRANATE™ (FULL-SPECTRUM)</b> - 30 softgels Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
00956	<b>POMEGRANATE EXTRACT</b> - 30 veg. caps Buy 4 bottles, price each	19.50 17.55	14.63 13.16		
01797	<b>POMI-T®</b> - 60 veg. caps Buy 4 bottles, price each	33.33 30.00	25.00 22.50		
00577	<b>POTASSIUM IODIDE</b> - 1 box, 14 tablets Buy 4 boxes, price each	6.95 5.25	5.21 3.94		
01500	<b>PQQ CAPS W/BIO-PQQ®</b> - 10 mg, 30 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	24.00 18.00 16.00	18.00 13.50 12.00		
01647	<b>PQQ CAPS W/BIO-PQQ®</b> - 20 mg, 30 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	40.00 32.00 28.00	30.00 24.00 21.00		
00302	<b>PREGNENOLONE</b> - 50 mg, 100 caps Buy 4 bottles, price each	26.00 22.00	19.50 16.50		
00700	<b>PREGNENOLONE</b> - 100 mg, 100 caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
***01373	<b>PRELOX® NATURAL SEX FOR MEN®</b> - 60 tablets Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
01576	<b>PREVAGEN®</b> - 10 mg, 30 caps	60.00	45.00		
01577	<b>PREVAGEN® ES</b> - 20 mg, 30 caps	70.00	60.00		
00525	<b>PROBOOST THYMIC PROTEIN A™</b> - 4 mcg, 30 packets	59.95	44.96		
01441	<b>PROGESTACARE® FOR WOMEN</b> - 4 oz cream Buy 4 bottles, price each	35.50 32.50	26.63 24.38		
01898	<b>PROSTATE FORMULA (ULTRA NAT)</b> - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		

**SUB-TOTAL OF COLUMN 13**

No.		Retail Each	Member Each	Qty	Total
01909	<b>PROSTAPOLLEN™ (TRIPLE ACTION)</b> - 30 softgels Buy 4 bottles, price each	\$28.00 25.00	\$21.00 18.75		
01742	<b>PROTEIN-ISOLATE (WHEY) VANILLA</b> - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01743	<b>PROTEIN-ISOLATE (WHEY) CHOCOLATE</b> - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01770	<b>PROTEIN CONCENTRATE</b> (New Zealand Whey) <b>Vanilla</b> - 520 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01771	<b>PROTEIN CONCENTRATE</b> (New Zealand Whey) <b>Chocolate</b> - 660 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01812	<b>PROVINAL® PURIFIED OMEGA-7</b> - 30 softgels Buy 4 bottles, price each	27.00 24.00	20.25 18.00		
01508	<b>PTEROPURE®</b> - 50 mg Pterostilbene 60 veg. caps Buy 4 bottles, price each	32.00 30.00	24.00 22.50		
01209	<b>PUMPKIN SEED EXTRACT (WATER-SOLUBLE)</b> - 60 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01587	<b>PURE PLANT PROTEIN</b> - Veg. Vanilla 540 grams powder Buy 4 jars, price each	38.00 35.00	28.50 26.25		
01637	<b>PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT</b> -100 mg, 60 veg. caps Buy 4 bottles, price each	64.00 60.00	48.00 45.00		
01217	<b>PYRIDOXAL 5'-PHOSPHATE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 19.80	16.50 14.85		
<b>Q, R</b>					
01309	<b>QUERCETIN (OPTIMIZED)</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01030	<b>RED YEAST RICE</b> (Bluebonnet)- 600 mg, 60 veg. caps	16.95	13.56		
00605	<b>REGIMINT</b> - 60 enteric-coated caps Buy 4 bottles, price each	19.95 18.67	14.96 14.00		
01708	<b>REISHI EXTRACT MUSHROOM COMPLEX</b> - 60 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01448	<b>REJUVENEX® BODY LOTION</b> - 6 oz Buy 4 tubes, price each Buy 8 tubes, price each	24.00 19.80 17.00	18.00 14.85 12.75		
01621	<b>REJUVENEX® FACTOR FIRING SERUM</b> - 1.7 oz Buy 2 bottles, price each Buy 6 bottles, price each	65.00 50.66 38.52	48.75 38.00 28.89		
01220	<b>REJUVENEX® (ULTRA)</b> - 2 oz Buy 2 jars, price each Buy 4 jars, price each Buy 8 jars, price each	52.00 48.00 44.00 39.93	39.00 36.00 33.00 29.95		
00676	<b>REJUVENIGHT® (ULTRA)</b> - 2 oz Buy 4 jars, price each	39.95 36.00	29.96 27.00		
01410	<b>RESVERATROL W/PTEROSTILBENE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01930	<b>RESVERATROL W/NAD+ CELL REGENERATOR™ (OPTIMIZED)</b> -30 veg. caps Buy 4 bottles, price each	42.00 36.00	31.50 27.00		
01430	<b>RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED)</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	46.00 41.33	34.50 31.00		
00889	<b>RHODIOLA EXTRACT</b> - 250 mg, 60 veg. caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
01900	<b>RIBOGEN™ FRENCH OAK WOOD EXTRACT</b> - 200 mg, 30 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		

**SUB-TOTAL OF COLUMN 14**

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# Buyers Club Order Form

No.		Retail Each	Member Each	Qty	Total
00972	<b>(D) RIBOSE POWDER</b> - 150 grams Buy 4 jars, price each	\$27.50 24.75	\$20.63 18.56		
01473	<b>(D) RIBOSE TABLETS</b> - 100 veg. tabs Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01609	<b>RICH REWARDS® BREAKFAST GROUND COFFEE</b> - 12 oz. bag	13.00	9.75		
01730	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag Natural Mocha	15.00	11.25		
01729	<b>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE</b> - 12 oz. bag Natural Vanilla	15.00	11.25		
01612	<b>RICH REWARDS® BREAKFAST BLEND WHOLE BEAN COFFEE</b> -12 oz. bag	13.00	9.75		
01610	<b>RICH REWARDS® DECAFFEINATED ROAST GROUND COFFEE</b> -12 oz. bag	14.00	10.50		
01530	<b>RICH REWARDS® CRUCIFEROUS VEGETABLE SOUP</b> - 32 oz. bottle Buy 6 bottles, price each	11.95 11.25	8.96 8.44		
01208	<b>R-LIPOIC ACID (SUPER)</b> - 240 mg, 60 veg. caps Buy 4 bottles, price each	49.00 45.00	36.75 33.75		
00070	<b>RNA CAPSULES</b> - 500 mg, 100 caps Buy 4 bottles, price each	17.95 16.16	13.46 12.12		
<b>S</b>					
01432	<b>SAFFRON w/SATIAREAL® (OPTIMIZED)</b> - 60 veg. caps Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
00358	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 200 mg, 20 enteric coated tablets Buy 8 boxes, price each	16.00 14.00	12.00 10.50		
00557	<b>SAME (S-ADENOSYL-METHIONINE)</b> - 400 mg, 20 enteric coated tablets Buy 6 boxes, price each	28.00 24.00	21.00 18.00		
01740	<b>SEA-IODINE™</b> - 1,000 mcg, 60 veg. caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	<b>SELENIUM</b> - 2 oz dropper bottle	11.95	8.96		
01679	<b>SE-METHYL L-SELENOCYSTEINE</b> - 200 mcg, 100 veg. caps Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00318	<b>SERRAFLAZYME</b> - 100 tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01684	<b>SILYMARIN</b> - 100 mg, 50 veg. caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01249	<b>SINUS CLEANSER</b> - 4 oz. bottle	25.00	18.75		
01596	<b>SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT®</b> - 30 veg. liquid caps Buy 4 bottles, price each	25.00 23.00	18.75 17.25		
00961	<b>SODZYME® w/GLISODIN® AND WOLFBERRY</b> - 90 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00657	<b>SOLARSHIELD SUNGLASSES</b> - 1 pair smoke color Buy 2 pairs, price each	12.99 11.50	9.74 8.63		
01097	<b>SOY EXTRACT (ULTRA)</b> - 150 veg. caps Buy 4 bottles, price each	87.00 78.00	65.25 58.50		
00432	<b>STEVIA™ EXTRACT (BETTER)</b> - 100 packets, 1 gram each	9.95	7.46		
00438	<b>STEVIA™ ORGANIC LIQUID EXTRACT (BETTER)</b> - 2 oz liquid	11.00	8.25		
01476	<b>STRONTIUM</b> - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01649	<b>SUPER ABSORBABLE SOY ISOFLAVONES</b> - 60 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01778	<b>SUPER SELENIUM COMPLEX</b> - 200 mcg, 100 veg. caps Buy 4 bottles, price each Buy 12 bottles, price each	14.00 12.00 11.00	10.50 9.00 8.25		

**SUB-TOTAL OF COLUMN 15**

No.		Retail Each	Member Each	Qty	Total
<b>T</b>					
01723	<b>TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE®</b> - 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
00199	<b>TAURINE</b> - 1,000 mg, 50 caps Buy 4 bottles, price each	8.95 8.00	6.71 6.00		
01918	<b>TEAR SUPPORT w/MAQUIBRIGHT®</b> - 60 mg, 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00133	<b>L-TAURINE POWDER</b> - 300 grams Buy 4 bottles, price each	20.00 16.88	15.00 12.66		
13685	<b>TEN MUSHROOM FORMULA® ECONUGENICS</b> - 120 veg. caps	39.95	29.96		
01304	<b>THEAFLAVIN STANDARDIZED EXTRACT</b> - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01683	<b>(L) THEANINE</b> - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 20.50	18.00 15.38		
**01038	<b>THERALAC PROBIOTICS</b> - 30 caps	47.95	35.96		
00668	<b>THYROID FORMULA™ (METABOLIC ADVANTAGE)</b> - 100 caps	21.95	16.46		
00349	<b>TMG POWDER</b> - 50 grams Buy 4 bottles, price each	14.00 11.00	10.50 8.25		
01859	<b>TMG</b> - 500 mg, 60 veg. liquid caps Buy 4 bottles, price each	13.00 12.00	9.75 9.00		
00781	<b>TOCOTRIENOLS WITH SESAME LIGNANS</b> - 60 softgels Buy 4 bottles, price each	38.00 36.00	28.50 27.00		
01400	<b>TOCOTRIENOLS (SUPER-ABSORBABLE)</b> - 60 softgels Buy 4 bottles, price each	30.00 28.00	22.50 21.00		
01278	<b>TOOTHPASTE</b> - 4 oz (Mint) Buy 4 tubes, price each	9.50 8.67	7.13 6.50		
01917	<b>TRANQUIL TRACT™</b> - 60 veg. caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01468	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT</b> - 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01469	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT w/RESVERATROL</b> - 60 veg. caps Buy 4 bottles, price each	32.00 29.60	24.00 22.20		
01803	<b>TRI SUGAR SHIELD™</b> - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01386	<b>TRUFIBER®</b> - 180 grams	32.95	24.71		
01389	<b>TRUFLORA PROBIOTICS</b> - 32 veg. caps	42.95	32.21		
01722	<b>L-TRYPTOPHAN</b> - 500 mg, 90 veg. caps Buy 4 bottles, price each	33.00 30.00	24.75 22.50		
01721	<b>TRYPTOPHAN PLUS (OPTIMIZED)</b> - 90 veg. caps Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01916	<b>TWO-PER-DAY</b> - 60 tablets Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01915	<b>TWO-PER-DAY</b> - 120 tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01914	<b>TWO-PER-DAY</b> - 120 caps Buy 4 bottles, price each	22.00 20.00	16.50 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 veg. tablets Buy 4 bottles, price each	\$15.00 12.50	\$11.25 9.38		
00408	<b>VENOTONE</b> - 60 caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		

**SUB-TOTAL OF COLUMN 16**

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No.		Retail Each	Member Each	Qty	Total
<b>V CONTINUED</b>					
01327	<b>VINPOCETINE</b> - 10 mg, 100 tablets	\$18.00	\$13.50		
	Buy 4 bottles, price each	14.00	10.50		
00372	<b>VITAMIN B3 Niacin</b> - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	<b>VITAMIN B5</b> - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	<b>VITAMIN B6</b> - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	<b>VITAMIN B12</b> - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 60 veg. tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	<b>VITAMIN C w/ DIHYDROQUERCETIN</b> - 1,000 mg, 250 veg. tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	<b>VITAMIN C (BUFFERED) POWDER</b> - 454 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
01736	<b>(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS</b> - 180 grams	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01732	<b>VITAMIN D3</b> - 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	<b>VITAMIN D3</b> - 1,000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	<b>VITAMIN D3</b> - 1,000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	<b>VITAMIN D3</b> - 5,000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	<b>VITAMIN D3</b> - 7,000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01758	<b>VITAMIN D3 w/SEA-IODINE™</b> - 5,000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
00864	<b>VITAMIN D3</b> Liquid Emulsion - 2,000 IU, 1 oz.	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01741	<b>VITAMINS D AND K w/SEA-IODINE™</b> - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	<b>VITAMIN E (NATURAL)</b> - 400 IU, 100 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
	Buy 10 bottles, price each	26.00	19.50		
01225	<b>VITAMIN K2 (LOW-DOSE)</b> - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
<b>X</b>					
00409	<b>XYLIWHITE™ MOUTHWASH</b> - 16 oz	\$10.00	\$7.50		
<b>W</b>					
01902	<b>WAIST-LINE CONTROL™</b> - 120 veg. caps	\$42.00	\$31.50		
	Buy 4 bottles, price each	38.00	28.50		
01826	<b>WEIGHT MANAGEMENT FORMULA</b> - 60 veg. caps	40.00	30.00		
	Buy 4 bottles, price each	36.00	27.00		
<b>Z</b>					
01813	<b>ZINC HIGH POTENCY</b> - 50 mg, 90 veg. caps	\$7.95	\$5.96		
	Buy 4 bottles, price each	7.00	5.25		
01561	<b>ZINC GLUCONATE/OXIDE LOZENGES</b> - 18.75 mg, 60 veg. lozenges	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
01961	<b>ZINC ACETATE LOZENGES (ENHANCED)</b> - 18.75 mg, 30 veg. lozenges	12.00	9.00		
	Buy 2 bottles, price each	8.00	6.00		
**01051	<b>ZYFLAMEND® WHOLE BODY</b> - 120 softgels	64.95	48.71		

**SUB-TOTAL OF COLUMN 17**



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33877	<b>THE TRUTH ABOUT MEN AND SEX</b> • by Abraham Morgentaler, MD FACS	2015	\$16.99	\$12.74		
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33867	<b>THE COMPLETE MEDITERRANEAN DIET</b> • by Michael Ozner, MD	2014	\$19.95	\$14.96		
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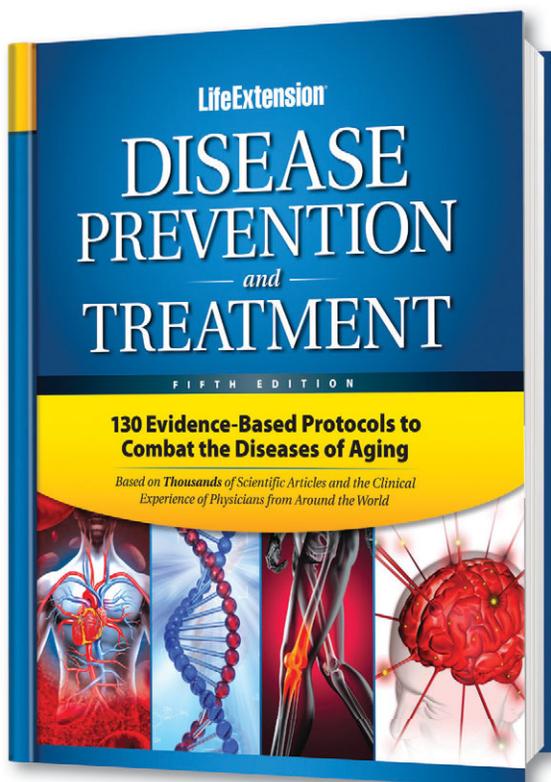
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30 capsules  
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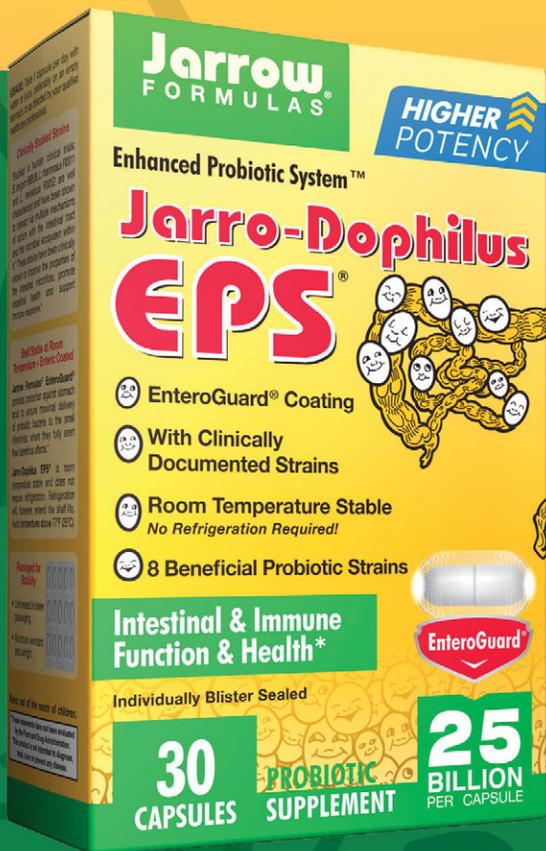
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# INTACT & READY TO ACT™

## ENHANCED PROBIOTIC SYSTEM™



## 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

Jarrow Formulas® Jarro-Dophilus EPS®, 25 Billion Per Capsule, 30 capsules Item # 01759  
Retail price \$39.95 each; Member Price \$29.96 each  
To order, call (800)544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

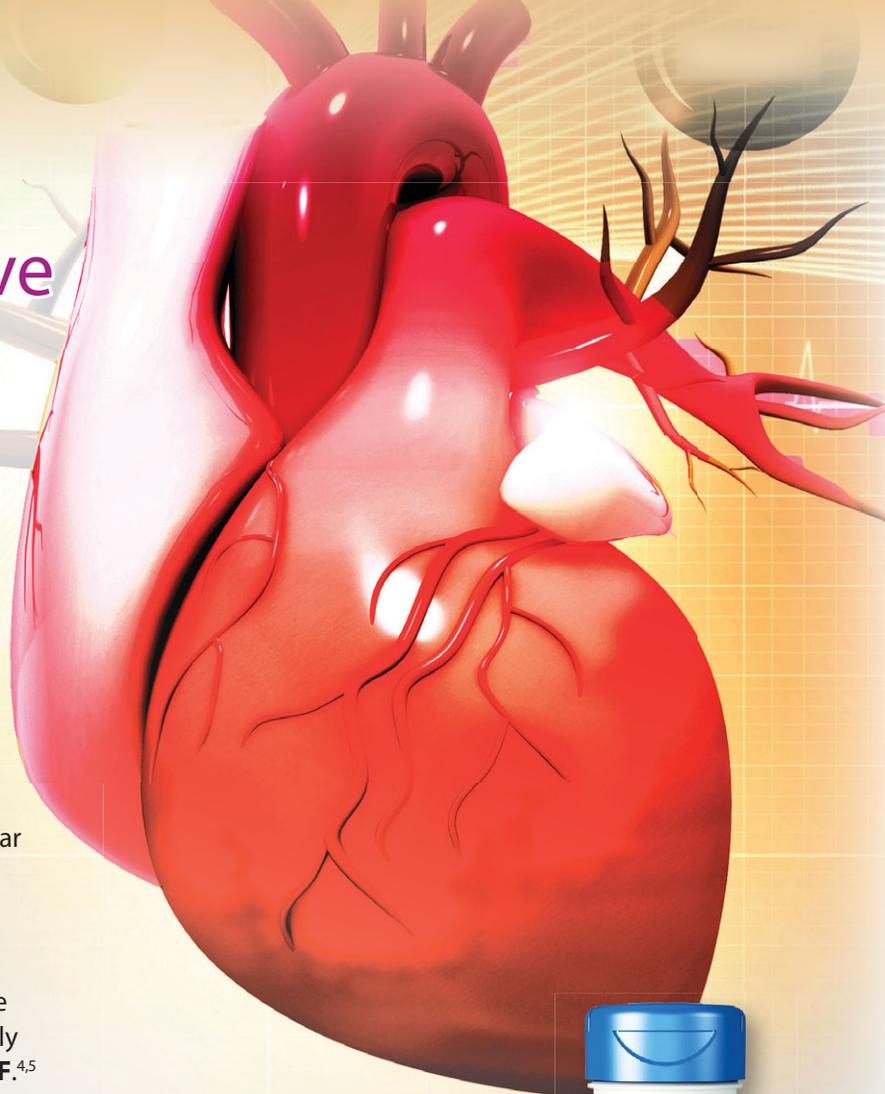
For more information visit us at  
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# Metabolically Active FOLATE

## Supports Cardiovascular Health



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

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

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

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

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

Non-GMO  
Quatrefolic® is a registered trademark of Gnosis, S.p.A.  
Patent number 7,947,662.

### References

1. *Am J Clin Nutr.* 2006 Apr;83(4):842-50.
2. *Am J Ther.* 2014; Epub Nov 17.
3. *Innov Clin Neurosci.* 2011 Jan;8(1):19-28.
4. *Am J Hum Genet.* 2002 Mar;70(3):758-62.
5. *Coll Antropol.* 2004 Dec;28(2):647-54.
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### Optimized Folate (1,000 mcg)

Item #01939 • 100 vegetarian tablets

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



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

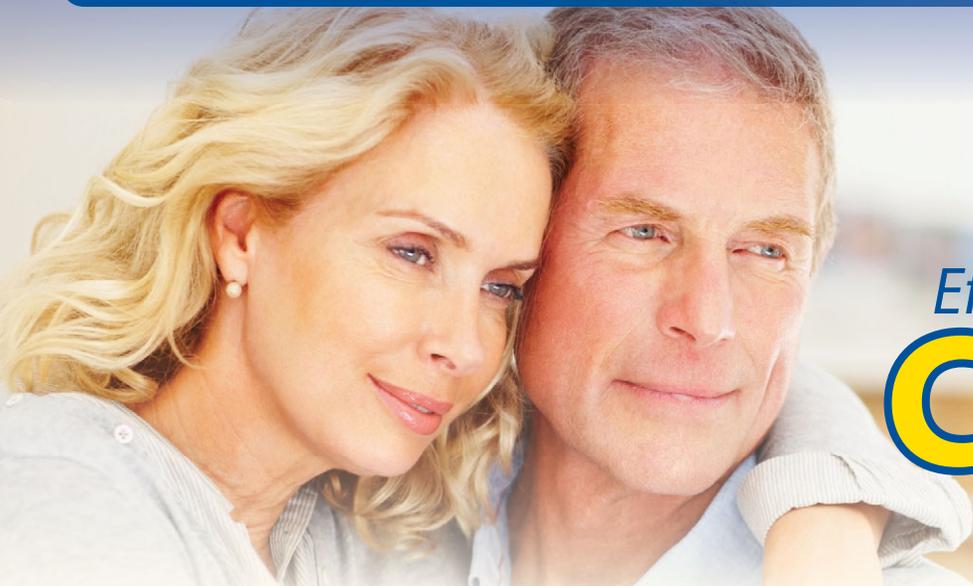
Item #01913 • 30 vegetarian tablets

	Retail Price	Member Price
1 bottle	\$25	<b>\$18.75</b>
4 bottles	\$22 each	<b>\$16.50 each</b>



To order either of these **Optimized Folate** formulas, call **1-800-544-4440** or visit **www.LifeExtension.com**

# MAINTAIN YOUTHFUL MITOCHONDRIA FUNCTION



## The Most Effective Form Of CoQ10

### CoQ10 Energizes Aging Cells by Enhancing Mitochondria Activity

Published studies on CoQ10 absorption clearly show that **ubiquinol** CoQ10 is superior to the conventional ubiquinone form. In middle-age mice, **ubiquinol** proved **40%** more effective in slowing measurements of aging compared to ubiquinone.<sup>1</sup>

A 2014 study further validates that **ubiquinol** activates mitochondrial functions to slow aging in mouse models.<sup>2</sup>

**Life Extension**® goes one step further and adds **shilajit** to its ubiquinol formula in a product called **Super Ubiquinol CoQ10**. Shilajit has been shown to promote mitochondrial metabolism, helping mitochondria convert fats and sugars into ATP—the main source of cellular energy.<sup>3-8</sup> When combined with **ubiquinol** CoQ10, it has been shown to **double** levels of CoQ10 in the mitochondria.<sup>9</sup>

The latest studies reveal that when **shilajit** is combined with CoQ10, cellular energy substantially increases. Combining the two ingredients produced a **56%** increase in energy production in the brain—**40%** more than CoQ10 alone! In the muscles, there was a **144%** increase!<sup>10</sup>

#### References

1. *Exp. Gerontol.* 2006 Feb;41(2):130-40.
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Life Extension® combines these two energy-activating ingredients in an exclusive **ubiquinol-shilajit** formulation available in three different potencies:

#### Super Ubiquinol CoQ10

Item #01425 • 100 50 mg softgels

	Retail Price	Member Price
1 bottle	\$58	<b>\$43.50</b>
4 bottles	\$46 each	<b>\$34.50 each</b>
10 bottles	\$42 each	<b>\$31.50 each</b>



Item #01426 • 60 100 mg softgels

#### Non-GMO

	Retail Price	Member Price
1 bottle	\$62	<b>\$46.50</b>
4 bottles	\$52 each	<b>\$39 each</b>
10 bottles	\$48 each	<b>\$36 each</b>



Item #01431 • 30 200 mg softgels

#### Non-GMO

	Retail Price	Member Price
1 bottle	\$62	<b>\$46.50</b>
4 bottles	\$52 each	<b>\$39 each</b>
10 bottles	\$48 each	<b>\$36 each</b>



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



## WHAT'S INSIDE

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# LifeExtension®

Magazine



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### 48 HUMAN AGE-REVERSAL STUDY INITIATIVE

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