

A MISSING LINK BEHIND HEART DISEASE

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December 2014

Why Most Zinc Lozenges Fail Cold Sufferers

**Protect Against
Environmental
Carcinogens**

**New Way
To Combat
Chronic Fatigue**

**Suppress Deadly
5-LOX Enzyme**



PLUS—
Vitamin D Protects Against Dementia
Metformin Improves Survival in Humans
Fish Oil Preserves Brain Volume



Higher-Potency **OptiZinc**[®] For Optimal Absorption



Zinc supports your body's natural **immune** defenses. Research demonstrates that zinc **deficiency** is widespread, especially in the elderly.¹⁻⁴ This deficiency may contribute to aging-related impairment of immune function—or **immunosenesence**.^{1,3}

Scientists found that zinc **supplementation** offers an effective way to support aging immune systems, as well as healthy inflammatory and antioxidant responses.^{1,4-6} A longstanding problem is that zinc absorption can be limited¹ and certain plant sources and grains can further inhibit absorption.⁷

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

Zinc's Critical Importance

Beyond immune support, zinc plays other crucial roles. It is an essential component of **superoxide dismutase**, one of your body's most powerful natural antioxidants.⁸ Zinc stimulates the activity of about **300 enzymes** that promote biochemical reactions in your body.⁹

This key mineral is also an integral component of vital **hormones** and supports protein and DNA synthesis, insulin production, as well as thyroid and bone metabolism.^{7,8-11} Zinc supports cardiovascular and neurological health, and helps maintain vision in the elderly.^{8,9,12}

Age-related immune decline is partly due to the decreasing size and function of the **thymus** gland. Evidence suggests that zinc may help maintain healthy function of the thymus gland in elderly people.¹

The Proven Superior Absorption Of OptiZinc[®]

OptiZinc[®] is a superior bioavailable form of zinc.¹³ It is assimilated more easily than ordinary zinc because it is comprised of one of the **most absorbable** forms of zinc—**zinc methionate (methionine)**.¹⁴ Published studies show that it results in higher blood levels compared to other forms of zinc.¹⁴



Item #01813

Zinc Caps are now available in a low-cost **50 milligram** format to allow you to easily attain the **optimal** dosage for maximum immune support.

The suggested daily dosage of one vegetarian capsule of Zinc Caps provides:

Zinc (as OptiZinc[®] zinc monomethionine*, Zinc citrate) **50 mg**

A bottle of 90 vegetarian capsules of **Zinc Caps** retails for \$7.95. If a member buys four bottles, the price is reduced to **\$5.25** per bottle.

* OptiZinc[®] is a registered trademark of InterHealth Nutritionals, Inc.

Caution: Supplemental zinc can inhibit the absorption and availability of copper. If more than 50 milligrams of supplemental zinc is taken daily, 2 milligrams of supplemental copper should also be taken to prevent deficiency. Chronic ingestion of more than 100 milligrams of zinc daily may be immunosuppressive for some aspects of T-cell and NK cell function.

References

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To order Zinc Caps, call 1-800-544-4440 or visit www.LifeExtension.com

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REPORTS

22 NEW OPTION FOR CHRONIC FATIGUE SYNDROME

Today's medicine has failed the nearly **4 million** Americans suffering from **chronic fatigue syndrome**. A global team of scientists has identified unique molecules called **roburins**, derived from oak wood, that have shown promise in managing a majority of **chronic fatigue syndrome** symptoms.

34 PROTECTION AGAINST ENVIRONMENTAL CANCER

We are surrounded by toxic environmental factors that contribute to as many as **80 to 90%** of all cancer cases. Studies show that **chlorophyllin** neutralizes environmental carcinogens and binds to dietary mutagens, excreting them from the body before they damage DNA.

46 THE MISSING LINK TO HEART HEALTH

Magnesium deficiency is dangerously common, resulting in increased cardiovascular disease risk. Studies indicate that restoring healthy magnesium levels reduces the rate of cardiovascular disease by **40%**, of sudden cardiac arrest by **77%**, of cancer by **50%**, and of all-cause mortality by **40%**.

58 RELIEF FOR CONSTANT INFLAMMATION

Low-level inflammation is an underlying factor for **six** of the **ten** leading causes of death. Studies have shown that **Boswellia** extract significantly improved arthritis patients' pain and function in just seven days while suppressing causative agents involved in **chronic inflammation**.

70 MOST EFFECTIVE ZINC LOZENGES FOR THE COMMON COLD

Over 30 years ago, scientist George Eby discovered that only **zinc acetate** can be relied on to protect against the common cold, allergies, and throat congestion. Validated by a new report published in the **Journal of the American Medical Association**, zinc acetate represents a first-line defense against the common cold.

82 A TRIUMPHANT FAILURE

Despite their vast reserves of oil, Venezuela has no chemo drugs for its cancer patients and even its president fled the country for medical care. This is a classic example of how government bureaucracy can destroy a nation's vital health care system and hinder the pursuit of longevity.



7 ON THE COVER

WHY MOST ZINC LOZENGES FAIL

The **Journal of the American Medical Association** reported that taking the correct **form** and **dose** of **zinc lozenge** cuts duration of the common cold by about **50%**! The key is initiating **zinc acetate lozenges** at the very **first** cold symptom. Delays of 24-48 hours may render zinc lozenges ineffective as too many rhinoviruses have already infiltrated your cells.

DEPARTMENTS

15 IN THE NEWS

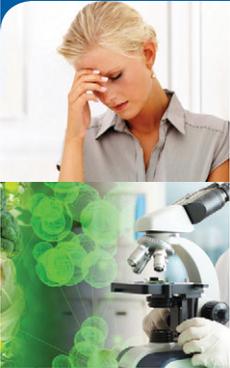
Resveratrol boosts memory; metformin increases longevity; vitamin D deficiency increases dementia risk; and more.

93 ASK THE DOCTOR: CHOOSING THE RIGHT HORMONE TEST

As you age, hormone testing is key to any longevity program. However, numerous factors can affect what testing methods you and your doctor choose. Scott Fogle, ND, explains how to assess the best hormone tests for your needs.

99 WELLNESS PROFILE

Miami Dolphins' punter Brandon Fields has a driving mission to educate people, especially kids, about the dangers of concussions, which can cause dementia, Alzheimer's, or chronic traumatic encephalopathy (CTE).





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LIFE EXTENSION (ISSN 1524-198X) Vol. 20, No. 12 ©2014 is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33309-3338. **LE Publications, Inc. All rights reserved.** Published 13 times a year. Subscription rate: \$40 per year in the United States. US \$47 in Canada. US \$60 in other countries. Subscription included as part of Life Extension Foundation membership. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscriptions: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. **POSTMASTER:** Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. Printed in USA. The articles in this magazine are intended for informational purposes only. They are not intended to replace the attention or advice of a physician or other health-care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle change intended to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health-care professional. **LEGAL NOTICE:** Health claims contained in articles and advertisements in this publication have not been approved by the FDA with the exception of FDA approved qualified health claims for calcium, antioxidant vitamins, folic acid and EPA and DHA omega-3 fatty acids, and selenium as noted where applicable. Life Extension® does not endorse any of the businesses or the products and/or services that may appear in advertisements for non-Life Extension branded products or services contained in Life Extension magazine® except to state that they are advertisers who may have paid Life Extension for placement of an advertisement in this publication. Life Extension disclaims any and all responsibilities or warranties as to the accuracy of information contained in advertisements for non-Life Extension branded products or services. For Canadian customers send change of address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON L2A 6C7.

IS YOUR FOLIC ACID WORKING FOR YOU?



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call 1-800-544-4440 or
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Folate is involved in **neurotransmitter synthesis** and critical **enzymatic reactions** throughout the body.

By depleting excess **homocysteine**, folate benefits cardiovascular health and nervous system function.

Those who take ordinary folate supplements, however, may not be experiencing its full spectrum of effects. This is because once ingested, not everyone converts folate to its biologically active form called **5-methyltetrahydrofolate (5-MTHF)**.¹ Research shows that in a large proportion of the population, *genetic enzyme deficiencies* prevent the conversion of folate to **5-MTHF**, leaving many vulnerable to low blood folate levels (and higher-than-desired homocysteine).

A BIOACTIVE FORM OF FOLATE

A more useful approach is to take the bioactive folate **5-MTHF** directly, which has been declassified as a drug and is now available as a dietary supplement. **5-MTHF** has been shown to dramatically raise blood serum folate levels² compared with folic acid supplementation. This bioactive folate is up to **seven times** more bioavailable than folic acid. This greater *bioavailability* is especially important in people who have a genetic enzyme deficiency³ since it requires no conversion to become metabolically active.

People with elevated homocysteine levels have a greater risk of cognitive decline.⁴ Unlike folic acid, **5-MTHF** is able to cross the blood-brain barrier, which is especially important for people with cognitive difficulties, to enhance the synthesis of *acetylcholine* in the brain—the neurotransmitter associated with memory.

Studies also show that the effectiveness of **5-MTHF** can be further enhanced by co-supplementing with methylcobalamin (the active form of vitamin B12),⁵ vitamin B6, and riboflavin.⁶ **5-MTHF** is up to seven times more bioavailable than regular folic acid.

A bottle containing **100** vegetarian capsules of **Optimized Folate** providing 1,000 mcg of bioactive folate in each capsule retails for \$28. If a member buys four bottles, the cost is only **\$18.75 per bottle**.

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Protease III 22,880 FCC	
Lipase 6,400 FCC	
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Protease II 780,000 FCC	
Protease III 1,300 FCC	
Amylase 7,000 FCC	
Lactase 2,000 FCC	
Cellulase 1,600 FCC	
Lipase 1,000 FCC	
Whole fruit papaya powder	200 mg



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Snail's Pace



BY WILLIAM FALOON

In **1979**, a serendipitous discovery occurred when a 3-year-old girl was battling **leukemia**. Her leukemia was being treated with chemotherapy, radiation, and **zinc**. She developed a severe cold during the treatment.¹ Due to the cold, the little girl refused to swallow a **50 mg zinc** tablet and instead **dissolved** it in her mouth. Within several hours her **cold** disappeared and did not return.¹

In **1984**, findings from the first double-blind human study on **zinc lozenges** for common colds was published. The results showed that **cold symptoms** vanished in **86%** of people taking **zinc lozenges** compared to **46%** taking **placebo** lozenges after seven days.¹

In **2014**, the **Journal of the American Medical Association** published a synopsis of human trials on the use of **zinc lozenges** in treating the **common cold**. The results showed that when the proper dose of **zinc** is used **within 24 hours** of first symptoms, the duration of cold miseries is cut by about **50%**.²

There are about **one billion** colds suffered in the United States each year.³ The delay from discovery to mainstream validation of **zinc lozenges** has caused enormous suffering.

The title of this editorial is "**Snail's Pace**." It refers to the agonizingly slow time (**30 years**) it took from the discovery that **zinc lozenges** shorten the duration of **cold symptoms** to acknowledgement of zinc's efficacy by the medical establishment.

The problem today is that most people don't know how to properly use **zinc lozenges** to stop colds from taking hold in their bodies. This article will describe a way to reduce your odds of contracting a protracted **cold virus** this winter.



People often procrastinate, even as their health succumbs to a **cold virus** that slowly wears them down. The problem with *delaying* treatment is that after a cold virus *invades* too many cells, it *self-replicates* to the extent that it is difficult to achieve relief.

The first step in infection occurs when a cold virus (called *rhinovirus*) attaches to the linings of **nasal** cavities in our head. The virus infiltrates cells by attaching to a cell receptor called *intracellular adhesion molecule-1* (ICAM-1).⁴

The proper form and dose of **zinc** blocks the **ICAM-1** receptor, thus preventing the rhinovirus from entering cells and establishing a common cold infection.⁵

According to an article published this year in the *Journal of the American Medical Association*, if higher-dose zinc lozenges are initiated *within 24 hours* of the first symptoms, the mean duration of a cold is **4.47**

days compared to **8.68** days in low-dose zinc lozenge users.²

While cutting the duration of cold symptoms almost in half is impressive, we at **Life Extension**® think it's possible to *stop* many colds before they take hold and cause prolonged agony.

We recommend that when the very **first** cold symptom develops, high-dose zinc lozenges are *immediately* initiated and continued until symptoms subside. In other words, don't wait **24 hours** to initiate, don't even wait 24 minutes. Start taking the proper form of zinc lozenge immediately!

Inconsistent Zinc Studies

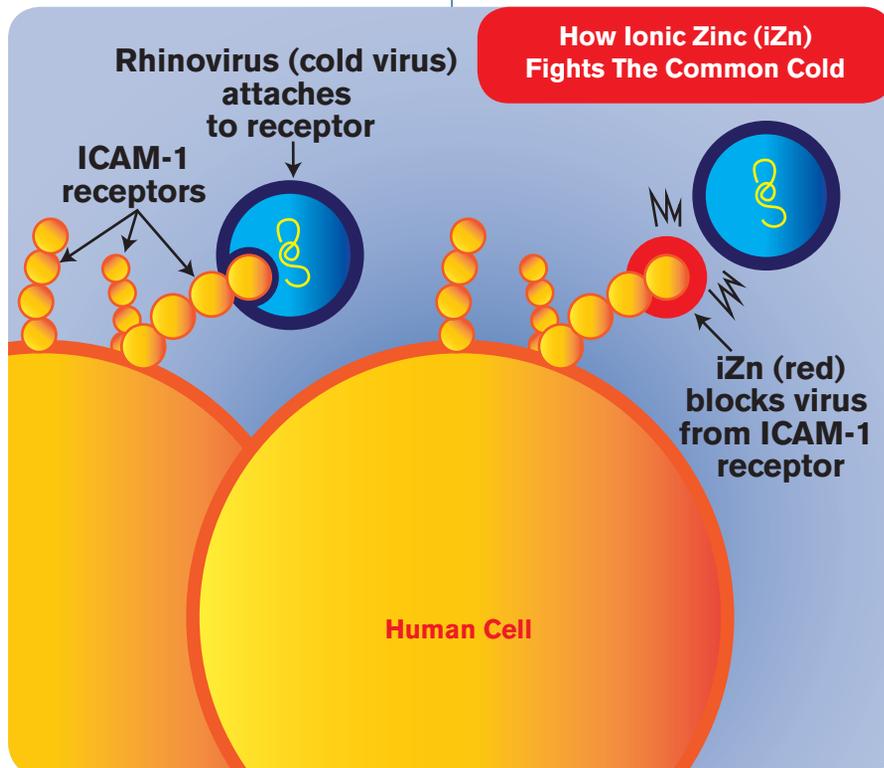
Not all clinical trials using **zinc lozenges** have been successful. The failures, however, provide important insights on what not to do if one expects to shorten their **cold** duration.

For example, two placebo-controlled studies published in **1987** did not initiate zinc lozenges until **36 hours** after cold symptoms presented. In addition, these people who suffered cold symptoms for more than 36 hours also had their sinuses inoculated with different strains of rhinoviruses to make sure they were fully infected. High-dose (**23 mg**) tightly bound **zinc lozenges**⁶ failed in these studies and the doctors concluded that zinc lozenges are "*not therapeutically useful in the treatment of rhinovirus colds.*"⁷

A study published in **1990** used low-dose (4.5 mg) zinc lozenges at the first sign of cold symptoms or within 24 hours of symptoms appearing. This low-dose zinc also failed to provide benefit compared to placebo.⁸

A study published in **1992** looked at differing forms of **zinc lozenges** and found that some of them were so tightly bound to their carrier by zinc chelators that they would not release enough **free zinc** in the throat to block the **ICAM-1 receptor**.⁹ The conclusion of this report is that previous studies showing a positive benefit with zinc occurred when lozenges contained the proper carrier to release ionic zinc. Studies published in **1996**,¹⁰ **1997**,¹¹ **1998**,¹² **2003**,⁵ and **2010**¹³ confirm this **1992** finding that the proper form of zinc is required to suppress cold symptoms.

So we know from earlier research *why* zinc lozenges don't always work. Fortunately, an abundance of research now demonstrates significant benefit when the right form and dose of zinc lozenge is used within 24 hours of cold symptoms manifesting.^{2,5,10-14}





Studies That Validate Zinc Efficacy

In 1996, a published study showed that moderate-dose (**13.3 mg**) **zinc lozenges** reduced the duration of common cold symptoms. Median time to complete resolution of cold symptoms was **4.4 days** in the **zinc lozenge** group compared to **7.6 days** in the **placebo** arm of the study.¹⁰

In 2000, another moderate-dose (**12.8 mg**) study showed significant reduction in duration and severity of cold symptoms. The number of days suffered was reduced by about **45%** in the **zinc lozenge** group. The mean overall duration of cold symptoms was **4.5 days** in the active (zinc lozenge) group compared to **8.1 days** in the placebo arm.)¹⁴

In a 2002 published study in children with colds, those who used zinc lozenges suffered **7.5 days** of symptoms compared to **9.0** for nonuse.¹⁵ What was impressive about this study is that the median number of colds declined to **zero** when children supplemented daily with a **zinc lozenge** compared to a median of **1.3 colds** contracted when not

supplementing. During the time of zinc supplementation, only **4.1%** of the children were prescribed an **antibiotic** drug compared to **36.2%** when they were not supplementing.¹⁵

A 2008 published study on adults was done using **13.3 mg** zinc lozenges within 24 hours of cold symptoms developing. Cold durations, on average, for those who received the zinc lozenges, were **4.0 days** compared to **7.1 days** in the placebo arm. The **severity of cold symptoms** in this study was markedly less in the zinc lozenge group.¹⁶

In 2011, a review of 13 placebo-controlled human trials was published that examined the effect of **zinc lozenges** on common cold episodes of natural origin. Five of the trials used a total daily zinc dose of less than **75 mg** and all these studies found no effect. Three trials used **zinc acetate** in daily doses of over **75 mg**. The pooled result of these three studies using higher dose **zinc acetate** showed a **42% reduction** in the duration of colds.¹⁷ Five trials used other zinc salts (like gluconate) in daily doses of over **75 mg**. The pooled result from these five

trials showed a **20% reduction** in the duration of colds.¹⁷ This analysis showed **zinc acetate** to be the preferable form to be used in a lozenge designed to shorten the duration of cold symptoms.

In 2014, the *Journal of the American Medical Association* published an article indicating that cold duration could be slashed almost in half if higher-dose **zinc lozenges** are taken within **24 hours** of the first symptom. This review concluded:

*“Our findings are consistent with 2012 American Academy of Family Physicians guidelines and with the 2013 dietary supplement fact sheet of the National Institutes of Health. Both support use of zinc supplementation within 24 hours of onset of the common cold.”*²²

How To Use Zinc Lozenges

Zinc lozenges should ideally be taken immediately upon the very first cold symptom, even if you're not certain you really have a cold. Take one **18.75 mg** zinc acetate lozenge every two waking hours. Please be aware that this is a high dose of zinc and should not be taken over the long term. You should only need to do this for a few days; we suggest no more than three days.

You may not need to suck on zinc for more than one day. If your cold symptoms disappear after sucking on a few lozenges over several hours, then you may not need to take any more until the next time you experience a cold symptom.

Overcoming The “Adverse” Effects

The research on zinc lozenges reveals consistent complaints of unpleasant taste, constipation, and a metallic feel in the mouth in response to higher potency zinc lozenges, especially zinc gluconate lozenges.^{17,18} Some people have told me over the years they’d rather suffer longer with the cold than endure the unpleasant effects of the zinc gluconate lozenges.

These adverse effects prompted **Life Extension®** to scour the scientific literature to identify a way of delivering enough **zinc acetate** in a lozenge without causing unpleasant effects.

The best solution involves a novel way of combining a **moderate-dose (18.75 mg)** of **zinc acetate** into a lozenge (without added chelators) flavored with **peppermint oil**. This lozenge is more palatable than many commercial brands while delivering an ideal potency of the proper form of **zinc** to block the **ICAM-1 receptor**.⁵

We think that these better-designed **zinc acetate lozenges** will motivate people to start sucking on them as soon as the first cold symptom manifests, thus providing an opportunity to prevent the rhinovirus from taking hold in one’s body.

Even if you are not certain an itchy nose, sneeze, or runny nose is really a cold, it will not hurt to suck on these new zinc lozenges to make sure. The immune-boosting effects of zinc are profound and the cost is quite low.

An argument could also be made that if you are in the presence of someone suffering from a cold, sucking on a few of these lozenges may block your **ICAM-1** receptors from allowing their **rhinovirus** to latch on and infect your cells.

My Personal Experience

I suffered my last head cold around **1983**. As I have written in the past, whenever I feel even the slightest symptom of a cold or flu virus, I immediately take high doses of **garlic**,¹⁸⁻²³ **melatonin**,²⁴⁻²⁸ **lactoferrin**,²⁹⁻³³ **DHEA**,³⁴⁻³⁸ and **zinc lozenges** along with **1,200 mg** a day of the OTC drug **cimetidine**.³⁹

This aggressive regimen has kept me from suffering a debilitating cold or flu infection for over **30 years**.

When I develop cold symptoms, I use a wide variety of high-dose zinc lozenges and keep sucking on them until symptoms disappear. I’ve never had to use zinc lozenges more than 12 hours to eliminate cold symptoms. My symptoms usually disappear within six hours of immediately sucking on zinc lozenges.

I’m convinced that if I did not aggressively start high-dose zinc lozenge therapy, I would have contracted a cold virus that would have lasted a week or more. I’ve heard this anecdotally from others; i.e. if they start sucking on zinc lozenges at the very first symptom of a cold, a full-blown common cold does not manifest.

History Of Zinc And The Common Cold

In this month’s issue, we feature an in-depth article by the pioneer of zinc lozenges in the prevention and treatment of the common cold. George Eby investigated every form of zinc before developing a lozenge that is palatable, potent, and provides a form of zinc (acetate) that binds to cellular ICAM-1 to keep out rhinoviruses.

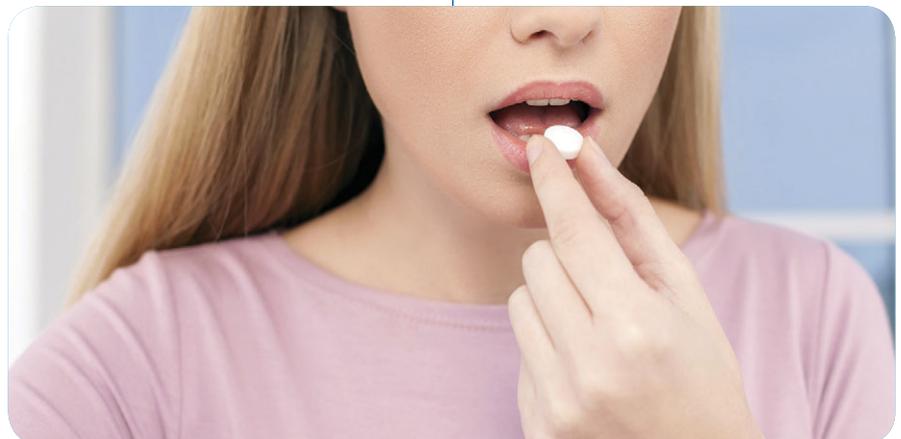
The low cost of zinc lozenges makes them a wise choice to stockpile ahead of time in one’s home, office, and suitcase. The last obstacle you want to face when a cold symptom manifests is trying to find a 24-hour pharmacy that sells a poor-tasting lozenge that may not be the form or potency needed to block your ICAM-1 receptors against an invading **cold virus**.

It is regrettable that the serendipitous discovery about **zinc** and the **common cold** occurred in **1979**, yet most victims in **2014** still do not know how to use zinc to shorten cold duration.

For longer life,



William Faloon





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BRAIN SHIELD®



SUPPORT for COGNITIVE FUNCTION with AGING

Your brain is under constant onslaught from environmental and stress-related challenges, as well as normal aging processes.^{1,2}

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

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

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

MULTI-FACTORIAL BENEFITS!

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

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

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

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

Those seeking maximum benefit should start with one 300 mg capsule of **Brain Shield®** taken twice daily.¹⁶ After 30 days, one Brain Shield® (gastrodin) capsule daily may be sufficient based upon the experience of gastrodin as an over-the-counter (OTC) pharmaceutical agent. Those taking **Cognitex®** are obtaining **50 mg** of gastrodin in the daily dose along with complementary nutrients. As additional research continues on gastrodin, better clarification on optimal dosing for a wide range of neurovascular and neuro-inflammatory conditions should be available.

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



Item # 01802

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



Zinc Acetate Lozenges

FOR WINTER SEASON SUPPORT

Zinc stimulates the activity of about 300 enzymes¹ and fortifies the immune system.²

Taking the best zinc lozenge is important for maintaining the body's natural defense system during the cold season—and throughout the year.

Enhanced Zinc Lozenges is a special "ionic formula" that delivers on the original promise of seasonal immune support.

Immune Support For Seasonal Changes

Scientific evidence is accumulating that **zinc acetate** is the preferred zinc compound to provide enhanced seasonal immune support.

Zinc acetate releases **100%** of its zinc as **ionic zinc**—positively charged zinc ions. **Zinc acetate** lozenges have been shown to strongly support immune function.³⁻⁵

Life Extension® **Enhanced Zinc Lozenges** provide **zinc acetate** with no other ingredients that could reduce the delivery of these immune-supportive, positively charged zinc ions. **Enhanced Zinc Lozenges** come in a naturally flavored peppermint lozenge.

The suggested serving size of one vegetarian lozenge of **Life Extension® Enhanced Zinc Lozenges** provides:

Zinc (as zinc acetate) **18.75 mg**

A bottle of 30 vegetarian lozenges of **Life Extension® Enhanced Zinc Lozenges** retails for \$12. If a member buys two bottles, the price is reduced to **\$6** per bottle.

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To order **Life Extension® Enhanced Zinc Lozenges**, 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.

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:

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

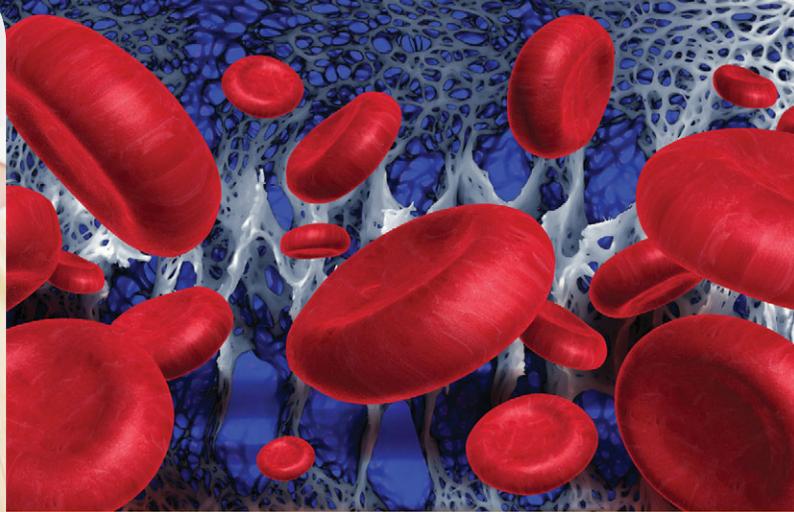


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Note: Those who take **Super Booster** or **Super K** usually do not need additional vitamin K2. They should order **Bone Restore without vitamin K2**. Those taking the anticoagulant drug **Coumadin®** (warfarin) should use **BONE RESTORE without vitamin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

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IN THE NEWS

Metformin Enables Diabetics To Live Longer Than Nondiabetics

Type II diabetes significantly shortens life span, but research has revealed that a medication commonly used to treat it might enable diabetics to live longer on average than those without the disease.*

Writing in the journal *Diabetes, Obesity and Metabolism*, Craig Currie and colleagues report that treatment with **metformin** improved survival in diabetics in comparison with those treated with sulfonylurea drugs, as well as in comparison with untreated nondiabetics.

The study included 78,241 diabetics treated with metformin and 12,222 prescribed sulfonylureas, matched with 90,463 nondiabetic control subjects. Nondiabetics experienced a **15% lower** adjusted median survival time in comparison with diabetics treated with metformin. Said differently, **diabetics** prescribed **metformin** lived **15% longer** than matched, case-control nondiabetics not taking metformin, suggesting the powerful longevity-enhancing potential of this medication. For those receiving sulfonylurea monotherapy, median survival time was **38% lower** than metformin-treated patients. This finding further validates Life Extension®'s longstanding position for diabetics to avoid the sulfonylurea drug class. Sulfonylurea drugs enhance insulin secretion from the pancreas regardless of ambient blood sugar level, which can result in dangerously high insulin levels.

"Metformin has been shown to have anticancer and antidiabetic disease benefits," Dr. Currie observed. "It can also reduce prediabetics' chances of developing the disease by a third."

Editor's Note: "Surprisingly, the findings indicate that this cheap and widely prescribed diabetic drug may have beneficial effects not only on patients with diabetes but also for people without, and interestingly, people with type I diabetes," Dr. Currie noted.

* *Diabetes Obes Metab.* 2014 Jul 7.

Resveratrol Improves Memory And Glucose Metabolism In Older Men And Women

On June 4, 2014, the *Journal of Neuroscience* reported brain benefits for **resveratrol**, a compound found in red grapes and wine, in a trial of older men and women.*

The trial included 23 healthy, overweight individuals between the ages of 50 and 75 years who supplemented with **200 mg** resveratrol per day for 26 weeks, plus 23 subjects given a placebo. Functional magnetic resonance imaging (MRI) of the brain was conducted, anthropometric measurements were obtained, and memory performance, blood factors, and vascular markers were assessed before and after treatment.



At the trial's conclusion, participants who received resveratrol had better retention of words after a 30-minute delay in comparison with subjects who received the placebo. Neuroimaging revealed greater functional connectivity of the hippocampus (which plays an important role in memory) to several areas of the brain in the resveratrol group.

Resveratrol treatment was additionally associated with a reduction in hemoglobin A1c, a marker of long-term glucose control, and an increase in leptin, a satiety hormone, in comparison with the placebo. While body fat percentage slightly increased in the control group, it declined among those who received resveratrol.

* *J Neurosci.* 2014 Jun 4.



Turmeric Compound Stimulates Brain Cell Regeneration

An article published online on September 25, 2014, in *Stem Cell Research & Therapy* reveals an ability for aromatic turmerone, a compound found in turmeric, to increase brain stem cell proliferation and differentiation in cell cultures, and to encourage the growth of neuron-generating areas of the brains of animals that received it.*

Earlier studies involving aromatic turmerone found that it prevented the activation of microglia cells, which trigger neuroinflammation associated with various disorders. For the current research, Adele Rueger of the Institute of Neuroscience and Medicine in Jülich, Germany, and her associates tested aromatic turmerone's effect on neural stem cells, which differentiate into neurons and play a role in brain self-repair. Culturing rat neural stem cells in six different concentrations of aromatic turmerone over three days resulted in an increase in stem cell proliferation of up to **80%**. Cell differentiation also increased in treated cells.

Editor's Note: When the researchers tested the effects of aromatic turmerone *in vivo*, PET imaging revealed expansion of the subventricular zone and hippocampus—areas of the adult mammalian brain in which neurogenesis occurs—in animals injected with the compound.

* *Stem Cell Res Ther.* 2014;5:100.

Calcium Supplementation Associated With Reduced All-Cause Mortality

Findings from a study examining the association between calcium intake and subclinical cardiovascular disease in diabetics not only failed to find an adverse effect for calcium on any measure of calcified plaque, but also uncovered a modest reduction in all-cause mortality over a 9.4-year average period in women who supplemented with the mineral.*

The study included 720 participants in the Diabetes Heart Study. Questionnaires administered upon enrollment provided information concerning calcium intake. Calcified atherosclerotic plaque was measured via computed tomography.

No association between any measure of calcified plaque and calcium intake from diet or supplements was observed, nor was increased calcium intake associated with a greater risk of all-cause mortality over follow-up. On the contrary, among women who supplemented with calcium, there was a **38% lower** adjusted risk of death from all causes over follow-up in association with each **500 mg** increase in calcium evaluated in this study.

Editor's Note: "Studies have raised concerns that calcium supplementation may have the unintended negative consequence of increasing cardiovascular disease risk," authors Laura M. Raffield and associates said. "In this study, we did not observe any negative cardiovascular impacts of differing calcium intakes from diet and supplements in contrast to some previous reports."

* *Am J Clin Nutr.* 2014 Aug 6.

Study Adds Evidence Regarding Protective Effect Of Vitamin D Against Dementia

A report published in the journal *Neurology* provides more evidence supporting a link between optimum serum vitamin D levels and a lower risk of dementia, including Alzheimer's disease.*

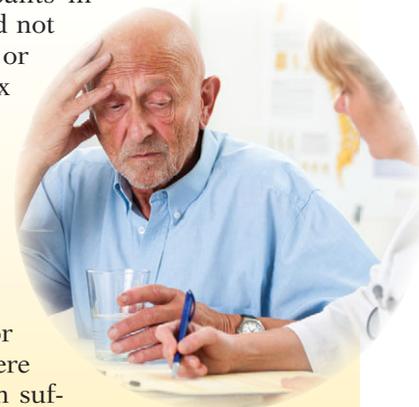
The analysis included 1,658 participants in the Cardiovascular Health Study, who did not have dementia, cardiovascular disease, or stroke upon enrollment. After almost six years, 171 subjects were diagnosed with dementia, which included 102 cases of Alzheimer's disease.

The researchers found a **53%** greater risk of dementia and a **69%** higher risk of Alzheimer's disease among subjects with moderate vitamin D deficiency, and more than double the risk of dementia or Alzheimer's disease among those with severe deficiency compared to participants with sufficient amount of vitamin D.

"Clinical trials are now needed to establish whether eating foods such as oily fish or taking vitamin D supplements can delay or even prevent the onset of Alzheimer's disease and dementia," lead researcher David J. Llewellyn stated.

Editor's Note: Dr. Llewellyn added, "The findings are very encouraging, and even if a small number of people could benefit, this would have enormous public health implications given the devastating and costly nature of dementia."

* *Neurol.* 2014 Aug 6.



Higher Vitamin E Levels Associated With Reduced Hip Fracture Risk

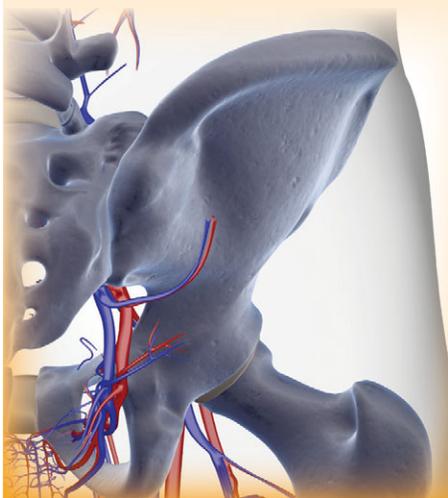
An article published in the journal *Osteoporosis International* reports the outcome of an analysis of older men and women that found an association between higher vitamin E levels and lower hip fracture risk.*

The current analysis included men and women enrolled in community-based Norwegian studies conducted between 1994 and 2001. Serum alpha-tocopherol levels of 1,168 subjects between the ages of 65 to 79 who suffered hip fractures during up to 11 years of follow-up were compared to those of 1,434 control subjects from the same cohort.

Higher vitamin E serum levels were associated with reduced hip fracture risk. Among subjects in the lowest 25% of serum alpha-tocopherol, the risk of hip fracture was 51% higher than among those whose levels were among the top 25%. Adjustment for body mass index, serum vitamin D levels, and other factors did not alter results significantly.

Editor's Note: The authors observed that oxidative stress has been suggested as a contributor to osteoporosis and fractures, and that vitamin E has strong antioxidant properties.

* *Osteoporos Int.* 2014 Aug 4.



Higher Vitamin D Levels Linked With Lower Risk Of Premature Mortality

The *British Medical Journal* published the results of a meta-analysis that indicate having a higher level of vitamin D is associated not only with a lower risk of dying from any cause over follow-up, but also with a reduction in the risk of dying from cancer among those with a history of the disease.*

The analysis included data from seven cohorts plus participants in NHANES III (The National Health and Nutrition Examination Survey). For men and women whose vitamin D levels were among the lowest one-fifth of subjects, there was a 57% higher risk of dying from any cause in comparison with those whose levels were among the top fifth. For those with the lowest vitamin D levels who did not have a history of cardiovascular disease, the risk of cardiovascular mortality was

41% greater than subjects whose levels were highest, and among those with a history of the disease, the risk was 65% higher.

Editor's Note: When the risk of dying from cancer was examined, a different picture emerged. In subjects with no history of cancer, there was no significant difference in the risk of dying among those with highest and lowest vitamin D levels. However, among those with a history of the disease, the risk was 70% greater in subjects with lowest vitamin D category compared to that with highest vitamin D, indicating that the vitamin may play a role in improving prognosis.

* *BMJ.* 2014 Jun 17.



Testosterone Replacement Enhances Aerobic Capacity

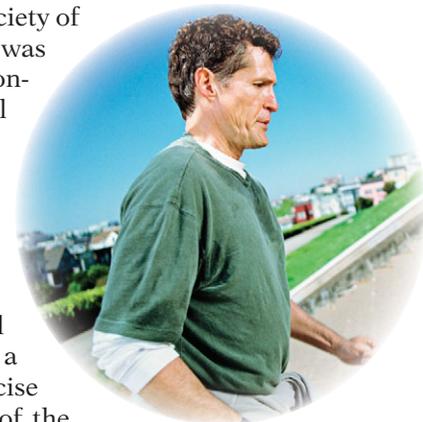
The joint meeting of the International Society of Endocrinology and the Endocrine Society was the site of a presentation on June 22, 2014, concerning findings obtained from a clinical trial of men with limited mobility that revealed improved aerobic capacity among those treated with testosterone.*

The current study evaluated data from 64 men with low testosterone enrolled in the Testosterone in Older Men with Mobility Limitation Trial. Participants in the trial received 10 mg testosterone in gel form or a placebo gel daily for six months. Cycle exercise tests conducted at the beginning and end of the treatment period provided measures of aerobic function, including peak oxygen uptake and gas exchange lactate threshold.

At the trial's conclusion, men who received a placebo saw a reduction in peak oxygen uptake, while those treated with testosterone experienced improvement.

Editor's Note: "If proven safe over the long term, restoring testosterone to normal levels may improve an important measure of physical performance and enhance their quality of life," lead author Thomas W. Storer, PhD, observed.

* Joint meeting of the International Society of Endocrinology and the Endocrine Society. June 22, 2014.



Fish Oil Associated With Brain Volume Preservation

A report published in *Alzheimer's & Dementia* describes a protective effect for fish oil supplementation on the maintenance of brain volume and cognitive function in older men and women.*

The study included 193 Alzheimer's disease patients, 397 individuals with mild cognitive impairment, and 229 cognitively normal individuals who participated in the Alzheimer's disease Neuroimaging Initiative, a five-year study designed to evaluate changes in cognition and brain structure in older men and women. Subjects underwent neuropsychological testing and magnetic resonance imaging of the brain upon enrollment and every six months. The analysis included 117 subjects who regularly used fish oil supplements at the initial study visit, among whom a significant percentage reported continued use at subsequent visits.

While average hippocampus and cerebral cortex gray matter volume decreased over time in the group as a whole, the use of fish oil was associated with improvements in these areas in those who were noncarriers of the apolipoprotein E4 gene.

Editor's Note: Those who used fish oil over follow-up had better scores of cognitive function at any time over the course of the study; however, the effect mainly occurred among those who were not carriers of the apolipoprotein E4 gene, which has been linked with Alzheimer's disease.

* *Alz Dementia*. 2014 Jun 18.



Fasting Lowers Cholesterol In Prediabetics

A presentation at the 2014 American Diabetes Association Scientific Sessions revealed a benefit over time for fasting on low-density lipoprotein (LDL) cholesterol levels in individuals with prediabetes, defined as elevated blood sugar that is not yet diagnostic of diabetes.*

Acting on the findings of a 2011 study of fasting in healthy people, Benjamin Horne and colleagues studied its effects in prediabetics with at least three metabolic syndrome components. "During actual fasting days, cholesterol went up slightly in this study, as it did in our prior study of healthy people, but we did notice that over a six-week period cholesterol levels decreased by about **12%** in addition to the weight loss," Dr. Horne reported. "Because we expect that the cholesterol was used for energy during the fasting episodes and likely came from fat cells, this leads us to believe fasting may be an effective diabetes intervention."

Editor's Note: "Although fasting may protect against diabetes, it's important to keep in mind that these results were not instantaneous in the studies that we performed," Dr. Horne noted. "It takes time. How long and how often people should fast for health benefits are additional questions we're just beginning to examine."

* 2014 American Diabetes Association Scientific Sessions. June 14, 2014.



Treat Aging To Prevent Disease

On July 24, 2014, in the journal *Nature*, gerontologist Luigi Fontana, professor at Washington University in St. Louis, Missouri, and colleagues from the University of Southern California, recommended tackling aging, rather than the myriad of diseases associated with the process, in order to promote health and extend life.* "As targeting diseases has helped people live longer, they are spending more years being sick with multiple disorders related to aging, and that's expensive," Dr. Fontana remarked.

The authors of the commentary observe that chronic diseases often occur simultaneously, and that interventions, including diet and specific drugs, frequently result in the prevention or delay of several conditions. Research conducted by Dr. Fontana involving dietary restriction has shown that the practice results in decreased blood pressure and inflammation, resulting in cardiac tissue that is characteristic of chronologically younger individuals. Adoption of a low-calorie regimen by more people could help protect the heart and prevent a number of aging-associated conditions.

Editor's Note: "It takes 30 or 40 years of an unhealthy lifestyle and activation of aging-related pathways from metabolic abnormalities such as high blood pressure, high cholesterol, and type II diabetes to give a person heart failure in his 60s," Dr. Fontana noted. "So we propose using lifestyle interventions—such as a personalized healthy diet and exercise program—to down-regulate aging pathways so the patient avoids heart failure in the first place."

**Nature*. 2014 Jul 24.



ARE YOU TAKING THE OPTIMAL FORMS OF VITAMIN E?

According to the *Proceedings of the National Academy of Sciences*, alpha tocopherol (vitamin E) displaces critically important gamma tocopherol in the cells.¹ While **alpha tocopherol** inhibits free-radical production, **gamma tocopherol** is required to trap and neutralize existing free radicals.²

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

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

SESAME LIGNANS: THE NATURAL VITAMIN E BOOSTER

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

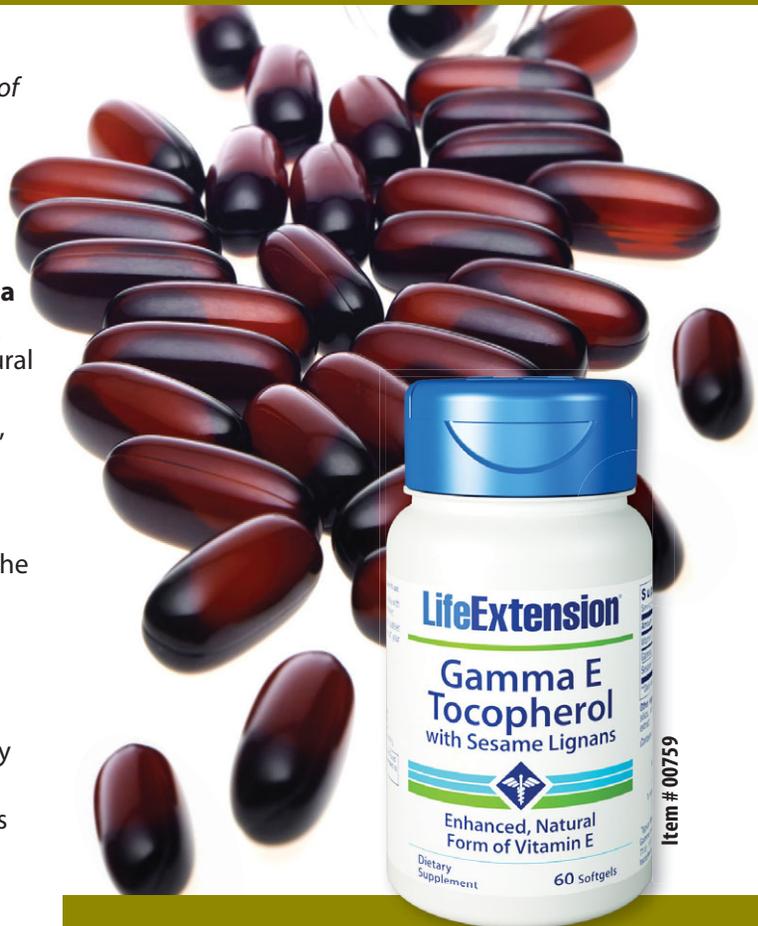
In a human study that combined **gamma tocopherol** with **sesame lignans**, gamma tocopherol/sesame was **25% more effective** than gamma tocopherol/tocotrienols in suppressing tissue measurements for free-radical and inflammatory damage.^{4,5} Since tocotrienols are considered nature's most potent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

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

WORLD'S MOST COMPREHENSIVE VITAMIN E FORMULA!

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

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



Item # 00759

Each softgel of Gamma E Tocopherol with Sesame Lignans provides:

Vitamin E (as D-alpha tocopherol)	45 IU
Gamma E mixed tocopherols	359 mg
Sesame seed lignan extract	20 mg

Contains soybeans.

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

NOTE: Those taking Super Booster with MacuGuard Ocular Support do not usually require additional gamma tocopherol.

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

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To order Gamma E Tocopherol with Sesame Lignans, call 1-800-544-4440 or visit www.LifeExtension.com

SUPER OME

**Powerfully
Enhanced Omega-3
Benefits**



Item #01819

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

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

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

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

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

Combined Benefits Of Fish And Krill Oils

Human studies suggest that omega-3 fatty acids from **fish oil** result in a more rapid uptake into *plasma triglyceride* and *platelet phospholipids*, which specifically benefit the cardiovascular system.¹

G A With Krill & Astaxanthin

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

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

Astaxanthin: Super-Antioxidant

Astaxanthin protects cells by controlling free-radical activity and boosting mitochondrial function.⁴ This potent antioxidant carotenoid has been shown to help optimize joint, immune,^{5,6} brain,^{7,8} cardiovascular,^{9,10} DNA,^{11,12} and mitochondrial^{13,14} health. Astaxanthin also supports healthy blood sugar levels for those already in the normal range.^{15,16} And astaxanthin crosses the blood-eye barrier, supporting vascular health within the eye¹⁷ and protecting the eyes' sensitive cells.¹⁸⁻²¹

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

Newly Documented Benefits Of Mediterranean Diet

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

The Mediterranean diet—rich in **omega-3** fatty acids, monounsaturated fatty acids found in **olive oil**, and antioxidant-rich fruits, vegetables, and herbs—has long been associated with cardiovascular health and increased life span.²³⁻³¹

To help emulate a Mediterranean diet, **Super Omega** provides a **standardized olive fruit polyphenol extract** to protect normal LDL from oxidation.³²⁻³⁶ Research shows that a combination of **olive oil** and **fish oil** supplements helps with **inflammation** better than a placebo or fish oil alone.³⁷ The daily dose of Super Omega softgels provide the equivalent polyphenol content of **4 to 6 tablespoons of extra virgin olive oil**.

Sesame Lignans Extend Fish Oil's Benefits

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

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

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

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

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

Contains crustacean shellfish (krill).

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

Super Omega-3 Still Available

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

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To order Super Omega with Krill & 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.

BY MICHAEL FRANCO

New Option For **CHRONIC FATIGUE SYNDROME**

CHRONIC FATIGUE SYNDROME

To date, as many as **4 million** Americans are suffering from the debilitating effects of **chronic fatigue syndrome**.¹

After decades of research, doctors remain puzzled as to how to treat this mysterious condition that involves unexplainable, extreme fatigue.² Unfortunately, there are no pharmaceuticals to treat chronic fatigue syndrome other than sleeping pills and anti-depressants, which do not resolve the problem.³

Frustrated by a lack of treatment options, an international team of researchers has focused their attention on a group of unique molecules called **roburins**, which are derived from oak wood.⁴

Roburin-rich oak wood extract has shown tremendous promise in managing a cluster of the symptoms that define chronic fatigue syndrome.

Evidence suggests that **roburins** are responsible for improving the functioning of our cellular *ribosomes*.⁵ Located in nearly every cell in the body, *ribosomes* are the sites of protein production and are intimately involved in the function of every tissue, organ, and system.⁶⁻⁸

The science of "**ribosomal biogenesis**" is now capturing the interest of scientists as a potential method for improving energy and biological function in the aging body.⁵





Hope From The Oak

Determined scientists at several research centers have discovered unique compounds in oak wood that are proving to be an effective therapy in treating **chronic fatigue**.

Humans have been exposed to oak wood extracts for as long as they have been storing alcoholic beverages in aged oak barrels.⁵ This practice was originally adopted because of the

preservative effects of fresh oak on new wines and spirits, but it has continued because of the unique flavor and character the oak provides to the aging liquor.

As the roburin molecules have been isolated and analyzed in modern laboratories, they have become available for use in animal and human studies aimed at transferring some of the oak's resilience and stress resistance to humans.

Roburins In The Human Body

Two major human studies demonstrate the potential of roburins for mitigating chronic fatigue syndrome symptoms.

In the first study, researchers were interested in understanding how roburin molecules were distributed and absorbed, as well as their compatibility in the human body.⁵ Following five days of oral supplementation with roburin-rich oak wood extract—three capsules of a proprietary, patented extract called Robuvit®—the scientists found a **100%** increase in plasma total phenols (a general measure of absorption of molecules in this class), as well as the presence of roburin breakdown products (metabolites) in urine of healthy volunteers.

Since roburins are found only in oak wood,⁴ the data demonstrated vigorous absorption and conversion of roburins into substances including *uroolithins* and *ellagic acid*, which are known to have potent biological activities.⁹

This study also revealed that the oak wood roburins trigger a complex set of biological events in the body. Using a sophisticated technology that measures changes in **gene expression**, the researchers were able to show that blood serum from supplemented people in the study may beneficially alter the expression of several genes in human cells in culture.⁵

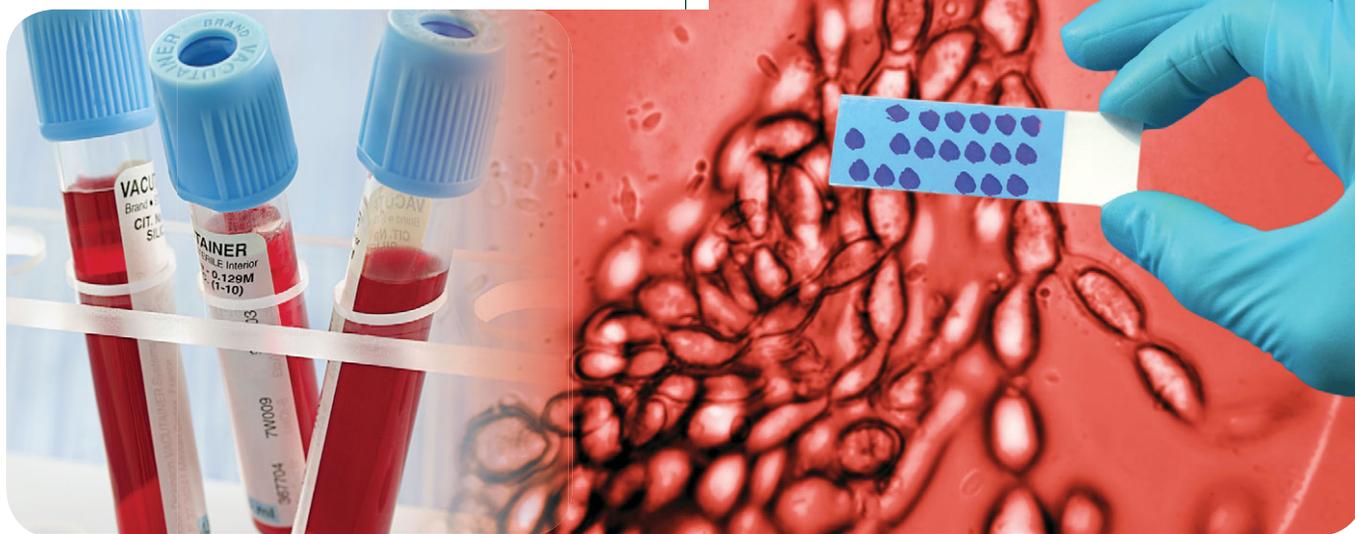
Among the most consistent changes in gene expression induced by the serum from oak wood extract in supplemented patients had to do with the activities of *ribosomes*, the ultramicroscopic cellular organelles that are responsible for the “translation” of genes in DNA into specific proteins.⁵ Long regarded as simply tiny protein-manufacturing plants, ribosomes are now emerging as essential in the maintenance of normal cellular functions, and as key players in the science of “systemic aging” and disorders such as chronic fatigue syndrome.

Roburins And Chronic Fatigue

The clinical impact of roburin-rich oak wood extract was made evident by a second important human study, this one conducted among patients with known chronic fatigue syndrome. In the study, adults with at least five primary chronic fatigue syndrome symptoms were treated with **200 mg/day** of Robuvit® oak wood extract for a minimum of six months.³ A control group that did not use the supplement was also established among patients with the same chronic fatigue symptoms. The scientists found that **oak wood extract** was productive in alleviating many of the most troubling symptoms of chronic fatigue.

Among those who used the oak wood extract, there were significant reductions for a multitude of key symptoms of chronic fatigue, including:

- **18%** reduction in weakness and exhaustion,
- **44%** reduction in unrefreshing sleep,
- **29%** reduction in short-term memory impairment,
- **63%** reduction in muscle pain,
- **51%** reduction in joint pain,
- **33%** reduction in headaches, and
- **47%** reduction in tender lymph nodes in the armpit and neck.³



Additionally, impressive reductions from baseline were also found in most secondary symptoms of chronic fatigue syndrome, including:

- **51%** reduction in sensitivity to noise, foods, medications, and chemicals,
- **38%** reduction in dizziness,
- **58%** reduction in depression,
- **49%** reduction in mood swings,
- **40%** reduction in weight fluctuation,
- **24%** reduction in alcohol intolerance,
- **39%** reduction in allergies, and
- **29%** reduction in visual disturbances.

There were no significant changes from baseline in all of these parameters for the patient group not taking the oak wood extract.³

These weren't all of the changes, though. On a standardized mood scale, supplemented subjects had significant increases in their scores on *positive* items including feeling active, happy, peppy, caring, calm, and loving, along with significant reductions in *negative* items such as feeling gloomy, fed-up, grouchy, sad, or tired. In fact, the overall mood evaluation score in supplemented subjects rose from an average of **-6.93** at baseline to **+4.32** at six months. For controls, the average score at baseline was **-6.5** and rose only to **-3.4** at six months.³

In those with chronic fatigue syndrome, scientists have found that oxidative stress levels are usually elevated.³ At the start of this study, **65%** of supplemented and **70%** of control patients showed elevated oxidative stress on blood tests. Following the supplementation period, control patients showed no decrease in oxidative stress, but supplemented subjects had **8** and **10%** reductions at three and six months, respectively.³

A third study demonstrated the impact of oak wood extract on the response to *histamine* in normal subjects.¹⁰ Histamine is a substance released in the face of allergic or inflammatory stimuli, and there is some evidence suggesting that chronic fatigue syndrome may be related to excessive release of, or sensitivity to, histamine in skin, intestines, or brain tissue.^{11,12}

In this study, female participants were randomly assigned to control or supplement groups (**300 mg Robuvit®/day**) for three days, followed by an injection



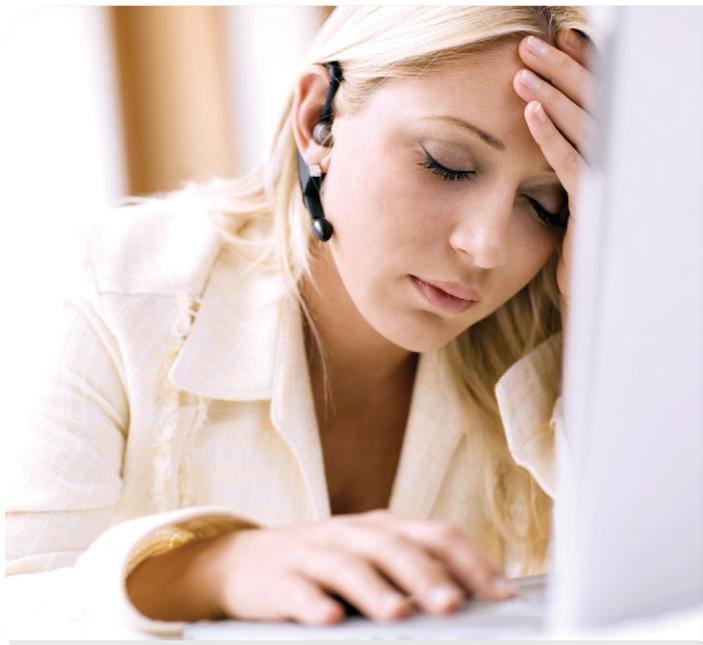
Quercus robur, French oak

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What You Need To Know

Treating Chronic Fatigue With Oak Wood Extract

- Chronic fatigue syndrome affects as many as 4 million Americans, but no clear-cut cause has yet been identified, and no effective treatment is available.
- A novel extract of the French oak tree, *Quercus robur*, contains compounds called roburins that, under the influence of human intestinal organisms, are converted into bioactive molecules called urolithins.
- This oak wood extract provides support for ribosomes, the tiny cellular factories responsible for accurately producing structural and functional proteins everywhere in the body.
- Ribosomal dysfunction has been implicated in chronic fatigue syndrome, so the ribosomal support properties of oak wood extract are of great interest to scientists.
- Research has shown that oak wood extract rich in roburins (Robuvit®) significantly improves symptoms of chronic fatigue syndrome in human patients after three months of supplementation.
- Oak wood extract demonstrates a unique, systems-level approach to fighting this previously untreatable condition.



of pure histamine into the skin.¹⁰ A normal response to this injection produces a so-called “wheal and flare” response: a raised, itchy skin **wheal** associated with a red flare on the skin surface and with increased micro-circulation in the immediate area. Compared with control subjects, those who had supplemented with Robuvit® had a significantly smaller wheal area (**28%**), smaller area of redness (**13%**), and lower levels of circulation increase in the immediate area (**49%**).¹⁰ These results suggest an additional mechanism, blockade of histamine effects, for this novel roburins-rich oak wood extract’s effects on chronic fatigue syndrome.

No side effects of the oak wood extract supplementation were reported in any of the participants in these studies.^{3,10}

Summary

Chronic fatigue syndrome remains a puzzling and frustrating condition for patients, families, and their physicians alike. Modern science has provided tantalizing clues, but so far, there has been no real progress in understanding and treating this common condition. No medication or other form of therapy is yet available to change the underlying sources of the condition.

There is now new hope for the millions of chronic fatigue syndrome sufferers, thanks to discoveries about the unique properties of **roburins**, a group of ellagitannins found exclusively in oak wood. These molecules undergo chemical changes in the human intestinal tract, mediated by normal healthy bacteria, which can fight chronic fatigue syndrome on several levels.

What Is Chronic Fatigue Syndrome?

Chronic fatigue syndrome (also known as myalgic encephalomyelitis) is a sizeable public health problem affecting, by some estimates, up to **3.3%** of the general population.¹³⁻¹⁶ For decades, mainstream physicians had little understanding of chronic fatigue syndrome or how to treat it. Even today, little progress has been made in genuinely understanding the biology of a condition many practitioners still regard as a “functional disorder” in which symptoms may be “psychological, imagined, or faked.”¹⁷⁻¹⁹

The syndrome is formally defined as “severe and disabling new-onset fatigue with at least four additional symptoms” from this list:^{3,16}

- Impaired memory or concentration,
- Sore throat,
- Tender lymph nodes in the neck or armpits,
- Muscle pain,
- New headaches,
- Unrefreshing sleep, and/or post-exertion malaise.

Additional “secondary” symptoms may also occur, including:³

- Sensitivity to noise, foods, medications, or chemicals,
- Gastrointestinal symptoms such as abdominal pain, diarrhea, or irritable bowel,
- Periodic or persistent dizziness or lightheadedness,
- Depression,
- Mood swings,
- Weight changes without changes in diet or activity level,
- Alcohol intolerance,
- Increased allergies, and/or
- Visual disturbances (blurring, sensitivity to light, eye pain, frequent eyeglass prescription changes).

Adding to the burden of these widely varying and chronic symptoms and the disdain many sufferers feel from their mainstream healthcare providers is the near-complete lack of effective pharmacological therapies.²⁰

Oak wood extract has been proven effective in a clinical trial, improving almost all primary and secondary symptoms of chronic fatigue syndrome. This and other studies demonstrate intriguing possible mechanisms of action, including changes in the function of the cellular protein factories called ribosomes. Altered ribosomal function has been seen in people infected with Epstein-Barr virus, which is strongly associated with chronic fatigue syndrome.

Support for ribosomal function may prove to be an entirely new approach to managing chronic fatigue syndrome.

Robuvit® is a patented and standardized oak wood extract rich in roburins. Even for those who do not suffer from chronic fatigue syndrome, oak wood extract may be considered a novel method of maintaining one's cellular protein synthesis machinery. ●

Epstein-Barr Virus, Chronic Fatigue Syndrome, And Ribosomal Biogenesis

Despite years of research, no single cause for chronic fatigue syndrome has yet been identified. A connection has been established between the Epstein-Barr virus (EBV) and chronic fatigue syndrome.²¹ The virus, which infects up to **90%** of people, can remain latent, becoming a permanent, but hidden, resident of the white blood cells called lymphocytes.²²

What happens next provides clues to how oak wood extracts, with their ribosomal support properties, may help fight chronic fatigue syndrome.

Epstein-Barr virus can periodically become activated by expressing its genetic message within host white blood cells, producing symptoms quite similar to those of chronic fatigue, including low-grade fever, liver dysfunction, enlarged or tender lymph nodes, and enlargement of the spleen and liver.²³

It is now clear that Epstein-Barr virus produces very short sequences of RNA, the companion molecule to gene-carrying DNA. These viral "microRNA," or "miRNA," sequences bind to host cell messenger RNA. There, they can silence vital genes in the host cells and, as a result, affect proteins that have structural and functional roles.^{22,24,25} Some of the affected proteins form portions of the ribosomes themselves and may be involved in a host of core cellular activities.²⁶

In addition, virus-induced changes to the immune system of individuals with chronic fatigue syndrome are responsible for the uncontrolled degradation of ribosomal RNA. This leads to a cascade of events that destroys structurally and functionally important vital proteins, resulting in cell death.²⁷⁻³²

A virus-infected cell, therefore, has difficulty manufacturing proteins that are essential to cellular activity. Studies now show that patients with chronic myalgia, a condition similar to chronic fatigue syndrome, have multiple changes in levels of proteins related to muscle activity and pain sensation, presumably at least in part the result of virus-induced **ribosomal dysfunction**.³³

Thus, virus-induced changes in ribosomal function may be intimately related to the origins and symptoms of chronic fatigue syndrome.^{27-32,34}

Since ribosomes are the tiny molecular factories that build all of the proteins in the body (including every enzyme, every structural protein, and every peptide-signaling molecule), restoring ribosomal function may be an important target for treating chronic fatigue syndrome.^{35,36}

The process of **ribosomal biogenesis** is the natural way the body restores ailing ribosomes.^{6,37} **Biogenesis** simply means "making new biologically," so ribosomal biogenesis is the process of making new ribosomes, which in turn empowers the body to make more proteins of the kinds needed for everyday function.

Mainstream medicine is only now recognizing the importance of promoting ribosomal biogenesis, but there are no drugs or other therapies that do so. Natural products, on the other hand, show tremendous potential. Indeed, **sirtuins**, the specialized proteins closely associated with increased longevity—and which are activated by numerous natural supplements—have recently been found to boost ribosomal biogenesis, whereas aging is associated with diminished ribosomal biogenesis.^{38,39}

Oak wood extract is now being hailed for the ability to support ribosomal biogenesis in human cells in culture. Regardless of the cell types examined, researchers found that treatment with oak wood extract upregulated important genes involved in ribosomal biogenesis.⁵ As a result, treated cells would be able to respond much more rapidly to the need for new, healthy proteins, and less likely to succumb to the weakening effects of EBV viral infection with its negative impact on ribosomes.

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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Advanced Defense Against Cellular Aging

NAD+ Cell Regenerator

If you are experiencing fatigue and lack of motivation, it may be due to the age-related decline in **NAD+** levels¹ and subsequent impairment of healthy cellular metabolism.²

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

How To Boost NAD+ Levels Within Your Cells

Newly patented **nicotinamide riboside** increases cellular levels of **NAD+** in the body.^{7,8}

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

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

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

Multiple Benefits Of Increasing NAD+ Cellular Levels

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

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

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

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

NIAGEN® Nicotinamide Riboside 100 mg

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A bottle of 30 vegetarian capsules of **NAD+ Cell Regenerator™** retails for \$34. If a Life Extension member buys four bottles, the price is reduced to **\$19.50** per bottle—a **43% savings** over the retail price. The suggested dose is just one small capsule daily.

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

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

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

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

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

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



To order **Brite Eyes III**, call 1-800-544-4440
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REDUCE GENERAL FATIGUE

While Supporting Ribosomal Biogenesis

Fatigue affects millions of Americans.¹ Common complaints include unrefreshed sleep, low energy, weakness, and head and muscle discomfort. Stimulation by caffeine only offers short-term relief with possible health consequences.

An effective solution to general fatigue must originate at the cellular level. **RiboGen™ French Oak Wood Extract** may meet this essential need.

Support For Cellular Factories

RiboGen™, a proprietary extract of the French oak tree (*Quercus robur*), provides unique bioactive polyphenol compounds called *roburins*. Evidence suggests that *roburins* support **ribosomes**, which are the small molecular factories in the cell that create proteins in the body.²⁻⁵

Oak wood extract is now being hailed for its ability to support **ribosomal biogenesis**, the body's natural way of restoring ailing ribosomes.^{6,7} Researchers found that a regimen with oak wood extract upregulated important genes involved in ribosomal biogenesis.²

In a human study, researchers found that **RiboGen™** provided the following benefits:⁸

- **18%** reduction in weakness and exhaustion.
- **44%** reduction in unrefreshing sleep.
- **33%** reduction in head discomfort.
- **51%** reduction in joint discomfort.
- **63%** reduction in muscle discomfort.

RiboGen™ French Oak Wood Extract

This product is the ideal option for those who would like to target complaints of general fatigue at the subcellular level throughout the body, including:

- Maintaining energy levels.
- Promoting ribosomal production of structural and functional proteins.
- Supporting vital body activities affected by energy metabolism.
- Minimizing fatigue-related, quality-of-life decline associated with aging.



The suggested daily serving of one vegetarian capsule of **RiboGen™ French Oak Wood Extract** provides:

Robuvit® French Oak (<i>Quercus robur</i>) wood extract (providing 80 mg total polyphenols)	200 mg
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A bottle of 30 vegetarian capsules of **RiboGen™ French Oak Wood Extract** retails for \$36. If a member buys four bottles, the price is reduced to **\$24.75** per bottle.

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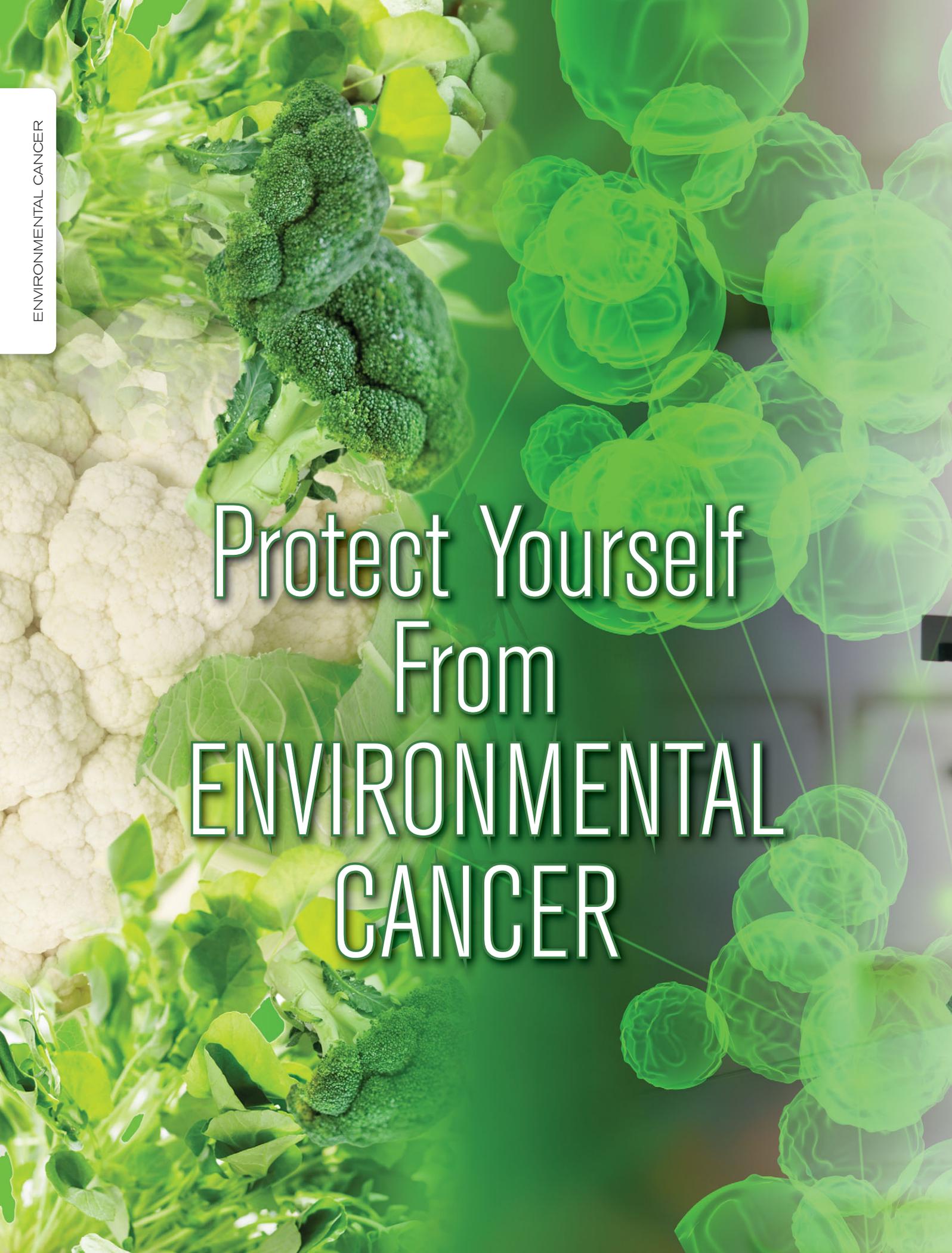
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Protect Yourself From ENVIRONMENTAL CANCER



BY GINA BATTAGLIA

Cancer is the second leading cause of death in the United States, accounting for **one out of every four deaths**.¹ Researchers estimate that lifestyle and **environmental factors** may contribute to approximately **90%** of cancer cases!^{2,3}

On a daily basis, we are exposed to a rapidly growing list of **carcinogens** in the environment. The sources of these carcinogens range from cigarette smoke and cooked meat to pesticides and plastic packaging.^{3,4-7} These chemicals **damage DNA** and **disrupt proper cell communication**,^{8,9} potentially leading to tumor formation.

With contamination of our food, air, and water, it's impossible to completely avoid environmental carcinogens.^{10,11} The best course of action is to arm ourselves with something that can *neutralize* the carcinogens, thereby protecting our DNA and ultimately preventing cancer.

Scientists have studied and identified an effective neutralizer in **chlorophyllin**, a substance derived from chlorophyll, the pigment in plants that gives them their green color.

In this article, you will learn how **chlorophyllin** protects your body from cancer-causing agents, promotes growth of healthy cells, and acts as a potential co-therapeutic agent to improve treatment and health in cancer patients.

How Chlorophyllin Works

Chlorophyllin's special cancer-fighting properties stem from its ability to bind to mutagenic substances and excrete them from the body before they can do any damage.¹² In fact, a study reported in the *Journal of Toxicology and Environmental Health* reported that chlorophyllin binds to certain mutagens **20 times** better than resveratrol.¹³

Carcinogens interfere with normal cell growth by binding to DNA and creating **DNA adducts**, which are pieces of DNA bonded to a cancer-causing chemical. Evidence in laboratory animals shows that these adducts contribute to cancer by causing **extensive and irreversible DNA damage**.^{14,15}

Chlorophyllin helps protect against cancer by **attaching itself to and degrading these damaging substances**,¹⁶ which prevents them from inducing mutations in DNA.¹⁷ In this way, chlorophyllin acts as an **interceptor molecule** by isolating carcinogens so that they cannot form dangerous DNA adducts.

Potent Cancer Inhibitor

Studies in both animals and humans demonstrate chlorophyllin's ability to bind to carcinogens and remove them from the body.

Rainbow trout have been used for over 40 years as an experimental model for testing the effects of environmental factors on cancer.^{18,19} In one recent study, researchers found that chlorophyllin **stopped the formation of tumors** in the stomach and liver of trout that had been induced by a leading cancer-causing agent known as **DBP** (dibenzo[a,l]pyrene).²⁰ DBP, a compound found in cigarette smoke and coal tar, is one of the most potent environmental carcinogens known.²¹

In this study, chlorophyllin reduced the amount of DBP in the liver by up to **63%**. The researchers attribute these findings to chlorophyllin's remarkable ability to bind to DBP in cell culture and suggest that chlorophyllin has **cancer-preventing properties across multiple organs**.

Evidence suggests these potent anticancer properties of chlorophyllin are also beneficial in humans. In a recent study, researchers fed human subjects a diet containing meat cooked at a high temperature (i.e. full of carcinogens).²² When researchers added cancer **inhibitors**—a combination of chlorophyllin tablets, cruciferous vegetables, and yogurt—to the diet, the subjects' bodies excreted more of the damaging compounds through their urine and feces compared to when they ate the meat without the inhibitors.

Furthermore, the inhibitors also reduced DNA damage in colorectal cells cultured in a dish by nearly **two-fold!** The authors indicate that studying the effects of each of the inhibitors separately will help clarify the degree to which chlorophyllin protects the cells against DNA damage.²²

Chlorophyllin Protects Against Liver Damage

Chlorophyllin's DNA-protecting mechanisms have been studied extensively in relation to a fungal toxin known as **AFB1 (aflatoxin B1)**. This "natural" contaminant is abundant in corn, peanuts, soy sauce, fermented soy beans, and other food crops grown in sub-Saharan African and Asian countries, and is one of the most carcinogenic substances known.²³⁻²⁵

When these contaminated foods are eaten, AFB1 is broken down in the liver to a deadly carcinogenic product that binds to and mutates DNA.²⁶⁻²⁸



This drastically increases the risk of a specific type of liver cancer called *hepatocellular carcinoma*, especially in individuals with hepatitis B.^{29,30}

To determine if chlorophyllin’s “interceptor” role could help protect against liver cancer, scientists studied individuals living in the Qidong region of China.³¹ Here, residents are unavoidably exposed to high AFB1 levels, and suffer high mortality rates due to liver cancer.^{31,32}

When individuals took **100 mg** of chlorophyllin three times per day before meals for three months, it led to a **55%** decrease in the levels of a urine compound (*aflatoxin-N7-guanine*) that indicates AFB1-induced DNA damage, compared to individuals who took a placebo.^{12,31} Previous research has indicated that levels of this urine compound are also **highly associated with liver cancer risk**.²⁹

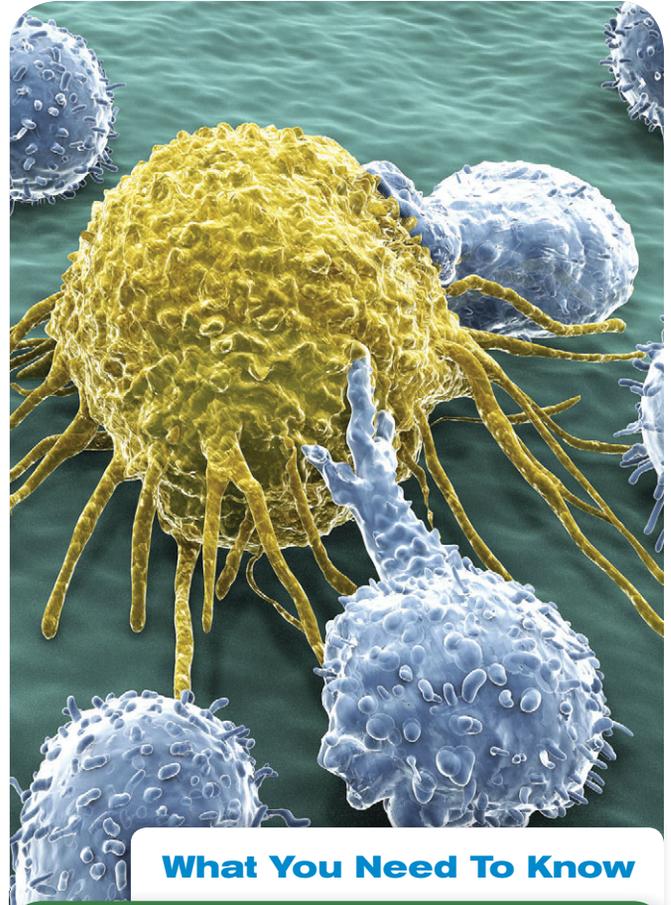
The scientists didn’t stop there. They dug deeper to prove whether chlorophyllin directly inhibited AFB1 absorption into the body. To determine this, they gave four human volunteers a low dose (**30 ng**) of AFB1 that had been labeled with a radioactive “tag” to track the chemical’s path, and then took blood and urine samples for 72 hours.²⁹

When the volunteers took a **150 mg** dose of chlorophyllin along with the AFB1, AFB1 **absorption rate** into the bloodstream **decreased drastically** and the urine output of the AFB1-induced DNA damage compound was reduced. Although more volunteers need to be tested to confirm these results, these data further support the hypothesis that chlorophyllin reduces AFB1 absorption by the body.³³

Once scientists knew that chlorophyllin could reduce the absorption of AFB1, they took the research a step further to find out if the protective effects of chlorophyllin against DNA damage would contribute to reduced liver tumor formation.

In order to determine this, researchers gave rats AFB1 plus chlorophyllin (**250 mg/kg** body weight) five times per day for three days, while other rats were given AFB1 plus a placebo.³⁴ Compared to rats given AFB1 and a placebo, the rats given AFB1 along with chlorophyllin had a **42% reduction** in liver DNA adducts and a **137% increase** in fecal AFB1 content, further indicating that chlorophyllin increases the AFB1 excretion from the body to reduce DNA damage.

Furthermore, the study found that giving this amount of chlorophyllin to the exposed rats for 10 days **reduced AFB1-induced precancerous lesions in the liver as well as in the colon**. All of this points to the fact that chlorophyllin protects these vital organs and reduces tumor formation by increasing the removal of this toxic chemical from the body.³⁴



What You Need To Know

Chlorophyllin Protects Against Environmental Carcinogens

- Carcinogens cause DNA damage that can lead to the formation of tumors.
- Chlorophyllin protects healthy cells from DNA damage by binding to carcinogens and increasing their removal from the body.
- In addition, chlorophyllin inhibits the growth of cancer cells, reduces oxidative damage, supports the immune system, and can boost the effectiveness of cancer drugs.
- The photosensitizing effects of chlorophyllin make it a viable low-cost agent to use in photodynamic therapy, a new treatment for small, local tumors near the surface of the skin or internal organ lining.

However, it's important to note that when chlorophyllin was given *after* AFB1-induced liver cancer was initiated, it did not significantly inhibit tumor progression in one study,³⁵ suggesting the effects of chlorophyllin may be stronger when it is given earlier in the tumor-initiating process.

Chlorophyllin Inhibits The Growth Of Some Cancer Cells

We've already seen that chlorophyllin can protect against cancer by binding to and eliminating harmful carcinogens from the body. In addition, chlorophyllin has been found to inhibit the growth of cancer cells through three important mechanisms:

1. Chlorophyllin may be able to halt the proliferation of deadly tumors specifically by inducing the death of cancerous cells. A study published in *Cancer Research* found that treating human colon cancer cells with various concentrations (**0.0625-0.5 mM**) of chlorophyllin for 24 hours promoted "**cell suicide**" (apoptosis) in these cells by interacting with "death receptors" on the membrane surface of cancer cells.³⁶ Chlorophyllin is generally nontoxic in normal tissue,^{37,38} and researchers observed that chlorophyllin may be able to **selectively trigger death in cancer cells** while maintaining normal cell growth.³⁹
2. Chlorophyllin helps prevent cancer cells from spreading (metastasis). In a study of cultured human colon cancer cells, researchers determined that chlorophyllin increases the expression of a protein called **E-cadherin**, which coordinates cell growth by allowing the cells to communicate with one another.^{36,40} High levels of E-cadherin are important for decreasing **cancer-cell invasion** and **metastasis**,⁴⁰ as dysfunction of E-cadherin inhibits cell-to-cell communication and was linked with **uncontrolled cell growth**.^{41,42}
3. Chlorophyllin helps reduce tumor formation. It does this by inhibiting **angiogenesis**, the process of developing new blood vessels from existing ones, which increases oxygen and nutrient delivery to tumors.⁴³ The increase in blood vessel formation promotes the dangerous, possibly deadly spread of tumor cells throughout the body.⁴⁴ In a hamster model of oral cancer, a daily dose of **4 mg/kg** body weight of chlorophyllin for 14 weeks reduced the expression of several proteins involved

in angiogenesis in the cheek pouches of the animals.⁴⁵ In this study, the lower content of angiogenesis proteins was also associated with **reduced tumor formation** in the hamster cheek pouches, further indicating the compound's ability to halt the progression of cancer by mitigating tumor-related angiogenesis.

Chlorophyllin Reduces Oxidative Damage

Another important way chlorophyllin helps prevent cancer is by helping defend the body against oxidative damage caused by **free radicals**. Like the smoke from a fire, free radicals are a byproduct that our bodies produce when we burn fuel for energy. *They also come from environmental pollutants, radiation, and chemical agents.* Although your body has natural defense systems in place to eliminate these harmful free radicals, excessive free-radical production overwhelms these defense systems, leading to **extensive DNA damage** that causes cancer.⁴⁶

Research has shown that chlorophyllin is capable of scavenging a wide variety of reactive oxygen species (a type of free radical containing oxygen).⁴⁷ Furthermore, a recent study in cultured liver cancer cells⁴⁸ showed that chlorophyllin was *one of the most potent inducers* of a set of enzymes that protect the cells against potentially harmful **oxidants** and **electrophiles**, two types of unstable molecules that damage tissues and contribute to cancer.^{49,50}



One way free radicals cause damage to cells is through **DNA strand breakage**. If the DNA has too many strand breakages and/or if the **repair mechanisms** are insufficient or defective, abnormal cell growth—and ultimately, **cancer**—can occur as a result.⁵¹ Studies show that chlorophyllin plays an important role in reducing this dangerous DNA strand breakage.

In one study, chlorophyllin was found to **reduce DNA strand breakage** induced by oxidative stress in calf thymus DNA.⁵² In another study, 18 weeks of chlorophyllin treatment **reduced tumor formation** and enzyme activity associated with **oxidative stress and inflammation** in mouse skin treated with a carcinogen, further supporting the link between chlorophyllin's free-radical fighting and antitumor properties.⁵³

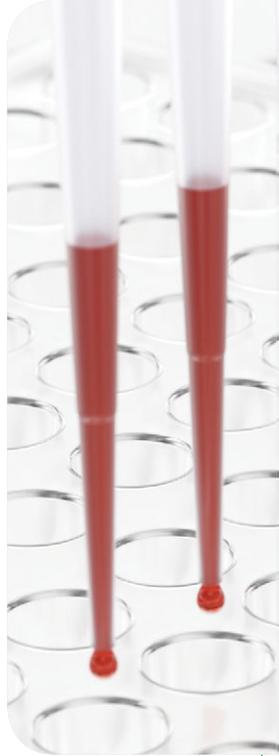
Another way excessive free radicals cause damage is by destroying white blood cells called **lymphocytes**. Since the job of lymphocytes is to protect your body against cancerous cells and potentially damaging foreign organisms, destroying them reduces your body's ability to fight cancer.²

Researchers found that injecting chlorophyllin into mice that had undergone whole-body radiation prevented the unnecessary death of these immune system cells by **reducing the production of reactive oxygen species** in the lymphocytes from their spleen.⁵⁴

Photosensitizing Effects Of Chlorophyllin

Photodynamic therapy is an exciting new cancer treatment typically used for **small, local tumors**⁵⁵ on or just under the skin, or on the lining of internal organs and cavities, such as the bladder.⁵⁶⁻⁵⁸ The therapy involves injecting into the bloodstream an agent called a **photosensitizer**, which is sensitive to a particular type and wavelength of light.⁵⁷

Although the photosensitizer is absorbed by both normal and cancerous cells, it stays in cancer cells longer than in normal cells. Exposing the tumor to light about 24 to 72 hours after injection will **preferentially destroy tumor cells** and minimize exposure to normal cells.^{57,59}



Chlorophyllin's Anticancer Powers

Special properties in chlorophyllin's unique molecular structure allow it to protect vital organs from damage through a variety of mechanisms. Research has shown that chlorophyllin's anticancer powers include:

- **Complex formation** with carcinogens, thereby protecting healthy cells from DNA damage.^{17,33,34,66}
- **Promotion of healthy cell growth** by supporting the destruction and "clean-up" of **cancerous cells**, preventing them from spreading throughout the body and damaging vital organs.^{36,40,45}
- **Ability to scavenge various free radicals**, highly reactive molecules that cause the **oxidative damage** that is associated with cancer development.^{31,47,52,54}
- **Photosensitive properties that may make** it a valuable therapeutic option for **treating certain** cancers through photodynamic therapy.^{60,61}
- **Potential ability to treat leukopenia**, a symptom of some cancers and common side **effect of cancer** treatment.⁶²
- **Improvements in the efficacy of the cancer drug oxaliplatin** in cell culture, even in **drug-resistant** cancer cells.⁶⁵

Recent research suggests that the remarkable photosensitizing properties of chlorophyllin make it a low-cost option for this novel therapy. In two studies, scientists recently synthesized two forms of chlorophyllin called **chlorophyllin e4** and **chlorophyllin f** and discovered that using these forms in photodynamic therapy increased the death of human **bladder cancer** cells in cell culture.^{60,61} Further research from these scientists showed that using photodynamic therapy with **chlorophyllin f** in two types of cultured human bladder cancer cells induced the death of approximately **85%** of the cancer cells.^{60,61}

Leukopenia (low white blood cell count) is a symptom of some types of cancer, such as Hodgkin's lymphoma, and may be an undesired side effect of cancer treatments such as chemotherapy and radiation therapy. Because white blood cells are critical for immune function, leukopenia weakens the immune system and makes the body vulnerable to infection and illness.^{62,63}

Chlorophyllin: An Explanation

What Is Chlorophyllin?

- **Chlorophyllin** is a semi-synthetic mixture of sodium copper salts derived from **chlorophyll**,³¹ the naturally occurring green pigment that gives plants and algae their color and helps plants trap light needed for photosynthesis.

What Is The Difference Between Chlorophyll And Chlorophyllin?

- Although both chlorophyll and chlorophyllin have a *ring-like structure*, chlorophyll has a *magnesium* molecule at the center of the ring and a *chain of carbon and hydrogen molecules*.⁶⁷ Chlorophyllin typically has *copper* at the center of its ring and does not have the chain of carbon and hydrogen molecules.⁶⁸
- Because chlorophyllin does not have this carbon/hydrogen chain, it is *soluble* (dissolves easily) in water, whereas chlorophyll is soluble in fat and *insoluble* in water.
- The slight variations in molecular structure may allow chlorophyllin to bind particularly effectively with certain carcinogenic molecules and *heterocyclic amines*.^{16,17,69-71} Interestingly, chlorophyllin inhibits the polycyclic aromatic hydrocarbon, benzopyrene, indirectly without binding to the carcinogen.¹⁶

What Else Is Chlorophyllin Used For Besides Cancer Prevention/Treatment?

- Chlorophyllin has been used for over 50 years to *reduce fecal*⁷²⁻⁷⁴ and *urinary*⁷⁵ odors.
- According to uncontrolled studies in the 1940s and 1950s,^{76,77} it can promote *healing of inflamed open wounds* due to its antimicrobial properties.
- More recently, chlorophyllin has also been used as an environmentally friendly way to *decontaminate food surfaces*^{78,79} and *extend shelf life* of food such as strawberries.⁸⁰



One study indicated that chlorophyllin might help treat leukopenia and thereby help maintain immune system function. For the study, researchers gave three **40 mg** sodium copper chlorophyllin tablets per day for one month to patients with leukopenia caused by various factors. The chlorophyllin was effective in treating **85%** of patients and was significantly more effective than placebo tablets and similar to Leucogen® tablets, a drug sometimes used to treat leukopenia.⁶²

Chlorophyllin Assists In Cancer Treatment

Another benefit of chlorophyllin is its ability to boost the effectiveness of cancer drugs.

Oxaliplatin is a moderately effective anticancer drug, although its unpleasant side effects, such as nausea, vomiting, and nerve damage, may limit a person's ability to take the drug long term.⁶⁴ Additionally, some tumors are resistant to the drug, limiting its effectiveness in combating the cancer.⁶⁵

However, one study indicated that administering chlorophyllin four hours after oxaliplatin **increased the drug's effectiveness** in cultured drug-resistant and nonresistant human ovarian cancer cell lines.⁶⁵ Although these effects have yet to be tested in humans, these results support chlorophyllin's potential, not only in protecting the body against cancer-causing agents, but also as a co-therapeutic agent for cancer drug treatment.

Summary

Researchers estimate that lifestyle and environmental factors may contribute to approximately **90%** of cancer cases. These carcinogens damage DNA and can lead to the formation of cancerous tumors. Unfortunately, it's practically impossible to avoid environmental carcinogens—but what you *can* avoid is their harmful impact on your body.

Chlorophyllin's unique molecular structure allows it to act as an "**interceptor molecule**" that binds to the harmful carcinogens and excretes them from the body before they can damage your DNA.

In addition, chlorophyllin has been found to inhibit the growth of cancer cells, reduce excessive oxidative damage that can lead to cancer, support the immune system, and boost the effectiveness of cancer drugs.

Chlorophyllin's ability to bind to carcinogens and excrete them from the body *before causing DNA damage* makes it a safe and low-cost way of protecting against unavoidable environmental carcinogens. ●

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

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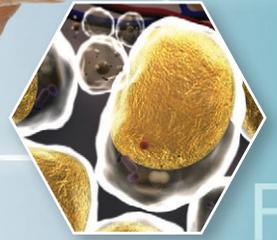


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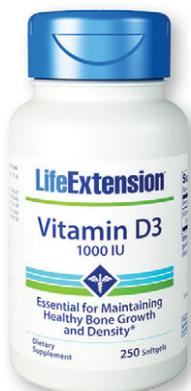
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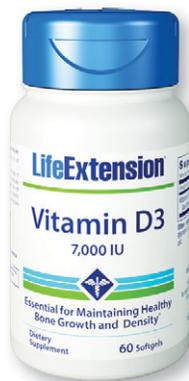
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250 softgels • Retail: \$12.50
Four-bottle Member Price: **\$8.44 ea.**
For most people, a **1,000 IU** potency is insufficient to attain optimal **vitamin D** blood levels. However, this potency may be suitable for smaller individuals who obtain **2,000-3,000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



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



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



Vitamin D3 • 7,000 IU
60 softgels • Retail: \$14
Four-bottle Member Price: **\$9.45 ea.**
Some people (such as those weighing more than 180 pounds) may require even more **vitamin D**. When combined with **1,000-3,000 IU** taken in a multi-nutrient formula, this **7,000 IU** softgel should enable these individuals to attain blood levels above **50 ng/mL**. **Item # 01718**



Vitamin D3 Liquid • 2,000 IU (Natural Mint Flavor)
1 ounce • Retail: \$28
Four-bottle Member Price: **\$18.75 ea.**
Great for travel and for those individuals who have difficulty absorbing enough vitamin D3 from softgels, this liquid vitamin D is ideal. **Item # 01732**
Also available without mint. (Item # 00864)

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

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

*If you have a thyroid condition or are taking antithyroid medications, do not use without consulting your healthcare practitioner.

PROTECT **DNA** AGAINST CHEMICAL ASSAULT



Item # 01571

On a daily basis, the **DNA** in each cell of your body is bombarded by an estimated 10,000 destructive oxidative hits.¹ Environmental toxins, such as pesticides, cigarette smoke, coal dust, and diesel emission particles, challenge the integrity of your DNA and can profoundly modify outcomes of aging.^{2,3}

Foods cooked at high temperatures also threaten cellular integrity. Deep-fried foods along with well-done beefsteak, hamburgers, and bacon trigger the formation of gene-threatening heterocyclic amines.^{4,5} Even "healthy" foods can contain small amounts of undesirable substances.⁶

To meet this challenge, **Life Extension® Chlorophyllin** provides a water-soluble form of **chlorophyll** shown to protect DNA.^{7,8} It binds to certain toxic chemicals, allowing the body to safely eliminate them before they can enter the bloodstream.

Chlorophyllin also helps the body neutralize all major oxygen species and acts to protect mitochondria.^{9,10}

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

The suggested dose is to take one **Chlorophyllin** capsule with each meal that contains mutagenic by-products. Each capsule provides:

Chlorophyllin	100 mg
(from sodium magnesium chlorophyllin)	

A bottle of 100 vegetarian capsules of **Life Extension® Chlorophyllin** retails for \$24. If a member buys four bottles, the price is reduced to **\$15** per bottle.

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BY JENNIFER DAWSON

MAGNESIUM

The Missing Link To A Healthy Heart

Cardiovascular disease remains the leading cause of death in the US.¹

With nearly half the US population consuming less than the recommended amount of magnesium in their diets,² this widespread **magnesium deficiency** is a commonly overlooked risk factor for cardiovascular disease.³ Studies demonstrate that the lower your intake of magnesium, the greater your risk of succumbing to cardiovascular disease.⁴

Research has shown that magnesium supplementation can be therapeutic for a range of cardiac factors including arrhythmias, hypertension, atherosclerosis, and endothelial dysfunction.^{3,5}

Even a *moderate* magnesium deficiency can cause profound changes in how the heart, blood vessels, blood cells, intestinal tract, and other tissues function.⁶ This is because magnesium is critical for tissues that have electrical or mechanical activity, such as nerves, muscles (including the heart), and blood vessels.^{5,7,8}

Experiencing a heart attack or stroke because of a simple magnesium deficiency does not need to happen. In this article we provide important information to protect yourself from unnecessary cardiac events.

12
Mg
Magnesium
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Are You At Risk Of Magnesium Deficiency?

Nearly half of the US population consumes less than the recommended amount of magnesium in their diet.²

Inadequate dietary intake is one reason why magnesium deficit is so prevalent in the elderly. Older people have reduced magnesium absorption in their intestines, reduced stores of magnesium in their bones, and increased magnesium losses in their urine.⁹ This correctable deficiency exposes the aging population to an **entirely preventable** cardiovascular risk factor.¹⁰

Magnesium deficit is also responsible for inflammation, endothelial dysfunction, type II diabetes, excessive platelet “clumping,” and other changes that put your heart—and your life—at risk.^{5,9}

Magnesium Deficit Increases Cardiovascular Risk

Because magnesium is essential for healthy control of blood vessel function, blood pressure regulation, and normal heart contractions, a deficiency in magnesium increases risk of conditions such as endothelial dysfunction, hypertension, and cardiac arrhythmias.³

Arrhythmias

Low magnesium levels raise the risk of developing potentially fatal disorders of heart rhythm, known as **cardiac arrhythmias**.^{4,11-13}

There are many different kinds of arrhythmias, but all have one thing in common: They involve abnormal conduction of the electrical impulses that govern heartbeat and heart rate. Such electrical disturbances in turn result in a heart rate that is irregular, or too fast or too slow.¹⁴

Mild arrhythmias may simply cause discomfort when the heartbeat can be felt in palpitations, while ones that are more serious can cause cardiac arrest or fibrillation, in which the beating chambers of the heart either stop entirely or result in an irregular heartbeat.¹⁴

The deadliest arrhythmias involve the major pumping chambers of the heart, the ventricles, while milder,



more chronic arrhythmias involve the upper chambers, or atria.¹⁴ Atrial arrhythmias can also degenerate into dangerous atrial fibrillation or flutter, in which slow blood flow can produce clots that travel to the brain, lungs, or other vulnerable areas.¹⁴

Many arrhythmias are managed by drug therapies aimed at restoring normal electrical activity in the heart. These drugs, however, by their very nature can be dangerous and can easily overshoot their goals, resulting in actual increases or changes to more dangerous arrhythmias.¹⁴

This cause-and-effect can be particularly dangerous in people with congestive heart failure, who may take diuretic drugs (“water pills”) that cause them to lose magnesium at a high rate,¹⁵ raising their already high risk for arrhythmias.¹² Similarly, coronary artery bypass surgery, a procedure still used for many people with severe atherosclerosis of the heart’s blood vessels, is known to lower magnesium levels and raise the risk of arrhythmias.¹⁶

In one study, 13 women consumed an experimental diet low in magnesium.¹⁷ Three of the women (**23%**) developed arrhythmias (**atrial fibrillation** and **atrial flutter**), in which the upper pumping chambers of the heart lose their normal beating pattern, and four (**31%**) had to begin magnesium repletion by supplementation earlier than scheduled.

Fortunately, magnesium supplementation readily corrects drug-induced or other low magnesium-related arrhythmias.¹⁸ Supplementation is now routinely used *before* many kinds of heart surgery that are known to induce postoperative arrhythmias, and is also recommended for people with chronic arrhythmias having known low magnesium levels.¹⁹⁻²²

Research suggests magnesium supplementation can combat that risk by restoring healthy heart cell electrical functions, fighting the development of arrhythmias at its source.²³

Emergency departments have used intravenous magnesium infusions to reduce dangerously rapid heart rates in patients with a common arrhythmia called **rapid atrial fibrillation**.²⁴ In addition, giving oral magnesium supplements in the days before surgery has proven to have similar benefits to infusion of magnesium during surgery in preventing dangerous arrhythmias in patients undergoing open heart surgery.²⁵

A recent study evaluated the use of oral magnesium supplements in preventing **premature ventricular contractions** (often called PVCs), which have been described as feeling like a “punch in the chest” and have the potential of converting into serious, life-threatening arrhythmias.^{26,27} For the study, patients with known PVCs were randomly assigned to receive a

placebo or **3 grams** of magnesium pidolate delivering **260 mg** of magnesium daily. After 30 days, **76.6%** of the supplemented group showed a significant reduction in daily arrhythmia episodes, while only **40%** of placebo recipients showed slight improvement.²⁶

These are exciting results for a condition in which the medical establishment has struggled to find adequate treatment.

Hypertension

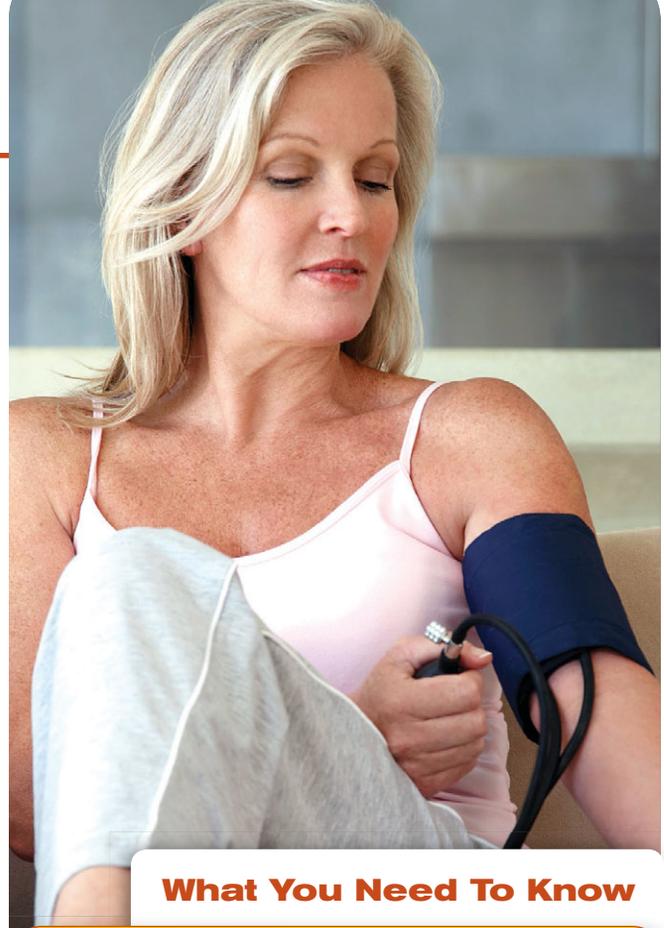
Having low blood magnesium levels increases risk for *hypertension*, the dangerous persistent rise in blood pressure that leads to congestive heart failure, strokes, and other catastrophes.^{28,29}

Lower magnesium levels are associated with higher blood pressure readings.^{30,31} In fact, you are nearly twice as likely to develop “prehypertension” (blood pressures of **120-139/80-89 mmHg**) if your magnesium levels are below the safe lower limit (**1.7mg/dL**).³² Epidemiologic research shows that people in areas where drinking water is higher in magnesium tend to have lower blood pressure.³³ Certain common blood pressure medications, paradoxically, can also deplete your body of magnesium.³⁴

Supplementation with magnesium has a beneficial effect on blood pressure. A large meta-analysis demonstrated an average decrease in blood pressure of **3 to 4 mmHg systolic** (top number), and **2 to 3 mmHg diastolic**, a change that increased further when intake of magnesium topped **370 mg/day**.³⁵ A subsequent meta-analysis of people with existing high blood pressure, with a mean starting systolic pressure of greater than **155 mmHg**, reported a highly significant **18.7 mmHg** mean reduction in systolic, and a similarly significant **10.9 mmHg** mean reduction in diastolic blood pressures.³⁶ In a group of patients with type II diabetes, a major cardiovascular risk factor, systolic blood pressure fell by an average of **7.4 mmHg** after supplementation with **384 mg** magnesium chloride a day.³⁷

Enlarged Heart

Hypertension is also a leading risk factor for the development of dangerous enlargement of the heart, specifically the left ventricle, which is the heart’s main pumping chamber.³⁸ Preclinical and human studies reveal that a deficiency in dietary magnesium and low magnesium levels are associated with such enlargement, producing a condition known as *hypertrophic cardiomyopathy*, in which the heart muscle becomes so enlarged that it can no longer pump blood effectively.^{39,40}



What You Need To Know

Magnesium Reduces Heart Disease Risk

- Your body relies on ample magnesium supplies to maintain normal, healthy function of muscle and nerve tissue, especially those found in the heart and blood vessels.
- Inadequate magnesium intake, or deficiency in total body magnesium, increases the risk of cardiovascular diseases such as heart attacks, strokes, and arrhythmias, as well as metabolic syndrome and type II diabetes.
- Restoring magnesium supplies through supplementation is proven to reduce cardiovascular disease and to potentially reverse many of the troubling signs of metabolic syndrome and diabetes.
- People with higher blood levels and intakes of magnesium appear to live longer, succumbing less often to heart disease and other causes of premature death.
- Beginning a regular magnesium supplement today may lengthen your life and lower your risk of some of the biggest killers of older adults.

Atherosclerosis

Endothelial dysfunction leads to thickening and stiffening of the arterial walls (“hardening of the arteries,” or atherosclerosis).⁵ While arterial stiffening drives up blood pressure, magnesium supplementation not only lowers blood pressure, but also sharply decreases the resistance against which the heart must pump; this is especially notable in the smaller arteries that provide blood flow to major organs and help improve the amount of nutrient-rich blood they receive.⁴¹

Magnesium supplementation can also improve the quality of life for those suffering from cardiovascular disease. For instance, in people with known coronary artery disease, magnesium supplementation improved exercise tolerance and reduced exercise-induced chest pain.⁴² And in a six-month study of patients with known ischemic heart disease (poor blood circulation to heart muscle), magnesium supplementation led to an impressive *decrease* in angina attacks and a *decrease* in the use of antianginal drugs such as nitroglycerin.⁴³

In patients on dialysis for kidney failure, thickening of arterial walls occurs much faster than in healthy patients. However, magnesium can provide important reduction of this condition.⁴⁴ In one study, supplementation with **440 mg** of magnesium oxide three times weekly for six months was found to be effective at reducing that thickening among dialysis patients, while placebo recipients had increased thickening over the same period.⁴⁵ Another study of dialysis patients observed similar results when supplementing with **610 mg** of magnesium citrate every other day for two months.⁴⁴

Metabolic Syndrome And Diabetes

Magnesium is vital for normal metabolic function, including glucose metabolism and insulin action. This is why magnesium supplementation in type II diabetics appears to reverse much of the damage wrought by low levels. Magnesium is an essential “co-factor” for more than 300 enzymes and is vital to the ways your body manages its energy.^{46,47}



Magnesium Impacts Life Span

Supplementing with magnesium is a simple, inexpensive, and effective way to reduce your unnecessary **risk of cardiovascular**

death, and even death from multiple causes. Research shows that the higher the magnesium blood levels, the lower the risk of dying from cardiovascular disease, cancer, and all causes.⁶² This is supported by other research showing that those with the highest magnesium intake enjoy a **34%** reduction in mortality risk compared with those having the lowest intake.⁶³ Another compelling study showed that for each **0.25 mg/dL** increase in plasma magnesium, the risk of sudden cardiac death fell by **41%**.²³

Preliminary research shows that magnesium is an absolute requirement for maintaining and repairing *telomeres*, the “aging timers” that are found on our DNA strands.⁶⁴ Without sufficient magnesium, the aging process itself might be drastically accelerated.

In fact, numerous new studies have appeared demonstrating that low magnesium levels are associated not only with specific diseases, but also with life span. As blood levels of magnesium diminish, the risk of death increases; similar risks arise with diminished magnesium intake.^{11,23,65,66}

Lower magnesium levels have been associated with the following negative effects:

- **23%** higher risk of death from all causes,¹¹
- **38%** higher risk of death from cardiovascular disease,¹¹
- **18%** higher risk of hospitalization for all causes,¹¹
- **14%** higher risk of hospitalization for cardiovascular disease.¹¹

Fortunately, higher magnesium levels have been associated with the following beneficial results, demonstrating the benefits of supplementing with magnesium:

- **40%** lower risk of death from all causes,⁶²
- **50%** lower risk of death from cancer,⁶²
- **40%** lower risk of death from cardiovascular disease,⁶²
- **77%** lower risk of sudden cardiac death.²³

Raising your blood levels of magnesium, then, appears to have the potential to save your life, especially if you are already at risk for heart disease or stroke.



In one study, a daily dose of **2.5 grams** of magnesium chloride significantly reduced insulin resistance, fasting blood sugar levels, and hemoglobin A1c, a measure of chronic exposure to high sugar.⁴⁸ In another study, 12 weeks of supplementation with **360 mg/day** of magnesium produced a **10 mg/dL** drop in fasting glucose levels.⁴⁹

Magnesium supplementation also directly counteracts metabolic syndrome. In a group of type II diabetics, treatment with **600 mg/day** of magnesium oxide produced significant drops in total and LDL (“bad”) cholesterol and triglycerides, with a rise in HDL (“good”) cholesterol.⁵⁰ Similar results were seen in another study when healthy volunteers supplemented with magnesium oxide, enough to deliver **520 mg/day** of elemental magnesium.⁵¹ Magnesium oxide and magnesium citrate have been shown to reduce platelet aggregation, and thereby reduce the risk of a dangerous blood clot.⁵¹

In a study representative of today’s typical middle-aged person (namely, people who were overweight and insulin resistant, but not yet diabetic), six months of magnesium supplementation significantly improved fasting blood sugar and insulin sensitivity, compared to placebo.⁵² Intriguingly, none of the patients had detectably low blood magnesium at the study’s outset, suggesting that it’s possible to be total-body deficient in magnesium, while still maintaining normal blood levels. According to the authors, this study emphasized “the need for an early optimization of magnesium status to prevent insulin resistance and subsequently type II diabetes.”⁵² Subsequent preclinical research has confirmed that type II diabetes can be delayed by magnesium supplementation.⁵³

People with lower magnesium levels or low magnesium intake may be at an increased risk for developing metabolic syndrome, the combination of central obesity with at least two of the following: hypertension, lipid disorders, impaired glucose tolerance, or diabetes.^{33,46,51,52}

As is the case with other health problems, the lower your magnesium intake, the greater your risk of obesity, excess body fat percentage, and high triglycerides.⁵⁴ In fact, as magnesium levels decrease, the number of metabolic syndrome components increase, as does an important marker of inflammation C-reactive protein (CRP).^{46,55,56}

People with existing diabetes, or with “pre-diabetes” (impaired fasting glucose or impaired glucose tolerance) have significantly lower magnesium levels than do those with normal metabolism.⁵⁷ In one study, **88.6%** of type II diabetics had magnesium intake less than the dietary recommendations, and **37.1%** had low blood magnesium levels.⁵⁴

Causes Of Magnesium Deficiency

Low blood levels of magnesium are considered to be one of the most underdiagnosed blood chemical deficiencies in modern medical practice.⁷ Many experts now believe that blood magnesium should be checked whenever testing of other electrolytes (chemical ions) in the blood is done.^{67,68}

Magnesium deficiency has two major common causes:^{69,70}

1. Decreased intake of magnesium, which can occur with alcoholism, starvation, or poor appetite, and in patients with cancer or on chemotherapy. Another growing cause of low magnesium intake is the increased consumption of bottled and filtered water. While some natural mineral waters may contain adequate magnesium, the amounts vary, and many “pure” spring waters contain very little magnesium at all, leading to widespread lack of sufficient magnesium.⁷¹⁻⁷³

2. Increased losses of magnesium, either through the digestive tract or in the urine, can occur with severe diarrhea, gastrointestinal fistulas (surgical or pathological connections between the intestinal tract and the outside world), and especially from drug therapy with diuretics and antibiotics such as *gentamicin*.

The so-called “loop” diuretics such as *furosemide* (**Lasix**[®]) and the thiazide diuretics (e.g., *hydrochlorothiazide*) are especially notorious for producing magnesium losses in the urine; fortunately, magnesium supplementation can prevent or correct low magnesium from these drugs.^{74,75}

Since so many people drink bottled or filtered water, have otherwise inadequate magnesium intakes, or are taking magnesium-depleting drugs, it is important to get regular tests of your blood magnesium levels, and to supplement with a good source of this vital mineral.

Table 1
Health Risks Associated With Magnesium Deficiency In Older Adults⁹

General Physiology	Cardiovascular	Metabolic	Other
<ul style="list-style-type: none"> • Increased inflammation • Increased oxidative stress 	<ul style="list-style-type: none"> • Stroke • Atherosclerosis • Ischemic heart disease • Cardiac arrhythmias • Endothelial dysfunction • Abnormal vascular remodeling • Alterations in lipid metabolism • Increased platelet aggregation and risk of blood clots • Hypertension 	<ul style="list-style-type: none"> • Glucose intolerance • Insulin resistance • Type II diabetes 	<ul style="list-style-type: none"> • Asthma • Chronic fatigue • Depression • Neuropsychiatric disorders

Magnesium deficiency is especially dangerous for diabetics. In one study of diabetic patients with heart failure, **73.3%** were found to have low serum magnesium.⁵⁸ Low magnesium levels in red blood cells are strongly associated with increased incidence of cardiac events and poor outcomes.⁴³

Some of these observations may be explained by the fact that low magnesium levels appear to raise insulin resistance through a variety of biochemical mechanisms.^{59,60} In addition, low magnesium levels make platelets “stickier,” increasing the risk of a destructive or fatal blood clot forming, and thereby increasing the likelihood of a dangerous heart attack or stroke.⁶¹

Summary

Magnesium is an element critical to multiple vital functions in the human body, yet even people interested in optimizing their nutritional health frequently ignore it. Low magnesium levels trigger problems in the heart muscle, blood vessel walls, and blood vessel linings that can lead to heart attacks, heart failure, atherosclerosis, and cardiac arrhythmias.

Magnesium deficiency also contributes to metabolic syndrome and type II diabetes, two epidemic conditions that themselves lead to cardiovascular disease and other chronic, age-related conditions.

But nearly half of all Americans (and more than that among the elderly) fail to get enough magnesium in their diets, and therefore have suboptimal blood levels of this vital mineral.

Magnesium supplementation is an easy, inexpensive, and effective way to restore magnesium to your whole body, and studies show that boosting your magnesium levels sooner rather than later offers the best protection. Indeed, people with the highest blood levels of magnesium, and/or the highest dietary intake of

magnesium, are at lower risk for dying of both cardiac and noncardiac conditions.

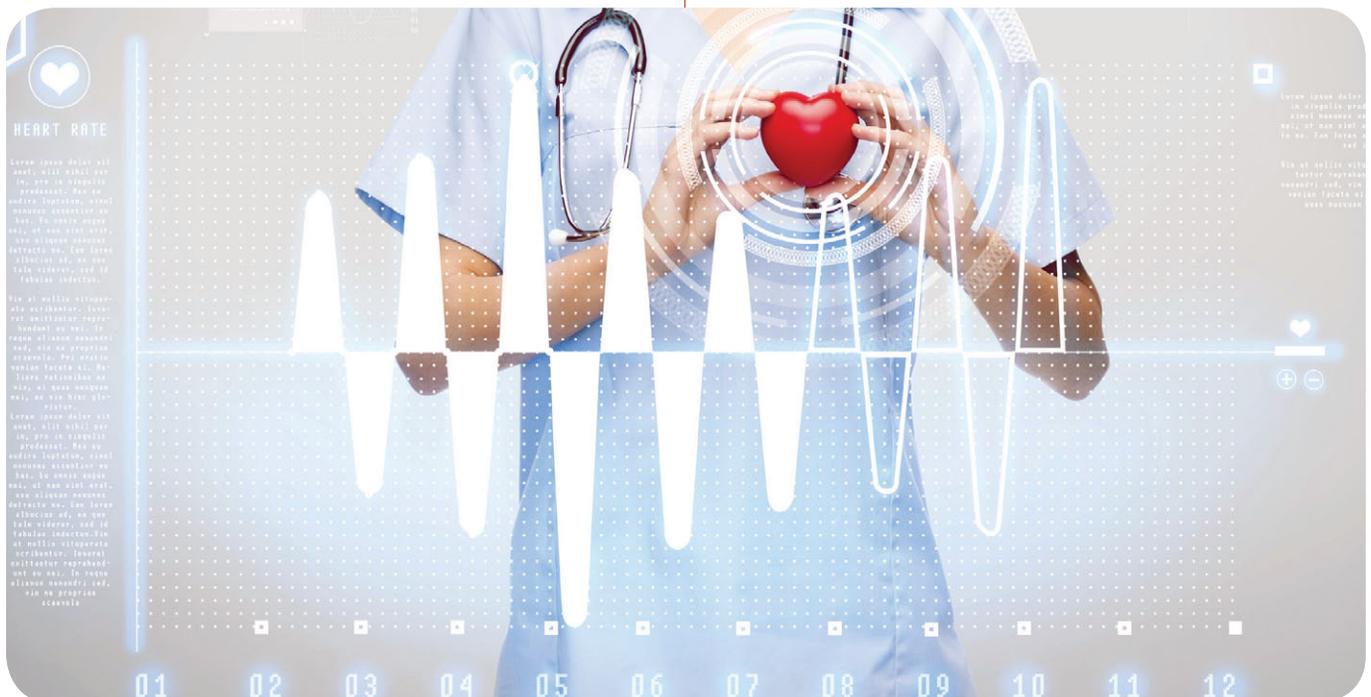
If you are an older adult concerned about the possibility of a premature death from cardiovascular or metabolic diseases, you should begin a regular magnesium supplement today. ●

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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Milk Thistle Phospholipid Proprietary Blend	760 mg
Milk Thistle Extract (seed) [providing silymarin (480 mg), Silybin (180 mg), and Isosilybin A and Isosilybin B (48 mg)], Phospholipids	
SILIPHOS® Phytosome Milk Thistle Extract (seed)	160 mg
[providing 47.52 mg silybin]	

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Contains soybeans.

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Taurine is so vital that scientists have described it as **"one of the most essential substances in the body."**¹ Food sources provide relatively little taurine,^{2,3} and as we age, synthesis of taurine in our bodies (from cysteine) markedly declines.³⁻⁵

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- Insulin sensitivity and glucose utilization,^{7,8}
- Proper utilization of minerals such as calcium,¹
- Eye health,^{1,9,10}
- Regulation of the central nervous system,⁶
- Cell membrane stability⁶ and balanced water content (*osmoregulation*),^{11,12}
- Immune system modulation,^{11,13}
- Bile salt formation,¹¹
- Neuron integrity^{6,11} and cognitive function,¹⁴
- Liver function,¹⁵ and
- Cardiovascular health.^{12,16,17}

To promote **system-wide** health, the body requires adequate levels of this **essential** nutrient.^{1,11,18}

ULTRA-LOW COST

A bottle of **50 1,000 mg** capsules of **Life Extension® Taurine** retails for **\$8.95**. If a member buys four bottles, the price is reduced to **\$6** per bottle.

One capsule taken one to four times daily on an empty stomach, or as recommended by a healthcare practitioner, supports optimal taurine levels. **Taurine** may represent one of the better values on the nutritional supplement marketplace today.



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

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

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

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

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

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

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



To order Magnesium Caps,
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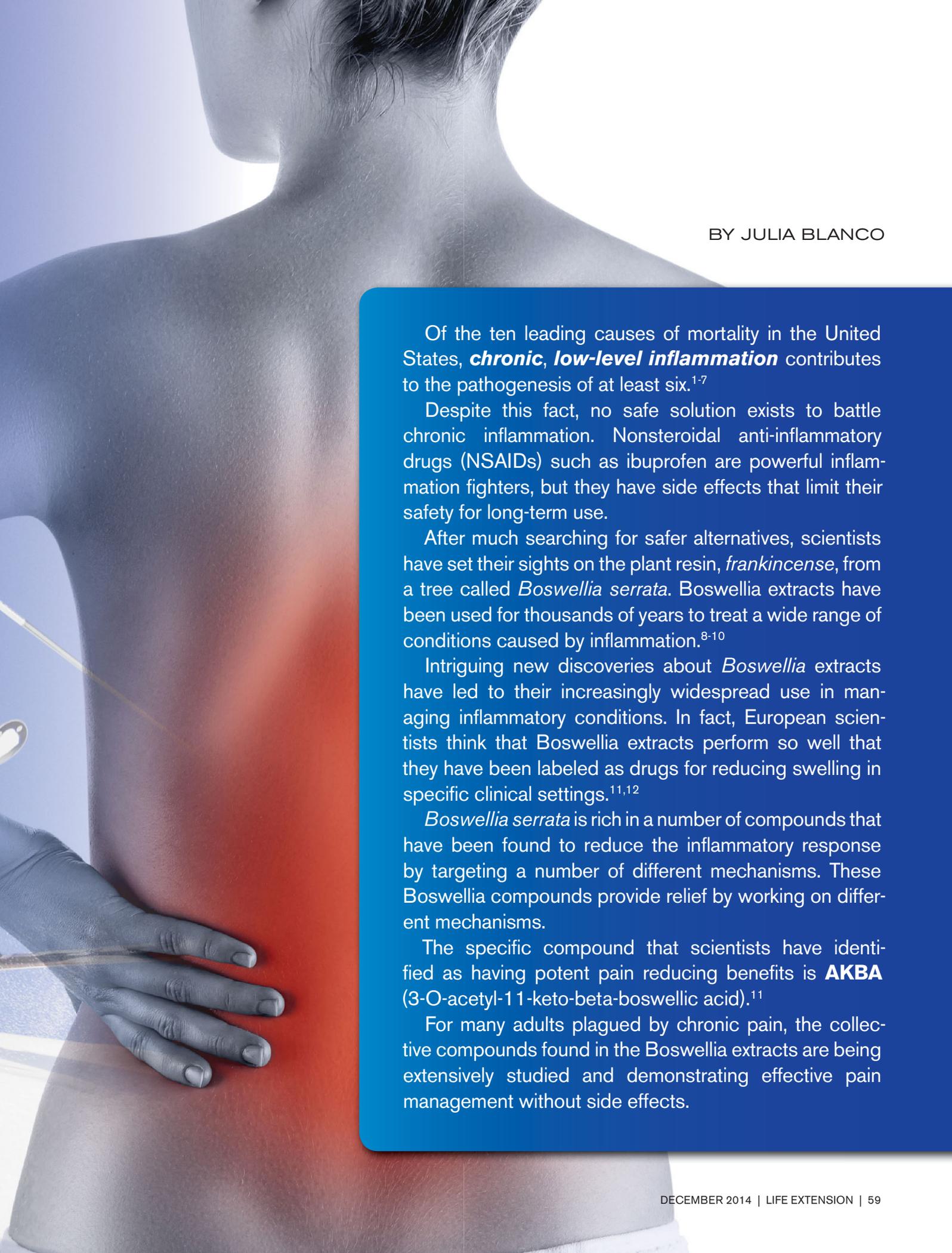
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BOSWELLIA

NEW STUDIES SHOW EFFECTIVE
PAIN RELIEF



BOSWELLIA

A photograph of a person's back, showing a large, vertical, reddish-orange area of inflammation or pain on the right side. The person's hand is resting on their lower back. The background is a soft, out-of-focus light blue.

BY JULIA BLANCO

Of the ten leading causes of mortality in the United States, **chronic, low-level inflammation** contributes to the pathogenesis of at least six.¹⁻⁷

Despite this fact, no safe solution exists to battle chronic inflammation. Nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen are powerful inflammation fighters, but they have side effects that limit their safety for long-term use.

After much searching for safer alternatives, scientists have set their sights on the plant resin, *frankincense*, from a tree called *Boswellia serrata*. *Boswellia* extracts have been used for thousands of years to treat a wide range of conditions caused by inflammation.⁸⁻¹⁰

Intriguing new discoveries about *Boswellia* extracts have led to their increasingly widespread use in managing inflammatory conditions. In fact, European scientists think that *Boswellia* extracts perform so well that they have been labeled as drugs for reducing swelling in specific clinical settings.^{11,12}

Boswellia serrata is rich in a number of compounds that have been found to reduce the inflammatory response by targeting a number of different mechanisms. These *Boswellia* compounds provide relief by working on different mechanisms.

The specific compound that scientists have identified as having potent pain reducing benefits is **AKBA** (3-O-acetyl-11-keto-beta-boswellic acid).¹¹

For many adults plagued by chronic pain, the collective compounds found in the *Boswellia* extracts are being extensively studied and demonstrating effective pain management without side effects.

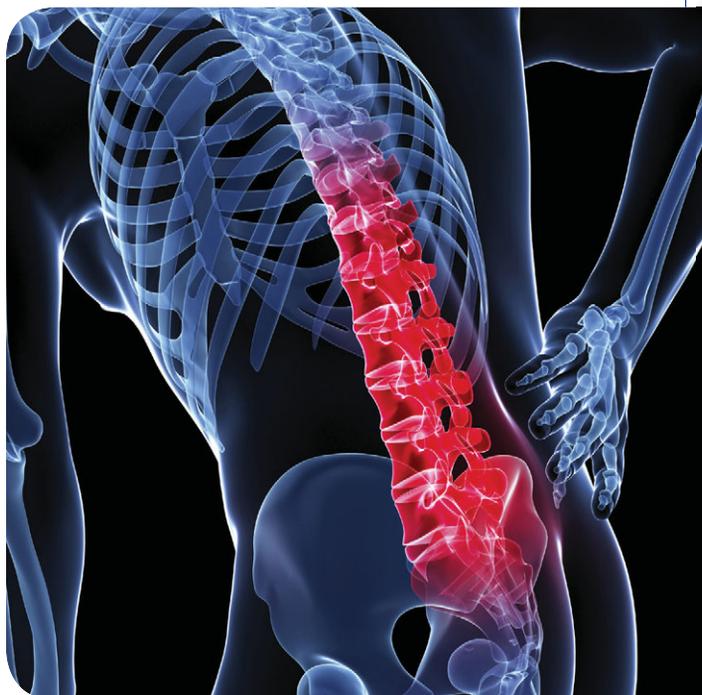
Boswellia: Removing The “Flame” From Inflammation

The *Boswellia serrata* plant is a moderate-to-large branching tree that grows in high, dry habitats in India, Northern Africa, and the Middle East.¹⁰ Its gummy resin is tapped from the tree by means of incisions in its bark that allow the thick, oily substance to ooze out for collection and drying.¹⁰ Within that thick, oily substance are compounds that have been used for thousands of years for their anti-inflammatory, pain relieving, arthritis-fighting, and anticancer effects.¹³

Now, with each study that comes out, excitement is growing in the scientific community because it appears as though *Boswellia* could be a natural alternative to NSAIDs, the most widely used anti-inflammatory drugs. Recent research has shown that *Boswellia*'s anti-inflammatory actions may exceed those of the NSAIDs, having a broader spectrum of actions influencing a much wider range of inflammation-producing processes—and with far greater safety.

Boswellia resin is rich in a wide variety of biologically active compounds including **terpenes** and **boswellic acids**, which are powerful inhibitors of *pro-inflammatory signaling molecules*.¹⁰ In fact, virtually all compounds isolated from the resin of *Boswellia* have now been determined to have anti-inflammatory properties.¹⁴

As a result, evidence is mounting for *Boswellia*'s ability to powerfully modify inflammation in some of the most notorious inflammatory conditions that plague older adults.



Boswellia Versus NSAIDs

It's not every day that scientists discover a natural source that fights inflammation as well as NSAIDs—much less one that exceeds them. Yet that's exactly what scientists are discovering about *Boswellia serrata*.

Importantly, *Boswellia* extracts achieve these benefits without the damaging side effects caused by NSAIDs.¹⁵ This is because *Boswellia* extracts appear to have several entirely different mechanisms of action than NSAIDs.

NSAIDs prevent inflammation by inhibiting an enzyme called COX-2 (cyclooxygenase-2). The problem is that in the process, they also block COX-1, which is needed to maintain a healthy stomach lining. This is one of the primary causes of NSAID toxicity.¹⁶

Boswellia extracts work differently than NSAIDs because they inhibit *different* enzymes involved in the inflammation process. COX-2 is involved in converting arachidonic acid into an inflammatory signaling molecule known as prostaglandin E2. Instead of inhibiting COX, Boswellic acids, most prominently one called **AKBA**, work by inhibiting the enzyme 5-LOX (5-lipoxygenase), thereby reducing the biosynthesis of inflammatory signaling molecules known as leukotrienes.¹⁷

In addition to inhibiting 5-LOX, boswellic acids have been found to inhibit inflammation at a number of other points of action in the development of inflammation:

- Components of *Boswellia*, including a compound called incensole acetate, have been shown to regulate inflammatory responses at a very high level by inhibiting the master inflammatory regulatory complex, NF-kappaB.⁹ Reducing NF-kappaB is an efficient means of slowing the onslaught of chronic inflammation throughout the body.
- Incensole acetate is also credited with robust neuroprotection, at least in animal models of brain trauma, and has been shown to have antidepressant, anti-anxiety, and other beneficial behavioral effects in animals.^{8,9}
- *Boswellia* extracts inhibit pro-inflammatory cytokines and mediators such as tumor necrosis factor alpha (TNF- α), interleukin-1, beta (IL-1 β), and interleukin-6 (IL-6).¹⁸
- *Boswellia* extracts have also been demonstrated to produce a marked down-regulation of interferon-gamma (IFN- γ), an activator of inflammatory T-lymphocytes.¹⁸

Human Studies On Arthritis Relief

Osteoarthritis and rheumatoid arthritis can cause disabling pain in aging adults. Treatment for both kinds of arthritis is still typically limited to NSAIDs like ibuprofen. And although more potent (and more dangerous) drugs are available for certain cases of rheumatoid arthritis, side effects limit their usefulness.¹⁹

Boswellia, on the other hand, has been safely used for thousands of years as an anti-arthritis drug—and now modern, scientific studies have finally vindicated that use.^{20,21}

In animal models of both experimentally induced osteo- and rheumatoid arthritis, *Boswellia* extracts have been found to reduce standard arthritis scores, paw swelling, and secretion of pro-inflammatory signaling molecules called cytokines.²²

Human studies have been just as encouraging. In a double-blind, randomized, placebo-controlled trial, 30 patients with osteoarthritis of the knee received either a *Boswellia* extract or placebo. After eight weeks, the supplemented patients demonstrated superior symptom relief—including a decrease in knee pain, increase in knee flexion, and increased walking distance—and decreased frequency of knee swelling. The placebo patients experienced no such changes.²⁰

In another study of patients with knee osteoarthritis, a *Boswellia* extract enriched in AKBA²³ was shown to produce both clinically and statistically significant improvements in pain scores and physical function scores; in some patients these results were detectable in as little as seven days after beginning supplementation!²⁴

This study is especially encouraging because researchers determined that treatment did more than simply relieve symptoms—it *improved conditions within the ailing joints*. (The extracts achieved this effect by reducing the amounts of the joint-degrading, protein-melting enzyme matrix metalloproteinase-3.)²⁴

Nearly identical results have been obtained using other *Boswellia* extracts rich in AKBA.^{23,25,26}

Inflammatory Bowel Diseases

Boswellic acid's anti-inflammatory actions make it an incredibly important tool in the management of inflammatory bowel diseases such as ulcerative colitis, Crohn's disease, and collagenous colitis.

In each of these conditions, inflammation of the bowel lining is kept alive largely through excessive production of inflammatory mediators called *leukotrienes*, which are produced by the 5-LOX enzyme.^{27,28}



Boswellia serrata

What You Need To Know

Boswellia Battles Chronic Inflammation

- Chronic inflammation poses a life-shortening risk to all Americans.
- Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, have serious side effects that limit their safety over the long term.
- Extracts of *Boswellia serrata*, also called frankincense, have long been used for fighting inflammation in traditional medicine.
- *Boswellia* extracts, especially those rich in the boswellic acid known as AKBA, are now proving to inhibit inflammation at multiple points of action in the development of inflammation.
- Those properties make *Boswellia* extracts especially attractive for long-term use where NSAIDs would be inappropriate.

Since 5-LOX is potently inhibited by boswellic acids, *Boswellia* extracts are an important tool in the management of these inflammatory bowel diseases.²⁹

In a study published in the *International Journal of Colorectal Disease*, researchers gave animals oral doses of either *Boswellia* extracts or AKBA.²⁹ Both the *Boswellia* extract and AKBA brought about a reduction in inflammatory cells sticking to blood vessels, and in the localized swelling typical of inflammatory bowel diseases.

Another animal study showed that AKBA can decrease the number of precancerous polyps, reducing polyp formation by **49%** in the small intestine and by more than **60%** in the colon. AKBA had a still greater effect on preventing polyps from turning malignant.³⁰ In fact, polyps in the treated group showed regression towards more normal cell structures, something not seen with drug treatment.

Human studies show great benefits as well. In a study of patients with advanced ulcerative colitis, six weeks of supplementation with *Boswellia* gum resin extract (**350 mg** three times daily) produced significant improvements in stool properties, microscopic appearance of the bowel wall, and blood tests of inflammation.²⁸



In fact, an impressive **82%** of the supplemented patients went into remission. These results were almost identical to the **75%** remission rate experienced by control patients that were taking the standard drug *sulfasalazine* (**1 gram** three times a day).²⁸

A subsequent, similar study showed even better results, with a **70%** remission rate in the supplemented group and just **40%** in the drug group.²⁷

Boswellia extracts have also induced clinical remission in patients who have collagenous colitis, a less common form of inflammatory bowel disease characterized by chronic diarrhea.^{31,32} Patients who followed the study protocol had a **63.6%** remission rate, compared with just **26.7%** of those receiving placebo.³¹

Boswellia Tempers Cancer Promotion

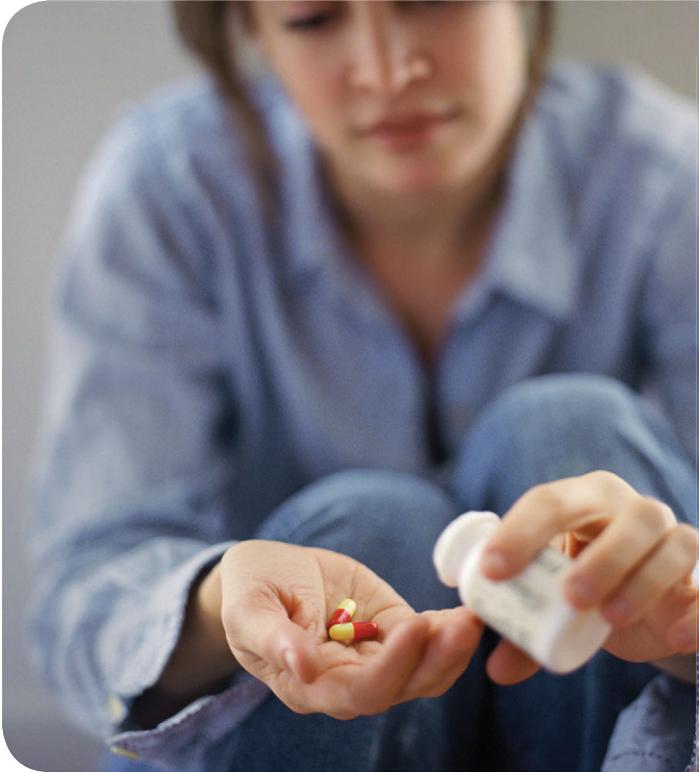
Because inflammation plays a central role in promoting cancers of virtually all kinds, inhibiting inflammation has become a key part of cancer-prevention strategies.^{33,34} Evidence is now emerging that components of *Boswellia*, particularly the boswellic acids such as AKBA, can be very effective against cancers. By shutting down the master inflammation regulatory complex NF-kappaB in tumor cells, *Boswellia* can bring about early cell death and regression of tumors.^{35,36}

In one animal study, when *Boswellia* extracts were given to mice prior to being chemically induced to develop colon cancer, the extracts significantly inhibited the formation of precancerous cell clusters.³⁷ The same study found that purified boswellic acids inhibited vital DNA synthesis in human leukemia cells in culture, preventing them from further replication.

In another study, AKBA, the most potent of the boswellic acids, rapidly induced cell death in cells derived from human meningioma, a common central nervous system tumor.³⁸

Later studies found that when AKBA was administered to mice with implanted human colorectal cancers, it inhibited tumor growth, resulting in smaller and less aggressive cancers.³⁹ This benefit appears to be caused by AKBA's anti-inflammatory actions. Indeed, when compared with aspirin, a known non-steroidal anti-inflammatory drug, *Boswellia* extracts proved superior at preventing precancerous lesions from forming in animals at risk for colon cancer.⁴⁰

Studies in cells from human pancreatic and other cancers demonstrate that *Boswellia* extracts kill cancer cells via multiple pathways, such as restoring malignant cells' ability to die off naturally (apoptosis), and causing "cell cycle arrest," which stops reproducing cells dead in their tracks.⁴¹⁻⁴⁴



Essential oils from *Boswellia* have also been found to slow the growth of human tumors implanted in mice.^{42,43}

An exciting, yet incompletely understood property of boswellic acids, is the ability to induce “epigenetic” changes in cancer cells’ chromosomes.⁴⁵ These changes produce physical shifts in the way various genes are expressed or suppressed, resulting in, for example, greater expression of tumor suppressor genes.

Boswellia Extinguishes Cardiovascular Inflammation

Atherosclerosis, or hardening of the arteries, is a complex process that leads to heart attacks, strokes, and peripheral vascular disease, as well as contributing to cognitive loss with aging.^{49,50} Over the past decade, it has become clear that atherosclerosis, like so many other age-accelerating processes, has a major inflammatory component.⁵¹ These observations make fighting inflammation a key factor in preventing and mitigating arthritis and cardiovascular disease.^{51,52} In fact, the routine use of aspirin in some settings is an attempt to reduce some of the effects of inflammatory stimuli on blood vessels.

Boswellia extracts are beginning to show promise in preventing the inflammation that contributes to atherosclerosis. In rats fed a high-fat, atherosclerosis-promoting diet, supplementation with *Boswellia*

The Problem With NSAIDs

Huge numbers of Americans are in pain, judging by the popularity of over-the-counter painkillers. In a given week, **23%** of us use acetaminophen (Tylenol® and others) at least once, while **17%** use a nonsteroidal anti-inflammatory drug (NSAID), like aspirin or ibuprofen.⁷¹

Some of these drugs are clearly effective at reducing inflammation,^{72,73} the leading cause of pain. Chronic inflammation has been implicated in diseases, including cancer, and reducing inflammation is important for long-term health.⁷⁴ Aspirin, of course, has been in use to prevent inflammation-related cardiovascular problems for many years, and there’s evidence that moderate use of both aspirin and nonaspirin NSAIDs such as ibuprofen may be helpful in preventing certain cancers.^{75,76}

However, despite their ability to reduce inflammation, full-dose NSAIDs cause far too many side effects for people to regularly take them as a means to boost overall health.¹¹ Gastrointestinal upset and reflux disease are two of the milder forms of NSAID side effects, but they can progress to more serious problems, such as internal bleeding and ulcers.⁷⁷⁻⁸⁷

However, you don’t have to face the side effects of NSAIDs to experience their inflammation-busting actions.

For thousands of years, **frankincense** has been used to fight diseases we now recognize as inflammatory in nature. Frankincense is an extract of a tree called *Boswellia serrata*. *Boswellia serrata* extracts produce NSAID-like effects and have been used in cancer prevention, in treatment of inflammatory bowel diseases (IBD), in cardiovascular disease prevention, and in neuroprotection.^{8,11,88}

extract significantly lowered total cholesterol by up to **48%**, and increased beneficial HDL-cholesterol by up to **30%**.¹³ In the same study, liver and kidney functions returned to near-normal levels.

Basic lab studies provide insights into how *Boswellia* provides these beneficial cardiovascular anti-inflammatory effects. Potent extracts, enriched in AKBA, reduced the changes in gene expression induced by the pro-inflammatory cytokine TNF-alpha, and slowed production and activity of protein-melting matrix metalloproteinase enzymes.⁵²

Anti-Metastasis Breakthrough

90% of cancer deaths result from tumor metastasis, the spreading of new tumors to distant sites in the body. Scientists have been eagerly pursuing a true anti-metastasis drug, but to date, no such drug has been found.⁴⁶

As researchers are discovering more about the cause of metastasis, it's becoming clear that AKBA from Boswellia could play an important role in stopping the deadly spread of cancer.

Recent discoveries indicate that a specific receptor on the surface of tumor cells is responsible for regulating metastasis. AKBA has been found to downregulate that receptor in pancreatic cancer cells.⁴⁶ Researchers have also found that AKBA is able to suppress metastases to the liver, lungs, and spleen in mice implanted with human colorectal cancers.³⁹

These effects are mediated by AKBA's ability to shut down NF-kappaB, the master inflammation regulatory complex.⁵¹ In a mouse model of atherosclerosis, treatment with AKBA inhibited NF-kappaB, and resulted in about a **50%** reduction in the size of atherosclerotic plaques.⁵¹

Chronic inflammation also induces changes in the function of platelets, the tiny cell fragments responsible for initiating blood clotting.⁵³ Inflammatory signals trigger platelets to become increasingly sticky, causing them to adhere to vessel walls and eventually blocking blood flow to produce a heart attack or stroke. Boswellia extracts have now been shown to significantly inhibit platelet activation and subsequent clumping.⁵⁴

Potent Neuroprotection

One of Boswellia's traditional uses is to prevent amnesia.⁵⁵ Now, its anti-inflammatory actions are being explored as a powerful form of neuroprotection for traumatic brain injury and stroke (both of which are aggravated by an inflammatory response following the event),⁵⁶⁻⁵⁸ as well as for other, age- and inflammation-related changes in the brain.⁵⁹

A component of Boswellia resin called *incensole acetate* inhibits NF-kappaB, and has now been shown to inhibit the gene expression of inflammatory mediators in an animal model of traumatic brain injury.⁷⁸ This effect also inhibits degenerative changes in the hippocampus, one of the brain's chief memory-processing areas. Boswellic acids have also been found

to stimulate hippocampal cells to grow new, highly branching projections called **neurites**. Neurites are the tiny projections that brain cells use to contact multiple other cells to advance cognition and memory.⁶¹⁻⁶³

This important study is disproving the outdated belief that brain tissue cannot regenerate—and gives a ray of hope to those currently suffering from degenerative brain disorders that are believed to be incurable.

Even hippocampal changes related to aging (which resemble a slow-motion version of acute brain injury in their cellular effects) can be attenuated in animals given Boswellia supplements.⁶⁴

Animal and human studies have borne out Boswellia's memory-improving effects.

In one study, rats receiving a Boswellia supplement experienced improved memory in a maze, showing that Boswellia significantly improves spatial memory retention.⁶⁵ Similarly, another study found that rats with experimentally induced seizures that have seizure-related learning disorders as a result, experienced improvements in their learning ability when supplemented with Boswellia extracts.⁶⁶



As an added benefit, the incensole acetate component of Boswellia has been shown to reduce behaviors typical of depression via gene expression changes in the hippocampus.⁶⁷ Recent work shows that these compounds can readily enter the brain from the bloodstream.¹²

In a human study of patients with diffuse axonal injury, a widespread and poorly understood consequence of brain trauma,^{68,69} Boswellia supplementation produced a significant increase in cognitive abilities related to self-care after six weeks of treatment. Placebo patients experienced no such changes.⁷⁰

Summary

Your body is under constant attack by chronic inflammatory stimuli. When these break through to cause perceptible pain, you are likely to turn to NSAIDs, such as ibuprofen. But such drugs, with few exceptions, are inappropriate for chronic use to prevent inflammation and its deadly consequences.

Instead, consider supplementing with extracts of Boswellia, the source of biblical frankincense. The gummy resin has similar effects as those exerted by NSAIDs and a different mechanism of action with almost no side effects, giving it both a wider spectrum of use and a vastly safer side-effects profile.

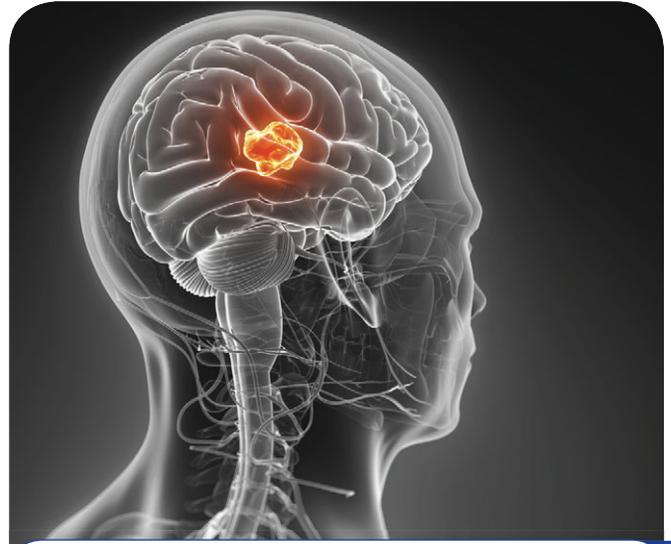
Boswellia extracts inhibit multiple steps in the inflammation-generating cascade of events. As a result, they are showing promise in reducing risk of arthritis, cancer, inflammatory bowel diseases, cardiovascular disorders, and neurodegeneration.

Aging humans concerned about the impact of chronic inflammation and leery of long-term NSAID use may consider Boswellia extracts for broad-spectrum protection. ●

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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Boswellia Extracts Help Manage Brain Tumors

In addition to their cancer-preventive effects, Boswellia extracts are also showing promise in management of *existing* brain tumors. Radiation treatment for such tumors typically produces brain swelling, which can be fatal.⁴⁷ Standard preventive treatment includes a potent steroid, *dexamethasone*, which also has a wide range of side effects.⁴⁸

Studies of Boswellia extracts given at doses of **4,200 mg/day** demonstrate that reductions in brain swelling of more than **75%** occurred in **60%** of supplemented patients undergoing brain radiation therapy, but in just **26%** of control patients.⁴⁸

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FlorAssist® Heart Health Probiotic

Enhances Healthy Cardiovascular Factors

Researchers are discovering how important **probiotics** are to overall health. Beyond improving digestive health, probiotics provide a broad spectrum of benefits throughout the body.

FlorAssist® Heart Health Probiotic contains a novel probiotic—*Lactobacillus reuteri* 30242—that has been shown in clinical trials to safely support healthy cholesterol in adults already within the normal range.^{1,2}

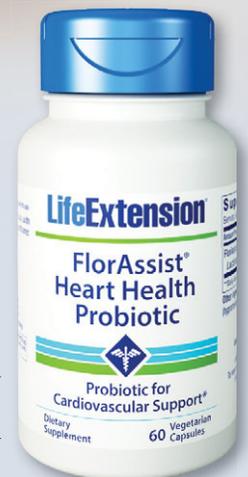
Additionally, *L. reuteri* 30242 has been shown to support healthy CRP (a marker for inflammation), fibrinogen (involved in clot formation), apoB-100 (a marker for LDL particle size, a known cardiovascular risk factor), and vitamin D levels (important for cardiovascular health) for those within normal range.³

FlorAssist® Heart Health Probiotic has been carefully formulated for convenient use as a safe, easy-to-swallow capsule with no unpleasant aftertaste. One capsule with food twice daily is the perfect addition to a heart-healthy lifestyle.

The suggested daily dose of **two** vegetarian capsules of FlorAssist® Heart Health Probiotic provides:

FlorAssist® <i>Lactobacillus reuteri</i> (NCIMB 30242)	5 Billion CFU*
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* Colony Forming Units



Item # 01821

A bottle of 60 vegetarian capsules of **FlorAssist® Heart Health Probiotic** retails for \$32. If a member buys four bottles, the price is reduced to **\$21** per bottle.

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To order FlorAssist® Heart Health Probiotic, call 1-800-544-4440 or visit www.LifeExtension.com

Relief For AGING JOINTS

Normal aging results in increased levels of 5-LOX (5-lipoxygenase), an enzyme that transforms fatty acids into *leukotrienes*, setting in motion an inflammatory response linked to common effects in joints and other aging tissue.¹⁻⁵

The Indian extract *Boswellia serrata* is rich in a compound called **AKBA** that has been demonstrated by scientists to effectively promote neutralization of 5-LOX.^{6,7}

Life Extension® scientists have developed a patent-pending, standardized form of **boswellia** called **AprèsFlex®**, which absorbs into the blood **52% more** than previously available boswellia extracts.⁷

The suggested daily serving of one to two vegetarian capsules of **5-LOX Inhibitor with AprèsFlex®** provides:

AprèsFlex® (<i>Boswellia serrata</i>) extract	100 mg
(gum resin) [std. to 20% 3-O-acetyl-11-keto- β -boswellic acid (AKBA) (20 mg)]	

A bottle of 60 vegetarian capsules of **5-LOX Inhibitor with AprèsFlex®** retails for \$22. If a member buys four bottles, the price is reduced to **\$15** per bottle.

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Item # 01639



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BY GEORGE EBY

ZINC LOZENGES

For The Common Cold

Why Did It Take 30 Years?

Ask a lay person what to take if you develop **cold symptoms**, and they will often suggest **zinc lozenges**.

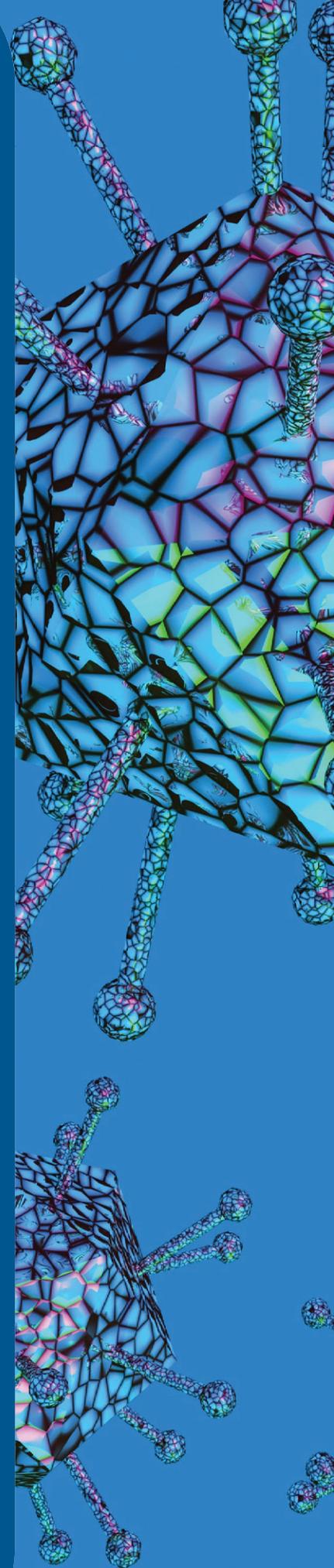
This recommendation is based on the many media reports surrounding the use of zinc lozenges in preventing or shortening the duration of the common cold.

For too many people, however, **zinc lozenges** have not worked to alleviate their cold symptoms.

To get to the bottom of this, **Life Extension**[®] reached out to **George Eby**, the scientist who discovered that zinc can eradicate cold symptoms. George Eby has spent decades perfecting the most effective and palatable form and dose of **zinc lozenge**.

In this report, George Eby relates his serendipitous discovery, and the many avenues of investigative research required to identify how to make **zinc** effective against **cold viruses** when administered in **lozenge** form.

ZINC AND THE COMMON COLD





In **1984**, an article I wrote about **zinc lozenges** and the **common cold** was published in a cancer journal called *Antimicrobial Agents and Chemotherapy*.¹

In **2014**, a positive article on **zinc** and **common colds** was published in the *Journal of the American Medical Association*.² Why did it take 30 years for zinc to be accepted as a viable treatment for common colds?

In this brief article, I won't delve into a nitty-gritty discussion of each and every clinical trial. Rather, I will cover subjects that I think are of general interest. I refer the academic reader to the most accurate review of the subject ever written, my 2010 article titled "**Zinc Lozenges as Cure for the Common Cold—A Review and Hypothesis**,"³ and my 1994 book on the subject, *Handbook for Curing the Common Cold*.⁴

My review article and handbook show that efficacy depends totally on the amount of **ionic zinc** (iZn) available in the lozenges when used nine times per day (every two wakeful hours). How it works remains to be determined, although a number of possibilities exist.

Positively charged ionic zinc (iZn), but not bound (neutrally charged) zinc, is a strongly astringent, anti-rhinoviral that:

1. Increases interferon-gamma (IFN- γ) 10-fold,
2. Inhibits intercellular adhesion molecule-1 (ICAM-1), and
3. Inhibits the release of the vasoactive compound (histamine) from mast cell granules.^{3,4}

Interestingly, one **18.75 mg** zinc acetate lozenge in the morning and one in the evening controls most allergy symptoms, especially throat congestion. Also, iZn protects cell membranes from a variety of assaults, ranging from viruses to venoms.⁵ My family has used topically applied supersaturated solutions of zinc gluconate to immediately terminate the sting of yellow jackets, bees, wasps, scorpions, and Portuguese man-of-wars. It quickly heals brown recluse spider bites. I have a friend who has used it topically to effectively treat rattlesnake bites in horses and dogs. It clearly has general anti venom properties.⁶

But back to the **common cold**: The main indicator that a zinc lozenge is releasing **ionic zinc** (iZn) is when a drying and astringent sensation occurs in the mouth. **Zinc acetate** releases **100%** of its zinc as iZn and it can be made into a pleasant-tasting, but astringent and drying, lozenge. It is imperative that strongly astringent and drying **zinc acetate lozenges** be used if maximum efficacy and pleasant taste are desired.

Ionization is the process that occurs when an atom or a molecule acquires a positive or negative charge by gaining or losing electrons.⁷ You'll read why this is important when attacking cold viruses later in this article.

A Serendipitous Discovery

Let me start my remarks with the comment that I was not smart enough to "figure out" how to cure the common cold. Rather, it was discovered totally by accident. When my daughter, Karen, was 3-years old in 1979, she was diagnosed with acute lymphocytic leukemia (T-cell). Upon her diagnosis, I immediately realized that zinc was critical for her survival since she had abnormally low zinc in her blood and zinc was vital to the T-cell lymphocytes,⁸ and perhaps vital to obtain a rapid remission and recovery.

From the first day of diagnosis, I regularly administered zinc and other supplemental nutrients to her. She was totally free of leukemic blast cells two-weeks after diagnosis and being given chemotherapy, radiation, and zinc which was unheard of at that time. Eventually, I published my hypothesis about zinc being vital for a rapid recovery from leukemia.^{9,10}

Since leukemic children have impaired immune systems due to both the disease and the chemotherapy, a common cold could lead to serious trouble. My daughter developed a horrible cold, and her doctor told us that it might last for months, maybe even until she was taken off of chemotherapy in three years! One afternoon, several months after her diagnosis, she was extremely tired and wanted to take a nap, but it was also time for her to take her **50 mg** zinc gluconate

tablet. She told me that her throat hurt too much to swallow the pill, so I told her to crush it with her teeth, hold the crushed particles in her mouth, and take a nap. Several hours later, she got up from her nap and was playing and smiling and looked and acted totally well. I told her to go back to bed, and she told me, "No, Daddy, zinc cured my cold."

There you have it, the cure for the common cold was discovered by a 3-year-old girl with leukemia. How did her leukemia turn out? She ran an 11-minute mile a few months later. She said she could run faster if her legs were longer! She never relapsed. Did physicians pay any attention to my article? No.

Testing The Theory

I tried the same zinc lozenge for common cold experiment with other members of my family, friends, and co-workers at the Texas Department of Health in Austin, Texas. It was always amazingly effective, and the Commissioner of the Department of Health, Dr. Robert Bernstein, MD, suggested to me that I should recruit a local physician and a scientist or two from the University of Texas in Austin to conduct a double-blind clinical trial. Dr. William W. Halcomb, an Austin osteopathic physician, and Ronald R. Davis, PhD, of the Clayton Foundation Biochemical Institute, University of Texas at Austin, decided they would like to participate.

Eventually, we ran the clinical trial in Dr. Halcomb's office with the help of local TV and radio stations that recruited patients for an "amazing research project." We ran two clinical trials, one with the **23 mg** zinc gluconate tablets (used as throat lozenges), which were only one-half as potent as what our previous

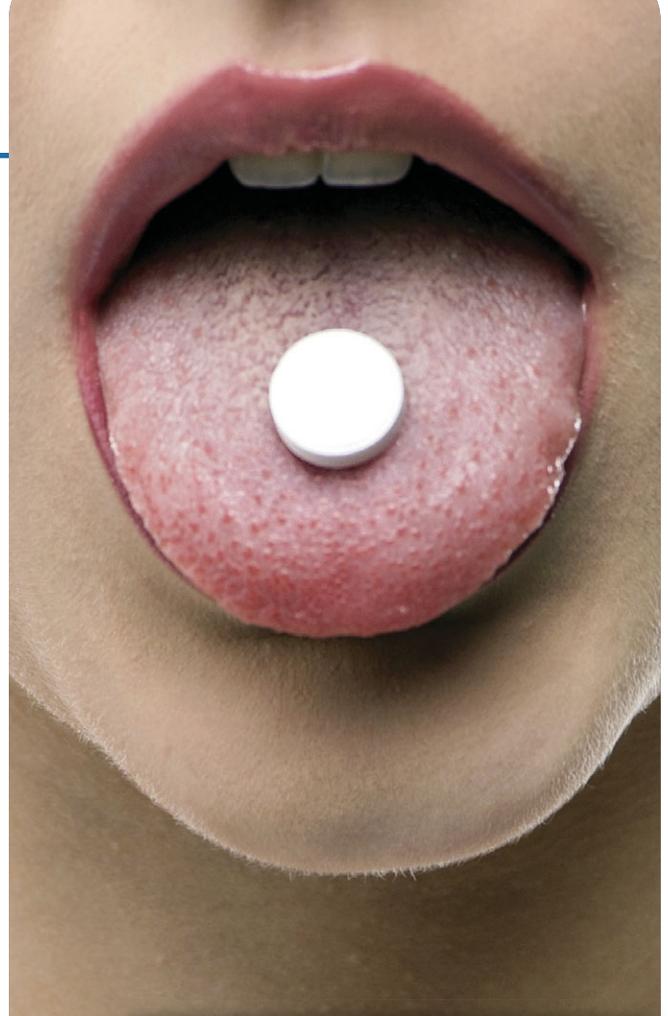


experience indicated was needed, and the other trial with **37 mg** zinc orotate lozenges used with **10 mmol** zinc (gluconate) nasal spray. Upon analysis, we found that the **23 mg** zinc gluconate lozenges used every two hours (nine lozenges per day) shortened common colds by about seven days, with strong statistical significance ($P=0.001$).¹ On the other hand, the zinc orotate lozenge and zinc nasal spray study showed zero results. We were hoping that the zinc orotate lozenges would work since they were more palatable, but zinc orotate releases zero iZn, explaining lack of efficacy. Years later, we submitted the results for publication to *Alternative Therapies in Health and Medicine*.¹¹

Before the zinc gluconate article was accepted and published, I sent a courtesy copy to Jack Merit Gwaltney Jr., MD, the Director of the Department of Internal Medicine, University of Virginia School of Medicine, Charlottesville, Virginia. He ran a common cold research unit there, and was considered to be the leading common cold researcher in the United States. A few days later, he called me on the phone and was very flattering in his comments about my research. We talked for about a half an hour, and he always came back to say how much he liked the article. However, he was a bit concerned that our placebo matching wasn't as good as he would have liked since our placebos tasted a bit better than the zinc gluconate lozenges. He suggested that it might be best for me to withdraw my article from consideration for publication, and he would run a new study with a better placebo. I thought about his kind offer, but rejected it since it would postpone publication for at least a year. When I told him no, he became angry, and told me that I would definitely need his help. I have always wondered if my rejecting his kind offer had anything to do with the **30-year delay** in obtaining widespread acceptance of my discovery. Perhaps it's not widespread yet, but zinc for common colds did get favorable mention in the **April 2014** issue of the ultra-conservative *Journal of the American Medical Association*.²

The Media Frenzy

Upon publication of our article in 1984,¹ we received substantial press coverage and interest by scientists with professional involvement in common cold research. One scientist was Dr. Rinaldo Pellegrini, the Medical-Scientific Director of RBS Pharma-Milan in Milan, Italy. He took the time to visit us in Austin and to listen to our warnings about metallic chelators and the vital solution chemistry of zinc. He agreed to replicate the solution chemistry of our lozenges. No attempt was made to replicate the solution chemistry of our zinc gluconate lozenges by anyone except



What You Need To Know

Zinc Lozenges And The Common Cold

- In 1979, George Eby gave his daughter, who had leukemia and was suffering from a bad cold, a crushed **50 mg** zinc gluconate tablet. Several hours later, her cold was completely gone.
- Clinical trials revealed that **23 mg** zinc gluconate lozenges used every two waking hours (nine a day) shortened the common cold by about seven days.
- Dr. Ananda Prasad, considered the father of zinc biochemistry, demonstrated zinc acetate shortened cold duration by three days in three separate trials.
- Taken at the first sign of a cold, typically a scratchy throat, zinc lozenges taken every two hours abort a cold by the end of the first day, earning them a special place in your supplement regimen.

Dr. Pellegrini, who made the flavor-masked zinc gluconate in **1 gram** fructose-based compressed lozenges using a binder with properties similar to high molecular weight hydroxypropyl methylcellulose. Those lozenges were successfully demonstrated by the British Medical Research Council Common Cold Unit in Salisbury, England (MRC), the world's leading authority in common cold research. The lozenges were quite astringent. Results of that study were similar to our original results, since the products being tested were quite similar in release of *iZn*.^{3,4,12} The lozenges never went to market since the company was sold and the new owners were not interested in zinc lozenges for colds.

Commercial Products That Failed

The Quigley Corporation was making and selling zinc gluconate lozenges. There were several studies done on these lozenges, with two showing success,^{13,14} while two failed.^{15,16} Another company, Bristol Myers Squibb, came up with a very pleasant-tasting hard candy zinc gluconate lozenge that was flavor-masked with lemon and citric acid. Their lozenges failed in a clinical trial done at the Department of Internal Medicine, University of Virginia School of Medicine, Charlottesville, Virginia.¹⁷ Interestingly, of the many zinc lozenges on the market in the United States, several contain citric acid and release no *iZn*, thus lacking any efficacy. Warner Lambert Company also

wanted to market a zinc lozenge; unfortunately, it too failed in clinical trials.¹⁶ Their hard candy zinc acetate lozenges contained **5** or **11.5 mg** of zinc. They were flavor-masked with partially hydrogenated cottonseed oil and/or palm kernel oil and soy lecithin. They thought it released *iZn*, but I am certain that they did not, mainly since there was no hint of oral astringency.

Over the years, there were a number of other scientists and companies that wanted in on producing a zinc lozenge for the common cold. These companies and scientists published both positive and negative reports, the efficacy of which I found to be closely related to the availability of *iZn*.^{3,4} Perhaps the most interesting of these was the 1987 study by Robert M. Douglas of the Australian National University, in Canberra, Australia, as it *increased* the duration of colds by 4.4 days.¹⁸ They used "effervescent" **10 mg** zinc acetate lozenges. I wrote them to find out what caused the effervescence, and they indicated that they used tartaric acid and sodium bicarbonate.³ Zinc acetate dissociates in the presence of these added ingredients and forms several tightly bound reaction products including zinc carbonate, which is insoluble and non-ionizable, plus negatively charged zinc tartrate. These zinc lozenges appear to have released sufficient negatively charged zinc that neutralized native *iZn* from **mast cell granules** (allergy symptom-inducing) of the infected nasal epithelium, resulting in significantly worsened cold symptoms.³ This is why care should be taken in one's selection of zinc lozenges.





Developing An Effective Lozenge

Around **1990**, I developed pleasant-tasting zinc acetate lozenges, which released all of their zinc as iZn , and submitted them to three independent clinical trials. The first clinical trial was conducted in 1998 by Edward Petrus and his colleagues.¹⁹ Using **9 mg** zinc acetate compressed tablet lozenges, they found significant reductions in mean duration. What was really interesting about this study is that in people with allergy symptoms, the results were twice as good as in those without allergy symptoms. The second and third clinical trials were conducted by Ananda S. Prasad, MD, PhD, and colleagues, of Wayne State University in Detroit, Michigan. In 2000, he was appointed Distinguished Professor of Medicine, Division of Hematology-Oncology. He has long been considered the father of zinc biochemistry in humans, having discovered the essentiality of zinc in the human diet in 1963.²⁰ His first study in 2000 used **12.8 mg** of zinc acetate, and these compressed tablet lozenges shortened colds by 3.6 days and reduced severity of colds with strong statistical significance ($P < 0.002$).²¹ I still have some of those zinc acetate lozenges, and they still taste the same and are still astringent. Dr. Prasad's second study was conducted in 2008 and the lozenges contained **13.3 mg** of zinc acetate. Mean duration of colds was reduced by about three days (4.0 vs. 7.1 days; $P < .0001$).²² These lozenges were also perceived to be pleasant tasting, but astringent. The zinc acetate lozenges being introduced in this publication are the only zinc lozenges to have ever been shown effective in three independent clinical trials.

Why It Took So Long

Back to the question, why has it taken 30 years for acceptance? First, I am not certain that a single positive article published in *JAMA* means "acceptance." It just means we have broken the ice a bit with establishment medicine. The question really has two basic problems.

The first problem is the lack of understanding as to what solution equilibrium chemistry is all about. This is the science that allows the calculation of the availability of **ionic zinc** at physiologic pH 7.4. This science has found that **zinc acetate** releases **100%** of its zinc as iZn . **Zinc gluconate** releases **72%** as iZn . **Zinc gluconate-glycine** releases **57%** (or less) iZn , while **zinc gluconate-citrate** releases **zero** iZn .^{3,23,24} This particular science is far outside the education of biologists, bio-chemists, physicians, and others who have responsibility in common cold research. Unless researchers use **zinc acetate** with a tablet base of nothing but directly compressible dextrose and some flavor oils (peppermint) plated onto silica gel, they are not likely to find efficacy if they also want a pleasant-tasting zinc lozenge. Of course, there needs to be enough zinc acetate to do the job, and I have found that **18.75 mg** of zinc (from zinc acetate) is enough. You can see the effect of iZn on average duration of colds in the chart on page 76. How do I know about such an esoteric subject? I needed to know, and I was open to suggestion. One day, about **1993**, I was invited by Guy Berthon, PhD, to prepare a paper for publication in his new book about metal-ligand interactions in biological fluids. I was delighted and I submitted to him my best work.²⁵ He wrote me back citing a number of errors related to solution chemistry, but instead of rejecting my work, he fixed my article to meet his professional judgment! I was thrilled! He took me under his wing and became my mentor in solution chemistry. I suspect that without Dr. Berthon's very kind assistance, I would have given up on this line of research long ago. We all owe him deeply. At that time, Dr. Berthon was Director of Research for Unit 305 (Equipe Bioréactifs: Spéciation et Biodisponibilité), at the Institut National de la Santé et de la Recherche Médicale (INSERM), in Toulouse, France, a part of the Centre National de la Recherche Scientifique (CNRS), Paris, France. That would be roughly the equivalent of a major office at our National Institutes of Health.

The second problem is the total disbelief by almost all common cold researchers that the best way to treat a cold is by using zinc lozenges. Why treat the mouth and not the nose? There have been some nasal zinc treatments used to treat colds and allergies, but intranasal iZn has been known to cause extreme nasal pain and anosmia (loss of the sense of smell) since before

1938, according to E.W. Schultz and L.P. Gebhardt.²⁶ In my web article about zinc and anosmia, I reported that scientists today continue to document this unfortunate effect.²⁷ Does intranasal iZn help with colds? I didn't find any evidence that it did in my 2006 report.⁹ However, others did find efficacy, but at what cost?^{28,29} There used to be a large number of zinc nasal treatment products for colds, but the threat of lawsuits over anosmia has reduced them considerably.

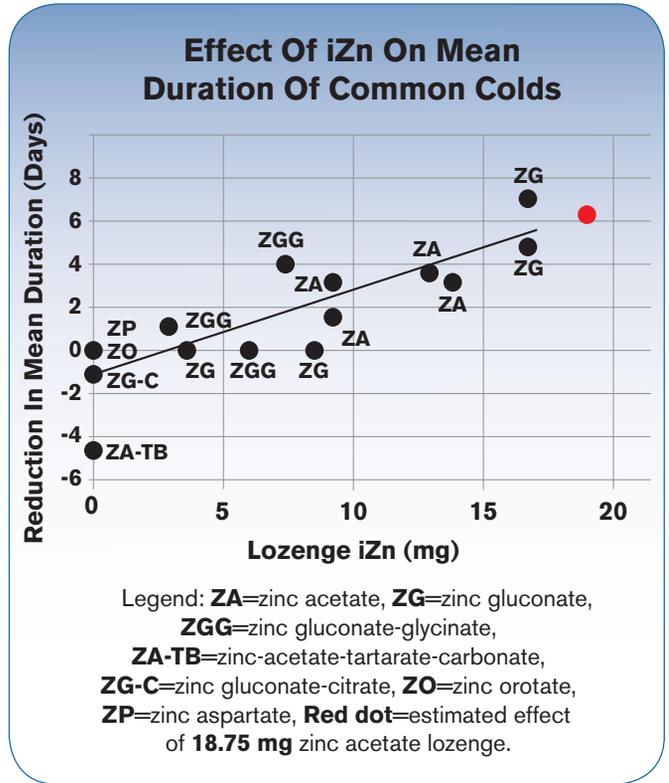
Another Mechanism As To Why Zinc Works

So, administration of zinc is fraught with problems and may or may not work, and I still haven't explained why zinc lozenges can work. It has to do with medicine's most exotic science. That is the field of "biologically closed electric circuits." This is a field pioneered by Björn Nordenström in his amazing 1983 book titled *Biologically Closed Electric Circuits*.³⁰ Dr. Nordenström showed that electrons moved in circuits within the body outside the nervous system and that by artfully manipulating them, serious illness could be cured.

How did I find out about his research? I was watching a news program on TV in 1988 when they showed a segment about his work. That news report and others like it were later placed on YouTube.^{31,32} Dr. Nordenström was Head of Diagnostic Radiology at the Karolinska Institute, Stockholm, Sweden. He was a member of the Nobel Assembly from 1967 through 1986, and served as President of the Assembly in 1985. He had extremely good credentials, but his book was so unorthodox that he lost his job and he went to China, where his advice on biologically closed electric circuits (BCEC) and cancer treatment was vastly more respected.

When I saw his amazing TV segment, I immediately went to the University of Texas medical library, checked out his book, and read the whole thing. I was left with the definite feeling that there was something electrical going on in the mouth and nose; perhaps one could call it a mouth-nose-BCEC (mouth-nose-biologically closed electric circuit). Since the voltages that he found were around 0.1 volts, I bought a high quality volt-ohm meter capable of detecting voltages as low as 0.01 volts and began my research. It only took a few seconds to find that there was a 0.1 volt flow of electrons from the nose to the mouth, and that the nose was positively charged relative to the mouth. The voltage fluctuated slightly with the respiratory rhythm.

According to Nordenström and classical electrical physics, there would be an opposing flow of metal ions (but not neutrally charged bound zinc) like iZn from the mouth to the nose. Wow! That was exactly the explanation I needed as to why zinc lozenges worked!



The mouth-nose-BCEC moved iZn into the infected tissues of the nose from the mouth and throat!

Previously, I mentioned Edward Petrus and colleagues¹⁹ showed that people with allergies were twice as responsive to his lozenges as people who didn't have allergies. I tested dozens of people with my volt-ohm meter and found that the voltage was always around 0.1 volt, but the electrical resistance between the mouth and nose varied widely between people.

People with allergies had extremely low resistances (1 to 20 kilohm range), which would result in much more electrons flowing from the nose to the mouth and much more iZn flowing from the mouth to the nose. I suspect that this is why Petrus found those amazing differences. The dozen physicians that I tested had extremely high resistances (100 to 500 kilohm range) and they reported that they never caught colds. My daughter, Karen, tested each of her middle school classmates and found the same voltage for a research project. (She got an A+ on her report!) Over the years, the mouth-nose-BCEC has become the best known of the BCECs. I published my mouth-nose-BCEC findings in my review,³ and later in *Expert Reviews of Respiratory Medicine*.³³

There you have it, two major reasons why scientists and physicians have not accepted zinc lozenges for common colds, and how a lozenge sucked in the mouth and delivered to the throat tissues is able to alleviate nasal cold symptoms.

What The “Experts” Still Don’t Understand

In my 2010 review article,³ I analyzed all of the relevant literature and plotted the effects of iZn on mean duration of common colds, which is shown in the chart on page 76. From these numbers, it is clear that the more iZn present, the better the efficacy. The red dot is the estimated effect of the **18.75 mg zinc acetate lozenges** being introduced this month. It is based upon the collection of all known data on zinc lozenges and the common cold. I have also plotted the effect of total zinc (iZn plus bound) on colds (data not shown) and the regression line was nearly flat, which is what classically trained physicians cling to as lack of evidence of efficacy of zinc lozenges.

Will physicians ever accept what is factual over their own medical school teachings and personal beliefs? I wonder. I personally don’t see too much hope, particularly since the new *JAMA* article² doesn’t say much more than zinc is good for colds (and cuts their duration in half) and did not mention iZn. Actually, that zinc is good for colds can be surmised from many years of research on zinc and the primary immune system. Without enough dietary zinc and other nutrients, our immune systems don’t function well and diseases are much more likely to develop and become difficult to remedy. Diet and immunity have been linked for centuries.³⁴ As we move away from meat-rich diets, our intake of zinc is becoming so low that it is threatening our immune system.³⁵

Summary

I remain hopeful that *Life Extension*[®] readers will accept my message and try **zinc acetate lozenges**. If started at the very first symptom of a common cold, which usually starts with a scratchy throat, regular use each two wakeful hours will often, if not always, abort colds by the end of the first day. I hope that you, the reader, will have a bottle at home, at school, at work, and always when boarding an airliner or when confined in some other venue, such as a theater or stadium. That way you can start treatment as soon as you feel you need to do so and rapidly defeat the cold. Good luck! ●

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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[standardized to 42.5% phthalides (butylphthalide and sedanenolide (127.5 mg)]	

A bottle of 60 vegetarian capsules of **Advanced Olive Leaf Vascular Support with Celery Seed Extract** retails for \$36. If a member buys four bottles, the price is reduced to **\$24** per bottle.

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BY CHASE FALCON

A TRIUMPHANT FAILURE

According to recent polls, the approval rating of the United States Congress has slipped to as low as **5%**.¹

Congress is endowed with the power to “create” new laws and amend existing ones. Members of Congress are sometimes referred to as “lawmakers.”

The power to “create” laws that regulate every aspect of society is enormous. This includes enacting legislation that determines the pace at which medical progress is allowed to occur.

If as little as **5%** of the American population approves of Congress, then why isn't something being done to change it?

Some readers ask why ***Life Extension*** features political articles in a magazine dedicated to health and longevity.

The reason is that inappropriate government policies are the roadblock preventing us from rapidly extending the healthy human life span. Inefficiency and corruption within our government is also lowering our standard of living.

Rather than reporting on some new US government scandal, this article describes the suffocating impact that “bad government” has in a country that should otherwise have a very high living standard.

A TRIUMPHANT FAILURE





Venezuela should be one of the most *prosperous* countries on Earth. It has the world's *largest* proven reserves of crude oil.²

Instead, Venezuela is a poverty-stricken nation that lies atop a bed of money. This paradox is solely a by-product of bad government.

Venezuela's vast underground wealth of oil has been squandered to the point that the entire country is teetering on the brink of economic collapse. The middle class has been impoverished, while the lower classes are virtually **100%** reliant on government handouts.

Shortages of basic items run rampant, and one effect is that the "free" Venezuelan health

care system is in a free fall.³ Cancer patients are being sent home from hospitals because there are not enough chemotherapy drugs and functional equipment to treat them.⁴

Saudi Arabia, on the other hand, enjoys enormous prosperity due to its oil wealth. It has virtually the same population as Venezuela.⁵ The difference is that Saudi Arabia's government has made a lot of "good" decisions that bestow enormous benefits to the citizenry, as opposed to incessantly bad decisions made by Venezuelan authorities that result in significantly reduced living standards. As a result, Venezuela is a nation wallowing in squalor.⁶

Abundant Natural Resources

Venezuela is a nation abundant in natural resources, having the highest provable petroleum reserves on Earth. Estimates range from **256** to nearly **300 billion** barrels.^{7,8}

This one factor alone should entitle Venezuela to an economic leg up over other nations, as crude oil is the most traded commodity in the world and Venezuela has even more oil than Saudi Arabia.

Venezuela's primary industry is oil production. Petroleum comprises approximately **96%** of the nation's exports and more than **25%** of the nation's GDP stems from revenue derived from the oil industry.⁹⁻¹²

To export a commodity like oil, efficient transport is essential. Fortunately for Venezuela, the nation possesses great ocean access for shipping to the world's largest oil consumers.

In addition to what is considered liquid gold as a resource, Venezuela also has the fortune of having large reserves of actual gold, and the world's eighth largest reserve of natural gas.¹³ With a nearly equivalent population to Saudi Arabia, one would only assume a country with even greater resources would have at least the same wealth capacity.

Government Mistakes Result In Lost Opportunities

The economic decisions made by the governments of Venezuela and Saudi Arabia are nearly identical, but one small mistake has made the difference between prosperity and poverty.

Both Venezuela and Saudi Arabia nationalized their oil industry and used socialism to distribute their newfound wealth. The problem with Venezuela is that it did so in such a manner that it completely replaced the oil industry's management and work force with inexperienced bureaucrats.¹⁴ Instead of maintaining and expanding oil production, Venezuela took surpluses generated from existing oil production and gave it away as entitlements, such as "free" health care and food subsidies.¹⁵ Not surprisingly, oil production plummeted as even rudimentary maintenance of oil fields was neglected to fund increasing social programs and the inherent corruption that invariably occurs when bureaucrats dictate the marketplace.¹⁶

Unlike Venezuela, Saudi Arabia decided not to kick out the experienced and technologically literate foreign oil corporations. Instead, they created agreements where increasing shares of ownership were bought out and consolidated under the joint-enterprise company ARAMCO.^{14,17} As surpluses surged under this modified capitalistic system, Saudi citizens were rewarded with some of the highest social benefits on the planet.^{18,19}



El Palito oil refinery.
Caribbean Sea,
Venezuela

Venezuela's expropriation of oil company ownership began under the Nationalization Law of 1975. The law decreed that Venezuelan contracts held by oil companies were nullified and extraction-based companies were forced to sell off their domestic assets at fire-sale prices to the government-run oil enterprise *Petróleos de Venezuela, S.A. (PDVSA)*.²⁰

As a result, the government of Venezuela was put in charge and able to dictate what technologies would be introduced to maintain and improve oil output. These decisions were made by government bureaucrats since the expertise and foreign investment previously provided by private oil companies was being phased out due to expropriations.

The benefits of becoming autonomous can be enormous for a country like Venezuela if it can manage itself appropriately. The difficulty in becoming completely autonomous is that it stifles a country's ability to find foreign expertise in management and innovation, which is desperately needed for a nation like Venezuela.

In Saudi Arabia's case, the oil industry was nationalized without giving up the competence and proficiency of private management.

Saudi Arabia did this gradually by first breaking the unfair and unwanted contracts with the oil companies. These previously held contracts did not allow the Saudi Arabian government to tax the oil industry on corporate profits. The contract was replaced with a tax-centered, profit-sharing system that split profits 50/50 between the nation and the oil companies.¹⁴

Using the tax money received, Saudi Arabia slowly bought ownership positions in the domestically run oil conglomerate ARAMCO. The Saudi's were then able to utilize the profits to which they were entitled, and keep the foreign experience and private management of their oil reserves.²¹

This objective was realized in the gradual takeover of individual operations within the oil industry. This began when the government of Saudi Arabia acquired a **25%** interest in the joint oil enterprise ARAMCO by purchasing shareholder ownership, and slowly expanding its influence by buying out all available positions in the company until it had a **100%** ownership stake in the company in 1980.^{22,23}

Unlike Saudi Arabia, Venezuela was not concerned with its limitations or its long-term viability, and where Saudi Arabia simply owned (but did not initially manage) oil enterprises, Venezuela operated and managed its own oil industry, and did not allow foreign oil companies to remain in charge of running its operations.

The Destructive Force Of “Nationalization”

Venezuela nationalized the oil industry along with other parts of their economy. To “nationalize” or “expropriate” something is a more publicly defensible version of saying “the government stole it!” The series of nationalizations exploded following the inauguration of socialist President Hugo Chavez in 1999.

Since then, numerous industries have fallen into government “management,” where corruption, inefficiency, and waste run rampant. These nationalizations have manifested themselves within the oil industry, power generation/utilities, food production, food distribution, the banking sector, construction, manufacturing, mining operations, and, in one instance, the government has even gone so far as to nationalize people’s homes in popular tourist locations like the “Los Roques archipelago” to turn them into state-run tourist enterprises.²⁴⁻²⁶

As a result of the nationalizations, the country is facing massive shortages in nearly every market. Food, water, electricity, basic retail goods, and even toilet paper have all seen rationing.²⁷⁻²⁹

The fact that the nation has an issue distributing a basic commodity like toilet paper is a profound example of the adverse ramifications of bad government.

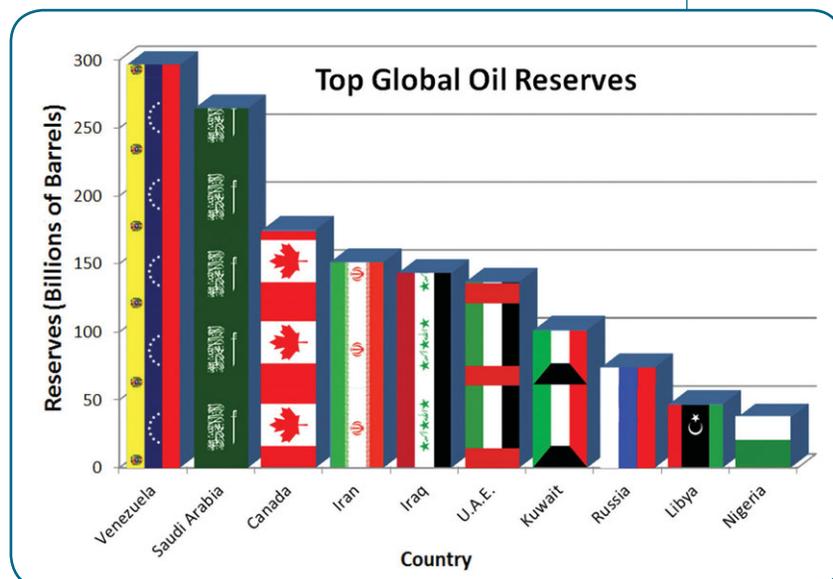
It also seems rather ironic that a nation like Venezuela, which domestically possesses the number-one fuel used to make energy, would have to ration electricity to its major cities. This rationing is a result of chronic power shortages in the nation; these black-outs are periodic and range from citywide to nationwide outages that started in 2009 and continue to this day.^{30,31} Again, this is just another failure among a long list of failures of the socialist government’s policies. As Winston Churchill once put it *“The inherent vice of capitalism is the unequal sharing of blessings; the inherent virtue of socialism is the equal sharing of miseries.”*

In an attempt to curb the shortages of goods, the new president of Venezuela, Nicholas Maduro, made sweeping legislation across the nation. He mandatorily proclaimed that all businesses in Venezuela couldn’t make above a combined **30%** profit margin on the products it sells. A violation of the “**30%** upper limit profit margin” would result in a prison term not exceeding **14 years**.³²⁻³⁵

The result of this upper limit on profits were immediate price cuts, followed by runs on the stores as consumers quickly cleared out products that all of a sudden were sharply discounted by virtue of government edict. As crowds queued and retailers were forced to sell goods below market prices, consumers saw increasing shortages of goods appear overnight.³⁶

Maduro’s reaction is quite typical and follows the time-tested pattern most governments institute when faced with shortages. They regulate. But regulation seldom ever solves this problem, especially given that, in this case, regulation is the underlying source of the problem. The majority of the time these regulations act only to temporarily mask, if not to exacerbate, the problem.

Yet, Maduro has come to the conclusion that history could not possibly repeat itself in nearly identical settings and he has thus decided to drastically reduce the ability for businesses to make profits; consequently, a severe toll has been taken on the country’s ability to innovate and thrive.



Deteriorating Infrastructure

Bureaucracy is tantamount to inefficiency and waste. The leaders and authorities will often convince the public of its necessity. They claim it is necessary to ensure things like liberty, security, equality, and prosperity.

The despots display the mirage of success to an eager and gullible public, all while hiding the crumbling foundation of failure the bureaucracy was built upon.

The proverbial cancer that is the bureaucracy starts small, but quickly grows over time as it takes on greater power, and engulfs more and more under its restricting eye of regulation.

This will continue until all progress is tied up in a web of red tape and nothing seems to move. This bureaucratic paralysis is a pivotal moment, as it signifies the underpinnings of a revolution. Only when the foundation begins to cave in, will those living under total tyranny realize the unfortunate truth that bad government is itself a foundation of inefficiency, corruption, waste, and oppression.

For Venezuela, the time of revolution seems to be drawing ever closer, as the literal foundation of society lies within the nation's infrastructure, and as of now Venezuela's infrastructure lies in a figurative state of rigor mortis.

After increasing instances of infrastructure collapses in Venezuela, citizens are becoming fed up with the lack of public services they've come to expect.

For a developing nation like Venezuela, infrastructure enhancement is vital to ensuring the long-term growth of its businesses.

The reliability of roads, bridges, railways, ports, and airports is essential. These basic infrastructures serve to distribute goods both domestically and internationally, which is the foundation on which all economies depend.

In Venezuela, deteriorated roads and bridges create substantially large traffic backups, while fledgling public transport suffers from seemingly nonexistent maintenance. There's a certain lack of reliability that accompanies anything government "managed" in Venezuela and the government's expectation that citizens remain complacent is becoming all the more unrealistic.

So when the Miranda State bridge collapsed from "excessive weight," citizens who would normally move back and forth from the capital to the eastern region of the country were forced to adjust their plans and cope.³⁷ In fact, many citizens who travel to and from



the capital have been forced to take up to a three-hour detour through Guárico State, an area that has made headlines for its "broken roads."³⁸ Still, residents continue to go about their normal lives all while knowing the government has neglected to perform the basic duty of road maintenance, which has dealt a great blow to the welfare of the people.

Most critics have come to the consensus that the alarming accident rates across the country are directly a result of the government taking money that would otherwise be put into infrastructure and instead using it to fund the nation's generous welfare and subsidies programs. In fact, Iván Freites, the Secretary-General of the United Federation of Oil Workers, directly blamed the government for the issue. He stated that "there is no investment in industry" after citing the neglect and lack of "proper hygiene and safety" carried out by the federal government.^{39,40}

Nearly every component of infrastructure in Venezuela has deteriorated to one extent or another. In one instance, the government-run airline Aeropostal had a DC-9 jet lose **both** its engines upon landing at the airport in Puerto Ordaz.⁴¹ The reportedly hard landing was said to have caused the engines of the 35-year-old plane to fall off, leading many to speculate upon the role the airline played in enabling this to occur in the first place.

Even Venezuela's primary industry has faced repercussions from the federal government's lack of investment in infrastructure. Amuay Refinery, Venezuela's largest oil refinery, felt the "shock and awe" of the collapsing foundation recently when leaking propane and butane sparked a deadly blast at the facility that killed 48, injured 151, and shut down the facility for a significant period of time.⁴²⁻⁴⁴

Inflation

Rampant inflation is among the largest problems Venezuela's economy is facing.

Inflation started jumping out of control as consumers, desperate to try and hold on to their wealth, have been restlessly searching for traders willing to convert their Venezuelan money into US dollars. Seeing as how the government-announced inflation rate was at **63.4%** for August of 2014, it would be wise for Venezuelans to seek an alternative currency, since keeping savings in the Venezuelan currency would mean that buying power of money saved would evaporate by **50%** every 9.9 months, compared to 20.5 years for US currency.⁴⁵⁻⁴⁸

Although the government-pronounced inflation rate is at a catastrophic **63.4%** for August of 2014, this is merely the government's take on the inflation rate. The implied rate of inflation, which is found by measuring the ability to convert the Venezuelan Bolivar Fuerte to an alternate currency, may actually prove to be significantly more daunting. According to independent sources that have tried to measure the lost value of the currency due to inflation, the rate is suspected to be above **300%** when trying to exchange Venezuelan Bolivares for US dollars.^{49,50}

Expectedly, a black market has formed in an attempt to cash in on the Venezuelan public's desperation to acquire a stable currency. The black market for currency has no shortage of customers willing to trade at exchange rates outlandishly greater than official rates. Though the official rate of exchange is currently set at 6.3 Bolivares to one US dollar, this is not at all in tune with the people's lack of confidence in the currency.⁵¹ And this is evident as masses wouldn't gather to trade 80 Bolivares to a dollar (an **immediate**

1,270% loss over the official rate) if the people believed the currency had a chance at recovering.⁵²

This shocking devaluation of the Venezuelan Bolivar Fuerte is reflective of the people's distrust in their government. Currency exchange on the Venezuelan black market is subject to buyers' demand, meaning that if people are willing to lose an astronomical portion of their money's value just to acquire a more stable currency, their faith in the Venezuelan government's problem-solving ability is clearly lacking.

Comically, the use of the Spanish word "fuerte," meaning "strong" was added to the currency name by the government of Venezuela in 2008, primarily for propaganda purposes.⁵³

Soaring Crime

Venezuela is a living model of the effects "bad government" has on society. The impropriety and corruption that manifested at the onset of the Chavez/Maduro regimes has been slowly spilling over to the helpless and unsuspecting populace.

Externally, it's difficult to determine whether the government's police force is completely bought off, grossly understaffed, outlandishly inefficient, or just blatantly incompetent, but seeing as how think tanks estimate that "only **8%** of crimes in Venezuela are prosecuted," it is pretty safe to say that it's all of the above.⁵⁴

Even worse, the Minister of Interior and Justice in Venezuela decreed that an estimated **one in five** crimes are committed by the police of Venezuela.⁵⁵

So not only are the police failing to do their job, they are being paid to essentially break the law they are tasked with enforcing.

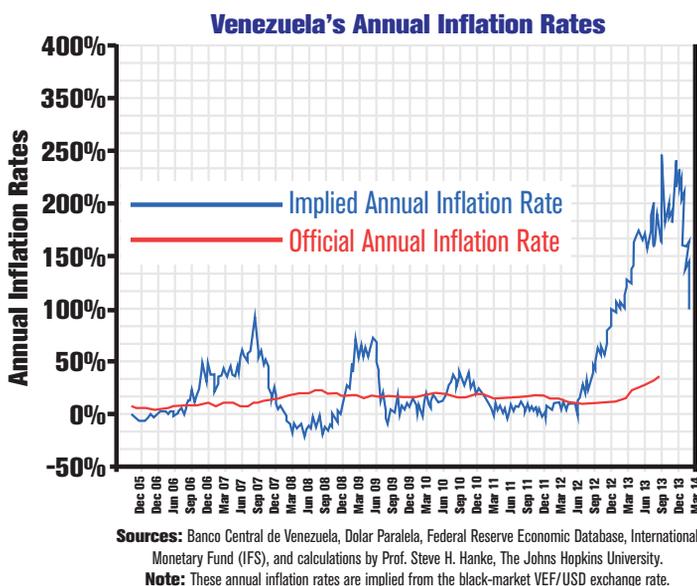
It would seem just about impossible for a government to top this degree of failure, so trying to imagine a more daunting scenario would leave most in a state of bewilderment and incredulity.

Unfortunately, however, Venezuela has yet to reach the summit of this mountain of failure.

At the start of Chavez's "Bolivarian Revolution" in 1998, the murder rate in Venezuela was approximately 19 killed out of every 100,000 inhabitants.⁵⁶

Today, the murder rate has reached 79 out of every 100,000, the second highest in the world.^{57,58} To put this scale of failure into perspective, South Sudan, a nation torn into existence by full-scale conflict and infamous for its still raging Darfur Genocide, has a homicide rate of just 21.3 out of every 100,000 people.^{59,60}

You did not read that wrong. A country undergoing an active genocide has less than one-third the murder rate of Venezuela.



Lack Of Medical Care

Very few would be surprised to learn that governments routinely lie to their citizens. In fact, the unscrupulous behavior of some governments makes it seem as if there is no line that can't be crossed. This includes promising the naïve and the unfortunate anything they want to hear to gain power, and even though these incredulous promises seem to be perpetually regurgitated, the masses never cease to believe claims of the government and the politicians.

So when Hugo Chavez promised his citizens free, universal health care and even went so far as to have it put into the 1999 Venezuelan constitution, how could he possibly have misled his citizens?⁶¹⁻⁶³ Well, the answer is quite simple. There is no distinction between good health care and appalling health care. The current Venezuelan government does not enable the public medical system to give quality care to its citizens; it just proclaims that citizens are entitled to some form of health care, free of charge.

In an environment such as this, where there is little to no incentive to be persistent, creative, and innovative, progress will be brought to a standstill.

Combine this with government-mandated price cuts, restricted profit margins, and the rampant inflation rate that has led to shortages throughout the nation, and you will see progress start moving backwards.

For example, if told that your local hospital had just **5%** of the materials it needed to assist patients and perform surgeries, would that be a comfortable and reassuring statement? If you were then told that **95%** of all the *other* hospitals in your nation were in

a scenario that was either the same or **worse** due to government-incited shortages, would it be reasonable to expect citizens to remain complacent and keep a firm stance of approval? It would be difficult to imagine a scenario so grim, but in Venezuela, that scenario is all too real.⁶⁴

Another report from the Venezuelan Association of Distributors of Medical Equipment indicated that of the **239** necessary items a hospital needs in order to even function, **200** were “absolutely lacking” in the country.⁶⁴

To show how serious the impact on health care has been, during Chavez's reign, half the public health care doctors quit, and half of those doctors left the country. In October of 2013, the situation got so severe that organ donations, transplants, and nonemergency surgeries were all suspended due to shortages in operating supplies.^{4,63}

This complete failure should be condemned as an intolerable atrocity, if not revolution worthy, but most citizens still sit idly by as the cancerous grip of “bad government” strangles the nation's welfare.

Venezuela's public hospitals have taken on a massive amount of the impoverished citizen's needs, but the hospitals remain understaffed, undersupplied, and underfunded, making them incapable of meeting the demand.⁶⁵ The private sector, although equally crippled by the same government-incited shortages, is picking up the tremendous slack the public medical facilities have left.

In Venezuela, there are approximately 50,000 hospital beds available at any given time, only 8,000 of which are held by private, nongovernment run





hospitals. Despite this massive difference in available resources, the public system is so inefficient that the private system treats **53%** of the nation's patients.^{4,66} Laughably, government employees who are entitled to universal government health care have, by and large, not utilized it. Instead, public employees are given insurance, which most use to get health coverage from the private, for-profit hospitals.

It's amazing the amount of confidence the government pretends to have in its system, but that's not even the most of it. Chavez, the inventor and aggrandizer of the public health system, had such little trust in his own system that after he was diagnosed with cancer he flew to **Cuba** to undergo medical treatment.⁶⁷

Following his death, instead of attempting to increase the welfare and efficiency of the medical system up to the standards Chavez *pretended* they were, the government decided to point the finger in an unbelievable direction. It blamed the United States. That's right, Venezuela actually launched a full investigation as to whether or not the United States gave President Chavez a kind of cancer that could not be treated.⁶⁸

Apparently, that could be said with enough confidence that the public had a chance of believing it. If Venezuela can get by with saying something so impossibly moronic, then there truly is no line that can't be crossed, and any informed skeptic should hesitate to take the Venezuelan government's word with anything short of a mountain of salt.

Systemic Corruption

Measuring the immensity of a country's corruption is often a difficult task, as corruption tends to manifest itself through so many different avenues, and dishonesty and fraud occur mostly behind closed doors.

But when unpopular President Nicholas Maduro ran for re-election in 2013 against opposition candidate Henrique Capriles, corruption became an in-your-face experience.

It came in the form of campaign advertising. Venezuelan law says no candidate can have more than

three minutes of campaign advertising in any given day.⁶⁹⁻⁷¹ The law may have been intended to make elections less influenced by money, but the law has a fatal flaw that the president eagerly took advantage of.

As president, Maduro had the power to address the nation however often, and as widely broadcasted as he saw fit.^{72,73}

That must have been quite convenient for Maduro, since all presidential addresses, no matter what the form, are funded by the state.⁷² This makes the act of overwhelming your political opponents astonishingly easy. Maduro simply had the federal government buy all the airtime and fill it with self-aggrandizing propaganda, effectively drowning out the opposition. Cumulatively, Maduro garnered more than 65 hours of airtime for speeches made during the campaign for presidency. Unfortunately, his opponent Henrique Capriles was only able to acquire an approximate total of six hours of airtime for his speeches.⁷⁴

Money, media, and message make up the foundation of any campaign. It goes without debate that media and money are essential to making any campaign's message heard.

It's also quite obvious that a president who wields the state's budget (money) in one hand and publicly owned television (media) in the other, as if they were weapons, would seek to water down his opponent's message.^{75,76}

After the results of the election came in, candidate Henrique Capriles refused to accept the result, claiming the election was illegitimate. He claimed "they stole the election."⁷⁷

Beyond face value, Capriles has some serious weight to his claim. Past elections in Venezuela have proven that expectations of fair elections and free choice are a fool's dream.

Electoral fraud is not ancient history in Venezuela. During Chavez's election in 2006, there were countless reports that government workers were **forced** to vote for Chavez in addition to being **forced** to march in his parades.^{78,79}

Failure to comply would not only result in the employees losing their jobs, but they would also be privately labeled as political dissidents and consequently **blacklisted** from holding future public employment.⁷⁸

It would be just about impossible for an honest government to get away with such blatant extortion.

But Venezuela does not have an honest government. Venezuela has been ranked the most corrupt country in the western hemisphere, and internationally it's the 17th most corrupt nation, found about midway between the corruption levels of Iran (**less corrupt**) and North Korea (**more corrupt**).⁸⁰

Unfortunately, not every instance of deficiency and failure can be addressed in a single article.

If there were ever to be a complete list of the hardships and indignities that the people of Venezuela have been forced to endure, its content would span many books.

This truth teaches an important lesson.

The lesson is that Venezuela should be a prosperous country, but instead, it is a nation nearing ruin and rubble, crumbling under the foot of “bad government.”

Citizens of the United States should not turn a blind eye to the wrongdoings of our current government. Unlike countries that physically repress dissidents, US citizens retain the individual power to speak out against government waste, inefficiency, and corruption.

It's unfortunate that US citizens have become resistant to change. The penalties for failing to demand meaningful corrective actions in the present can lead to catastrophic reductions in our future living standard and even our life span.

We should remind ourselves of the mistakes of our fellow man. We should be emboldened to never tolerate governments that oppress their citizenry, to reject any feeling of complacency when we are promised so much, yet given so little. We the people have the power to rise up, resist, and free ourselves from oppression. We have all the power in the world, if only we would unite to use it.

For life, rationality, and prosperity,
Chase Falcon



Chase Falcon is the second son of William Faloon. He was 17-years-old when asked to write this article to document severe difficulties endured in Venezuela, some that may also occur in the United States if citizens remain on the political sidelines. Chase helped design and initiate an experimental age-delaying protocol at the age of 13 that he tested on himself and will report the long-term effects as he matures. Chase changed his last name to “Falcon” to better enable name recognition as he has political ambitions aimed at solving pervasive issues this nation faces.

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RHODIOLA EXTRACT

Supports Cellular Energy Metabolism!

A common complaint among older adults is loss of physical and mental energy. As people age, their cells' ability to produce energy is diminished. Many scientists believe that cellular energy deficit is a critical factor in the onset of many problems.

The Russian herb **rhodiola** (*Rhodiola rosea*) has demonstrated a remarkable ability to *support cellular energy metabolism*.* **Rhodiola** promotes higher levels of ATP (adenosine triphosphate) and CP (creatine phosphate) in the cellular power plants known as the *mitochondria*, thus providing more of the energy molecules need to power many daily activities.¹

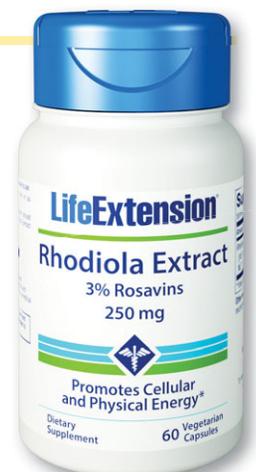
In a human trial, **rhodiola** aided exercise endurance after just a single dose.² In another double-blind, crossover human trial, **rhodiola** increased several measures of mental performance, including associative thinking, short-term memory, calculation, concentration, and speed of audiovisual perception. Statistically significant improvements were reported after just two weeks of supplementation.³

Life Extension® has formulated a **Rhodiola Extract** that provides **250 mg** of *Rhodiola rosea* extract in each capsule.

Unlike other rhodiola supplements on the market today, **Rhodiola Extract** uses only the authentic *Rhodiola rosea* species and is standardized to contain 3% *rosavins* and not less than 1% *salidroside*s—matching the concentrations of active “adaptogens” used in clinical trials.

Rhodiola Extract is an extremely low-cost supplement. The retail price of a bottle of 60 vegetarian capsules (a two-month supply) of **Rhodiola Extract** is just **\$11.75**. If a member orders four bottles, the price is reduced to only **\$7.94** per bottle!

Caution: Individuals with manic or bipolar disorder should not use Rhodiola. Take early in the day if Rhodiola Extract interferes with your sleep.



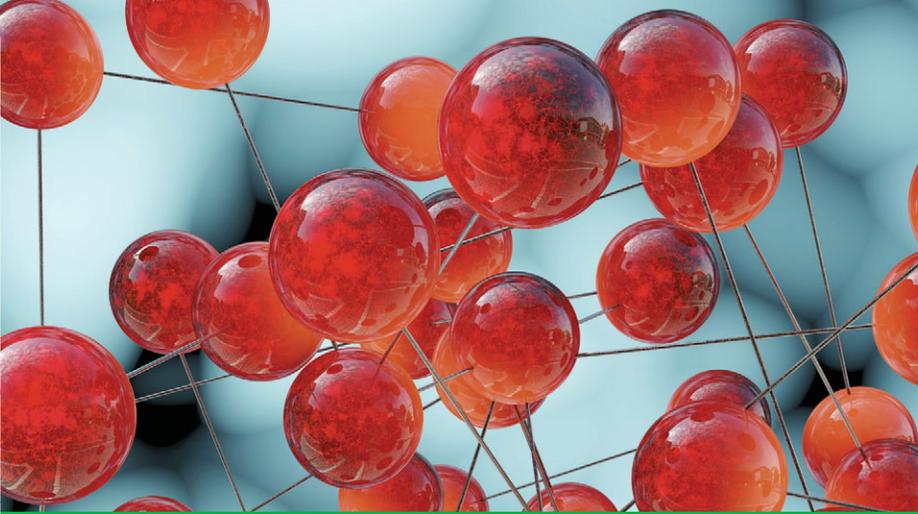
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To order **Rhodiola Extract**,
call 1-800-544-4440 or
visit www.LifeExtension.com

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



ASK THE DOCTOR

BY SCOTT FOGLE, ND

What Is The Best Way To Test Your Hormones?



Scott Fogle, ND

Q: What is the best way to test my hormones? I see that there are different methods such as saliva, blood, and urine.

A: I am constantly asked this question regarding the various methods available for hormone testing. Unfortunately, there's not a simple answer because each of the methods has unique pros and cons. The question is compounded by the fact that doctors and researchers have differing opinions on which testing method is the best. Making the matter even more complex, laboratory companies with vested interests also muddy the waters by presenting biased evidence showing that their way is the best way.

So what is the truth? Each of the methods for testing hormones has its pros and cons. Each method can provide valuable and important information, but because the information is different for each method, the method(s) you use should be determined by your diagnostic needs. Ideally, a physician will determine the best testing method after carefully listening to a patient's medical and family history combined with the results of a physical exam.



Some conditions are easy to test for, such as menopause, which typically only needs one testing method, any of which can work fine. At Life Extension®, we typically suggest blood testing for menopause since it is easy, inexpensive, and accessible.

Other conditions, such as when a woman is struggling with terrible perimenopausal symptoms, are more difficult to test for because hormone levels change daily and are hard to pin down. Since a blood test is only a snapshot in time, the 24-hour urinary hormone test or multiple saliva tests done in spaced intervals can often provide more helpful information.

In certain complex situations, more than one testing method may be needed. In fact, at Life Extension, we may suggest doing both the blood and urine test at the same time in difficult situations, such as when a woman is struggling to find the right hormone dosages while going through a difficult perimenopausal phase or a man is trying to figure out why his

testosterone levels are not improving with testosterone therapy. While more expensive, combining two different methods of testing provides more valuable information than doing only one method and can provide that extra insight needed for challenging cases.

Three Types Of Tests

Remember, there is no one perfect way to test hormones. Each test has its merits and its limitations. Let's look at each method for its unique strengths and weaknesses.

Blood Testing

Blood testing is a tried-and-true way to check hormones and is regarded by many to be an excellent approach. It is readily accessible, and has good correlation with symptoms. It can test both free (active) and total levels of testosterone (something saliva and urine can't do). It can also be used to assess levels of sex hormone binding globulin (SHBG), which is important for maintaining reservoirs of sex hormones, as well as for protecting them from being excreted or metabolized too quickly. For men, **annual blood testing** is important because it's the only way to accurately measure **PSA** levels. Whether a man chooses to restore youthful hormone balance or not, annual PSA tests to assess the health of one's prostate gland are vitally important.

To help ensure accuracy, the CDC recently launched a volunteer program for labs that has further advanced accuracy and reliability in blood testing. The CDC makes available on its website (www.cdc.gov), the names of labs that have passed the performance criteria for the CDC Testosterone

Reference Method in adult male and female serum. In fact, the methods used by Life Extension for its free and total testosterone have been CDC-certified every year since the program's inception in 2011. Unfortunately, there is no similar certification program for saliva or urine hormone testing at this time.

However, blood testing also has some limitations. First, it only provides a single snapshot in time and sometimes more information is needed since hormones can have daily and monthly rhythms. Also, for those doing bioidentical hormone replacement, it's important to know that blood testing cannot easily be used to assess estrogen metabolites to provide a 2/16 hydroxysterone ratio. This ratio can be helpful since there are scientific studies that found some of the estrogen metabolites may promote cancer while others may have beneficial *anticancer* qualities. Blood testing does very well assessing estradiol levels, but blood testing cannot be used to check estriol levels. Since most bioidentical hormone replacement is typically done using a combination of estradiol and estriol, sometimes it is helpful to check both. However, for many women, an improvement in estradiol correlates with improvement in estriol so it is not necessary to test for estriol except in situations where the woman's symptoms are not improving as expected.

The 24-Hour Urinary Panel

The 24-hour urinary hormone panel has several positive qualities. First, it provides the average hormone level over a 24-hour period, removing the variable of daily fluctuations in one's hormone levels. It also tests for all three estrogens (estrone, estradiol, and estriol) and provides additional helpful information, such as the levels of 2/16 hydroxysterone ratio

and 2-methoxyestradiol (suspected to have anticancer qualities). Although the test is more expensive than blood or saliva, it tests more hormones and hormone metabolites than any blood or saliva panel, which results in a higher level of information that is especially helpful in difficult cases.

Even though it has so many benefits, the 24-hour urinary hormone panel has a few limitations as well. The main problem is that it only measures the hormones the body is excreting in the urine. And while excreted hormones often correlate with tissue and blood levels, this is not always the case. This method is also inconvenient because it requires a person to collect all their urine over a 24-hour period.

Saliva Testing

Saliva testing is very easy to do. It doesn't require a blood draw and it looks at free hormone levels. It also can test for the hormone



estriol, which is helpful for difficult cases when doing bioidentical hormone therapy such as BiEst or TriEst. Saliva testing allows for charting changes in hormones over time (such as a monthly menstrual cycle) through multiple samples, thus providing information about the peaks and troughs of a person's hormone levels.

These are all positive aspects to saliva testing. However, there are

limitations too. The first is accuracy. In all laboratory testing, the more you have of any substance, the greater your accuracy will be in testing it. The problem with saliva testing is that hormones are found in much lower concentrations in saliva than in blood or urine. This makes it much harder for labs to consistently report salivary hormones with as much accuracy as blood or urine. In addition, contamination from bleeding gums or even aggressive tooth brushing can affect a person's results and make the levels seem artificially high.

Further, other factors such as salivary pH and flow rate can also affect results. In the past, when split samples from the same person were sent to different salivary testing labs, the results from the different labs were unfortunately very different, leading some researchers to discount saliva testing altogether. Fortunately, as the technology has improved, many of the labs have improved their ability to provide accurate and reproducible results. However, the fact remains that because hormone levels are much lower in the saliva, any lab that tests salivary hormones will need highly proficient quality control standards to assure consistent and reliable accuracy.



Consider The Pros And Cons

As you can see, each of the different methods for hormone testing has its merits and limitations depending on your diagnostic needs.

It is important to understand the pros and cons of each method and to use the method (or methods) that will provide the most helpful information for your unique situation.

Life Extension offers several excellent blood hormone panels as well as a comprehensive 24-hour urinary hormone panel. For most people seeking to obtain a comprehensive picture of their hormone status, the blood hormone panels are a great place to start. Life Extension's health advisors are available to help you obtain more information on which tests may be best for your unique situation.

Why Do Results Differ From Lab To Lab?

Another question frequently asked is why hormone results from LabCorp are different than results from Quest for the same hormone test.

At Life Extension, we often encounter customers who are concerned because they received a hormone result from Quest that their doctor ordered, and it doesn't match the result from Life Extension using LabCorp.

What most people don't realize is that there is no standardization between commercial blood labs for hormone testing. It is a common assumption that all labs are testing hormones the exact same way and that the numbers should be the same between labs. Unfortunately, this is not the case. Because different labs use different methods, the results are not directly compa-

table. And since the methods, the reagents, and the equipment are all different, the number you get from one lab may not be comparable to the number from another lab—even though the name of the test is the same.

This is so frustratingly common that when I read a study on hormone testing, the first thing I do is go to the "Materials and Methods" section to see which lab did the test and what methodology was used. Only then can I put the hormone levels reported in the study into the proper perspective. This lack of standardization between labs makes it very frustrating for clinicians and researchers alike.

To make matters worse, there are also multiple ways to test the same hormone within each lab. Testosterone is the classic example. The two primary methods used to assess testosterone in the blood are an *immunoassay methodology* or *liquid chromatography* coupled with *tandem mass spectrometry*. This situation leads to a lot of confusion among patients and doctors alike.

The best solution is to stick with the same lab and use the same methodology each time.

Foreign Testing Numbers Don't Match American Numbers

Blood work done in other countries is often reported in different units than in the US. Other countries often report results as a *molar concentration*. For example, in other countries, testosterone is commonly reported as **nmol/L** (nanomole/liter), while in the US, it is reported as **ng/dL** (nanogram/deciliter). This means that in order for the units to match up, conversions must be made.

However, even after converting the units, there is still the issue of possible differences in methodology, especially when testing for hormones. It is less of an issue with tests such as CBC (complete blood count), chemistry, and glucose since there is better standardization among those common tests (although it will always depend on the lab doing it). But the fact that there is no standardization for hormones between labs can make it very challenging for doctors to compare hormone results from overseas labs.

Although a comparison can be approximated, it will never be as good as having your lab work done consistently through the same lab, which is highly recommended whenever possible.

Summary

Hormone testing becomes increasingly important as you age. Testing can allow you and your physician to anticipate and prevent various health conditions that are directly attributable to hormonal imbalance. It is therefore important to have your hormones tested annually. Each test has its own strengths and weaknesses depending on your diagnostic goals. ●

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

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



COOL DOWN AGING



Recently, scientists have identified one of the main culprits responsible for premature aging: rogue protein galectin-3. When galectin-3 is elevated due to aberrant cell growth, tissue injury, aging, or other factors, it stimulates an imbalanced inflammation response and triggers a cascade of consequences for cellular and cardiovascular function, joint and skin health, and more.^{1-3*}

But there *is* an answer. Derived from the pith of citrus fruits and modified to meet patented molecular specifications, PectaSol-C[®] Modified Citrus Pectin is the most researched natural galectin-3 inhibitor.¹ The molecular features of PectaSol-C[®] allow it to enter the circulation with optimal bioactivity, so that it can bind to excess galectin-3 and block its pro-aging effects.⁴ PectaSol-C[®] is also shown to support immune function, as well as safe elimination of toxins and heavy metals such as lead, mercury, and arsenic.^{5,6*}

Cool down aging with PectaSol-C[®], the only clinically proven Modified Citrus Pectin delivering versatile anti-aging benefits.^{7,8*}

Clinically researched PectaSol-C[®] delivers comprehensive anti-aging benefits:

- Supports Cellular and Cardiovascular Health*
- Safely Removes Heavy Metals and Toxins*
- Promotes Immune Health*
- Supports Healthy Galectin-3 Levels*

Available in Powder and Capsules

PectaSol-C[®]
270 Veg. Capsules

Item # **01080**
Retail: \$79.95
Member: \$59.96



PectaSol-C[®]
454 Grams Powder

Item # **00342**
Retail: \$109.95
Member: \$82.46



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

Anti-Aging HAND CREAM

Over time, daily activities and unprotected exposure to sunlight and environmental factors wreak havoc on the thin skin on the hands. The damage manifests as unsightly age spots, wrinkles, dryness, and crepiness that make people look older than they are.¹

Cosmesis Advanced Peptide Hand Therapy is a new formulation containing **six** natural compounds that help rejuvenate the appearance of aging hands by *lightening dark spots, minimizing the crepe-like look of wrinkles, hydrating the skin, and correcting skin tone.*

N-ACETYL GLUCOSAMINE AND RETINOL

Aging-increased pigment production causes age spots, discolored patches, and uneven skin tone. **N-acetyl glucosamine** slows down pigment production, and was clinically shown to even out skin tone and soften brown spots in just eight weeks.² **Retinol**, a form of vitamin A, was demonstrated to support skin health after sun exposure.³

SARSASAPOGENIN AND MACELIGNAN

With age, hands lose subcutaneous fat, causing a skeletal-like appearance and increasingly visible tendons and veins. The plant compound **sarsasapogenin** was found to promote factors involved in adipocyte differentiation by **201%**⁴—a process supportive of the formation of subcutaneous adipose tissue and plumping of the skin. The nutmeg compound **macelignan** was shown to increase lipid storage within adipocytes, indicating support for plumping of the skin and minimizing wrinkles.⁵

MACADAMIA OIL

Aging hands are commonly dry and flaky. **Macadamia oil** is among the richest sources of palmitoleic acid⁶—a key component of sebum that supports hydration⁷—enabling it to moisturize and soften dry, mature skin. It also provides natural moisturizers squalene and vitamin E.⁸⁻¹⁰

ACETYL OCTAPEPTIDE-3

Years of hand muscle contractions result in wrinkles. By modulating the neuronal excitability behind muscle contractions, **acetyl octapeptide-3** was shown to reduce wrinkle depth up to **63%**.¹¹

Cosmesis Advanced Peptide Hand Therapy incorporates all six of these compounds into one synergistic formula that noticeably rejuvenates the appearance of aging hands.

A four-ounce bottle of **Cosmesis Advanced Peptide Hand Therapy** retails for \$46. If a member buys two bottles, the price is reduced to **\$29.25** per bottle.



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To order Cosmesis Advanced Peptide Hand Therapy, call 1-800-544-4440 or visit www.LifeExtension.com



BY ALEXIS FRANZI



WELLNESS PROFILE

Brandon Fields Teaching Concussion Awareness



Brandon Fields

Brandon Fields is no stranger to success. The 30-year-old punter for the Miami Dolphins has started every game since joining the team in 2007. He holds franchise records for gross and net averages for both single season and career. He also played in the 2014 NFL Pro Bowl.

But as impressive as Fields' NFL career has been, perhaps his most important successes have been off the field.

In 2011 and 2012, Fields won the Miami Dolphins' Nat Moore Community Service Award for giving back to the community. In 2012 and 2013, Fields received the Miami Dolphins' nomination for the Walter Payton NFL Man of the Year Award, which honors volunteer and charity work.

In addition to donating his time and effort to numerous charities, Fields and his wife Katie started the Youth Fitness Fund, an organization that encourages today's young to be physically active and live a healthy lifestyle. A big part of being physically active is learning how to stay safe, which is why Fields' passion is to raise awareness among children and parents of a serious problem plaguing the sports world: head injuries.

NFL Controversy

Fields has made it his mission to educate people about the dangers of concussions—an issue that has caused major controversy in the NFL in recent years. The NFL has been accused of covering up the dangers caused by repeated blows to the head, but the latest research makes this issue impossible to ignore.

Last year, in the NFL alone, there were 228 diagnosed concussions during preseason and regular season practices and games combined. Concussions can result in brain damage and may eventually increase the risk of dementia, Alzheimer's, or chronic traumatic encephalopathy (CTE).

CTE is a disease of the brain found primarily in athletes with a history of repetitive brain trauma. This trauma triggers progressive degeneration of brain tissue that can begin months, years, or even decades after the last concussion. The brain degeneration is associated with memory loss, confusion, impaired judgment, paranoia, impulse control problems, aggression, depression, and, eventually, progressive dementia.

Originally, CTE was most associated with boxers and was diagnosed as far back as 1928 when it was called “punch-drunk syndrome” because boxers experienced symptoms such as an unsteady gait, slowed movement, confusion, and speech problems.

But researchers have determined that CTE is far more prevalent than first realized, and more and more professional football players have since been diagnosed.

Over the past few years, autopsies of more than 50 ex-NFL players revealed evidence of CTE. Although the disease can only officially be diagnosed post-mortem, the latest

advances in brain imaging technology have allowed doctors to spot signs of the disease while a person is still alive. Recently, famous living players such as Hall of Fame inductees Tony Dorsett and Joe DeLamielleure, and former NFL All-Pro Leonard Marshall, have been diagnosed as having signs of CTE.

Because there's no current way to treat CTE, prevention is the best—and *only*—way to avoid the tragedy of chronic traumatic encephalopathy.

And that's exactly what Brandon Fields has made it his mission to do. He knows that pro football players and boxers aren't the only ones facing the dangers of head trauma. All kids who play sports are at risk, which is why Fields has taken it upon himself to educate kids, parents, and coaches of the dangers of concussions, how to avoid head trauma in the first place, and how to recognize a concussion when it happens.

Should Kids Play Football?

Naturally, given the increased awareness over the potential dangers of contact sports, many parents are questioning whether they should allow their children to play football, or any sport that could possibly allow for concussions.

But in a society where getting kids to be active is increasingly difficult, Fields believes keeping kids out of sports poses a far greater risk to their health.

As a professional athlete and a new parent himself, Fields explains why parents shouldn't worry about letting their kids play football, or any other sport that would possibly allow for concussions.

“The benefits of playing sports outweigh the general concerns that parents might have about their children playing any contact sport,” Fields says. “Parents and coaches need to be aware of the warning signs of all on-the-field



injuries, while players need to be careful and practice proper techniques to avoid injuries. Contact sports, by their nature, have risks, but they also have benefits like teaching kids about sportsmanship, team building, working together, etc.”

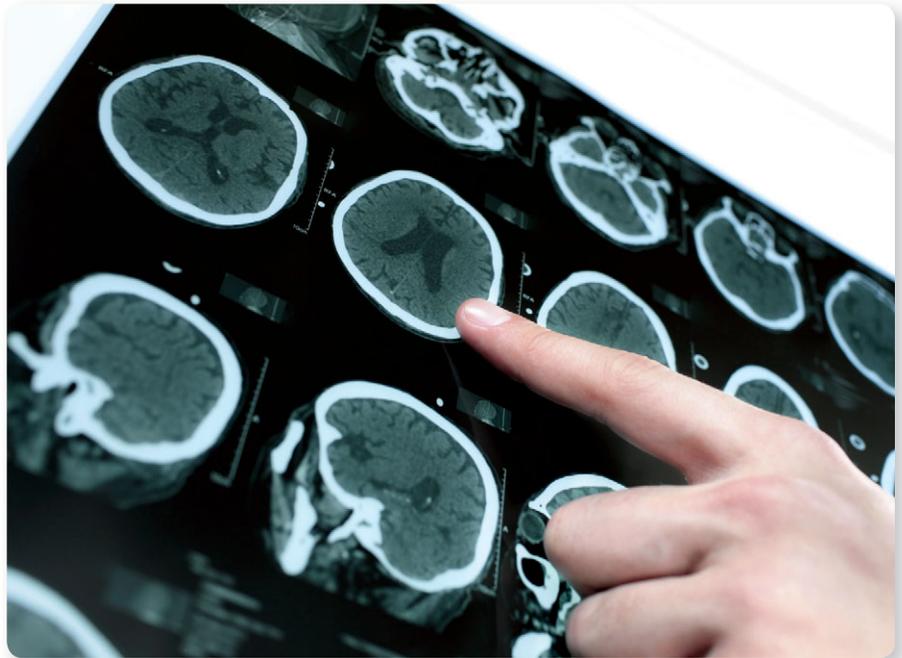
It’s all about knowledge and awareness, he adds, such as knowing how to prevent these kinds of injuries in the first place, then being aware of the warning signs when such an injury occurs.

While there’s always a risk when you play contact sports, there are many safety precautions parents and coaches can take in order to help lower the odds of sustaining a concussion. These include wearing the right protective equipment, such as a well-fitting helmet, following the rules of safety, and not going back into the game if a concussion is suspected.

This last precaution is especially critical because if an athlete suffers a second blow to the head before fully recovering from the first one, he or she is at risk of a rare but often fatal condition called *second impact syndrome*.

Some common symptoms of a concussion include headache, loss of memory, and confusion. These symptoms may last days, weeks, or even longer. But be aware: Concussions aren’t always easy to identify, and contrary to popular belief, they don’t always involve a loss of consciousness.

In fact, according to research done by the Centers for Disease Control, **90%** of most diagnosed concussions *don’t* involve a loss of consciousness, and this might falsely allow the child, parent, or coach to think everything is okay. Most kids are resilient and even if they’ve been knocked down, they want to go right back out and play.



However, Fields stresses it’s the job of the parents and coaches to know when it is time for a player to sit out.

How Brandon Fields Keeps Himself Healthy

When it comes to maintaining optimal health, Fields practices what he preaches. In addition to a healthy diet and plenty of exercise, Fields takes numerous supplements specifically designed to support both his overall health, and ones specifically designed to support his knee and hip joints—the joints most important to his profession as a kicker.

“I take a general multivitamin and fish oil, as well as joint support supplements such as glucosamine and manganese,” Fields says.

These are excellent choices for keeping joints and bones healthy. Glucosamine stimulates the manufacture of glycosaminoglycans, which are important components of the cartilage needed for healthy

joints, while manganese plays a role in energy production as well as normal bone formation and development. Fatty acids from fish oil support focus, mood, learning, and positive behavior.

Perhaps most of all, Fields believes that staying active is essential for good health, which is why he dedicates so much time to organizing programs designed to teach kids about health, fitness, and maintaining a positive attitude.

By teaching kids the importance of staying active and safe today, he believes they are well on their way to a healthier tomorrow. ●

To find out more about Brandon Fields’ charities or to make a donation, visit www.BrandonAndKatieFields.com.

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



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

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2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable health advisors by calling 1-800-226-2370; or review the results with your personal physician.

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For Our Local Members:

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

Blood Testing The Ultimate Information

MOST POPULAR PANELS

Life Extension Member Pricing

- | | |
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| <p>○ COMPREHENSIVE PANELS</p> <p>○ MALE LIFE EXTENSION PANEL (LC322582) \$269
 Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes: C-Reactive Protein
 DHEA-S Homocysteine
 TSH for thyroid function Free Testosterone
 Estradiol Total Testosterone
 Vitamin D 25- hydroxy PSA (prostate-specific antigen)
 Hemoglobin A1c</p> <p>○ FEMALE LIFE EXTENSION PANEL (LC322535) \$269
 Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes: C-Reactive Protein
 DHEA-S Homocysteine
 TSH for thyroid function Free Testosterone
 Estradiol Total Testosterone
 Progesterone Vitamin D 25- hydroxy
 Hemoglobin A1c</p> <p>○ WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028) \$275
 CBC/Chemistry profile (see description at right), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-reactive protein (high sensitivity), and Ferritin.</p> <p>○ WEIGHT LOSS PANEL-BASIC (LC100027) \$130
 CBC/Chemistry profile (see description above right), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Insulin and Hemoglobin A1c.</p> <p>○ MALE HORMONE ADD-ON PANEL (LCADDM)* \$155
 Pregnenolone and Dihydrotestosterone (DHT)
 To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.</p> <p>○ FEMALE HORMONE ADD-ON PANEL (LCADDF)* \$125
 Pregnenolone and Total Estrogens
 To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.</p> <p>○ LIFE EXTENSION THYROID PANEL (LC304131) \$75
 TSH, T4, Free T3, Free T4.</p> <p>○ FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011) \$299
 CBC/Chemistry Profile (see description above right), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3.</p> <p>○ 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.</p> | <p>○ THE CBC/CHEMISTRY PROFILE (LC381822) \$35
 Note: This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.</p> <p>CARDIOVASCULAR RISK PROFILE
 Total Cholesterol Cholesterol/HDL Ratio
 HDL Cholesterol Estimated CHD Risk
 LDL Cholesterol Glucose
 Triglycerides Iron</p> <p>LIVER FUNCTION PANEL
 AST (SGOT) Total Bilirubin
 ALT (SGPT) Alkaline Phosphatase
 LDH</p> <p>KIDNEY FUNCTION PANEL
 BUN BUN/Creatinine Ratio
 Creatinine Uric Acid</p> <p>BLOOD PROTEIN LEVELS
 Total Protein Globulin
 Albumin Albumin/Globulin Ratio</p> <p>BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE
 Red Blood Cell Count Monocytes
 White Blood Cell Count Lymphocytes
 Eosinophils Platelet Count
 Basophils Hemoglobin
 Polys (Absolute) Hematocrit
 Lymphs (Absolute) MCV
 Monocytes (Absolute) MCH
 Eos (Absolute) MCHC
 Baso (Absolute) Polynucleated Cells
 RDW</p> <p>BLOOD MINERAL PANEL
 Calcium Sodium
 Potassium Chloride
 Phosphorus Iron</p> <p>○ COMPREHENSIVE THYROID PANEL (LC100018) \$199
 TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA</p> <p>○ FOOD SAFE ALLERGY TEST** (LCM73001) \$198
 This test measures delayed (IgG) food allergies for 95 common foods.</p> <p>○ ADRENAL FUNCTION PANEL (LC100021) \$136
 DHEA-S, AM/PM Cortisol, Glucose, Insulin, Lipid Panel, RBC magnesium</p> <p>○ HEALTHY AGING PANEL-COMPREHENSIVE† (LC100026) \$249
 CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Homocysteine, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Free T3, Free T4, Ferritin, Urinalysis, Fibrinogen, and Insulin.</p> <p>○ 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.</p> <p>○ VAP™ TEST* (LC804500) \$90
 The VAP™ cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.</p> <p>○ VAP™ PLUS* (LC100009) \$330
 VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.</p> |
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* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional \$35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.

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



Other Popular Tests and Panels Life Extension Member Pricing

- | | |
|--|--|
| <p><input type="radio"/> NUTRIENT PANEL[†] (LC100024) \$349
Vitamin B12, Folate, Vitamin D 25-hydroxy, Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC magnesium.</p> <p><input type="radio"/> ENERGY PROFILE (LC100005) \$375
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"/> ANEMIA PANEL* (LC100006) \$86
CBC/Chemistry Profile (see description previous page), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate, Reticulocyte Count.</p> <p><input type="radio"/> INFLAMMATION PANEL (LC100007) \$135
CBC/Chemistry Profile (see description previous page), C-Reactive Protein (high sensitivity), Sedimentation Rate, Rheumatoid (RA) Factor, Antinuclear Antibodies (ANA) Screen.</p> <p><input type="radio"/> THYROID ANTIBODY PROFILE (LC100004) \$99
Thyroid Antithyroglobulin Antibody (ATA) and Thyroid Peroxidase Antibody (TPO).</p> <p><input type="radio"/> CARDIAC PLUS* (LC100008) \$145
CBC/Chemistry profile (see description previous page), Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), Fibrinogen, Homocysteine.</p> <p><input type="radio"/> Lp-PLA2 (PLAC[®] TEST) (LC123240) \$125
This test is used to aid in predicting risk for coronary heart disease, and ischemic stroke associated with atherosclerosis. Lp-PLA2 is a cardiovascular risk factor that provides unique information about the stability of the plaque inside your arteries.</p> <p><input type="radio"/> GLYCOMARK (LC500115) \$99
This test measures your average maximum glucose over the past two weeks and is an effective tool in monitoring postmeal glucose control.</p> <p>CANCER RISK TESTING</p> <p><input type="radio"/> IGF-1 (LC010363) \$75
High levels of IGF-1 (Insulin-like growth factor) are associated with breast and prostate cancer.</p> <p><input type="radio"/> NATURAL KILLER CELL SURFACE ANTIGEN (LC505016) NEW \$110
Natural Killer (NK) Cells are highly selective white blood cells found in our immune system. They patrol the body looking for cells that are infected with cancer or other viruses. This test measures the number of natural killer cells but it does not measure their activity.</p> <p><input type="radio"/> PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322) \$31
Screening test for prostate disorders and possible cancer.</p> <p><input type="radio"/> GALECTIN-3 (LC004110) \$90
Increased concentrations of galectin-3 are prevalent in growing cancers such as prostate, ovarian and breast.</p> | <p>HORMONES</p> <p><input type="radio"/> DHEA-SULFATE (LC004020) \$61
This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.</p> <p><input type="radio"/> MALE BASIC HORMONE PANEL (LC100012) \$75
DHEA-S, Estradiol, Free and Total Testosterone, PSA</p> <p><input type="radio"/> FEMALE BASIC HORMONE PANEL (LC100013) \$75
DHEA-S, Estradiol, Free and Total Testosterone, Progesterone</p> <p><input type="radio"/> DIHYDROTESTOSTERONE (DHT)* (LC500142) \$99
Measures serum concentrations of DHT.</p> <p><input type="radio"/> ESTRADIOL (LC004515) \$33
For men and women. Determines the proper amount in the body.</p> <p><input type="radio"/> INSULIN FASTING (LC004333) \$25
Can predict those at risk of diabetes, obesity, heart and other diseases.</p> <p><input type="radio"/> PREGNENOLONE* (LC140707) \$116
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.</p> <p><input type="radio"/> PROGESTERONE (LC004317) \$55
Primarily for women. Determines the proper amount in the body.</p> <p><input type="radio"/> SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016) \$33
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.</p> <p>GENERAL HEALTH</p> <p><input type="radio"/> VITAMIN D (25OH) (LC081950) \$47
This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.</p> <p><input type="radio"/> FERRITIN (LC004598) \$28
Ferritin levels reflect your body's iron stores and is also a biomarker for insulin resistance.</p> <p><input type="radio"/> VITAMIN B12/FOLATE (LC000810) \$33
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> |
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Arginine/L-Ornithine Capsules
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L-Glutamine Capsules
L-Glutamine Powder
L-Lysine Capsules
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Cognitex® Basics
Cognizin® CDP Choline Capsules
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Life Extension Mix™ w/o Copper Capsules
Life Extension Mix™ w/o Copper Tablets
Life Extension Mix™ w/Extra Niacin
Life Extension Mix™ w/Extra Niacin w/o Copper
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PalmettoGuard™ Saw Palmetto w/Beta Sitosterol
Pomi-T®

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

SKIN CARE

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

SOY

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

SPECIAL PURPOSE FORMULA

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

Coriolus Super Strength
CR Mimetic Longevity Formula
Cinsulin® w/InSea2®
and Crominex® 3+
European Leg Solution Diosmin 95
Fem Dophilus
Femmenessence MacaPause®
GlycemicPro™ Transglucosidase
Migra-eeze™
NAD+ Cell Regenerator™
Nicotinamide Riboside
Natural Female Support
Optimized Resveratrol w/NAD+ Cell Regenerator™
Pecta-Sol®
Potassium Iodide
PQQ Caps with BioPQQ®
PteroPure®
Prelox® Natural Sex for Men®
Pyridoxal 5' - Phosphate
Tri Sugar Shield™

SPORTS PERFORMANCE

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

VITAMINS

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

WEIGHT MANAGEMENT

Advanced Anti-Adipocyte Formula
w/Meratrim® & Integra Lean®
Advanced Natural Appetite Suppress
CalReduce Selective Fat Binder
CoffeeGenic® Green Coffee Extract
7-KETO DHEA
DHEA® Complete
Fucoxanthin Slim™
Garcinia HCA
Integra-Lean® African Mango Irvingia
Optimized Irvingia w/Phase 3™ Calorie Control Complex
Optimized Saffron w/Satierea®
Natural Glucose Absorption Control
Super Citrimax®
Super CLA Blend w/Guarana and Sesame Lignans
Super CLA Blend w/Sesame Lignans
WellBetX PGX® plus Mulberry

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
A					
01524	ACETYL-L-CARNITINE - 500 mg, 100 veg. caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
01525	ACETYL-L-CARNITINE ARGINATE - 100 veg. caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	ADRENAL ENERGY FORMULA - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01630	ADRENAL ENERGY FORMULA - 120 veg. caps	46.00	34.50		
	Buy 4 bottles, price each	42.00	31.50		
01828	ADVANCED LIPID CONTROL - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	ADVANCED ORAL HYGIENE - 60 mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	AHCC - 500 mg, 30 caps	59.98	44.99		
00457	ALPHA-LIPOIC ACID w/BIOTIN (SUPER) - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01907	AMPK ACTIVATOR - 90 veg. caps	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01440	ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01509	ANTI-ADIPOCYTE FORMULA w/MERATRIM® & INTEGRA LEAN® (ADVANCED) - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
01625	APPLEWISE POLYPHENOL EXTRACT - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	ARGININE/ORNITHINE - 500/250, 100 caps	17.99	13.49		
00038	ARGININE/ORNITHINE POWDER - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	(L)-ARGININE CAPS - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01617	ARTHROMAX® w/THEAFLAVINS & APRESFLEX® - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	ARTHROMAX® ADVANCED w/UC-II® & APRESFLEX® - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01404	ARTHRO-IMMUNE JOINT SUPPORT - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00919	ARTICHOKE LEAF EXTRACT - 500 mg, 180 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01533	ASCORBYL PALMITATE - 500 mg, 100 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
00888	ASHWAGANDHA EXTRACT (OPTIMIZED) - 60 veg. caps	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
01805	ASIAN ENERGY BOOST - 90 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01066	ASPIRIN - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
01720	ASTAXANTHIN WITH PHOSPHOLIPIDS - 4 mg, 30 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
B					
00920	BENFOTIAMINE w/ THIAMINE - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	BENFOTIAMINE (MEGA) - 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	BERRY COMPLETE - 30 veg. caps	\$21.00	\$15.75		
	Buy 4 bottles, price each	18.67	14.00		
01496	BERRY COMPLETE w/ACAI (ENHANCED) - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	BETA-CAROTENE - 25,000 IU, 100 softgels	11.25	8.44		
01622	BIFIDO GI BALANCE - 60 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	BILBERRY EXTRACT - 100 mg, 100 veg. caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
01512	BIOACTIVE MILK PEPTIDES - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	BIO-COLLAGEN w/PATENTED UC-II® - 40 mg, 60 small caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	BIOSIL™ - 5 mg, 30 veg. caps	18.95	15.16		
*01007	BIOSIL™ - 1 fl oz	31.99	25.59		
00102	BIOTIN - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
01709	BLACK CUMIN SEED OIL - 60 softgels	16.00	12.00		
	Buy 4 bottles, price each	14.00	10.50		
01710	BLACK CUMIN SEED OIL w/BIO-CURCUMIN® - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	30.00	22.50		
01008	BLAST™ - 600 grams of powder	26.95	20.21		
70000	BLOOD PRESSURE MONITOR - ARM CUFF (medium)	99.95	49.99		
70004	BLOOD PRESSURE MONITOR - WRIST (cuff)	69.95	52.46		
01214	BLUEBERRY EXTRACT - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	BLUEBERRY EXTRACT w/ POMEGRANATE - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01726	BONE RESTORE - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	19.00	14.25		
01727	BONE RESTORE w/VITAMIN K2 - 120 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01725	BONE STRENGTH FORMULA w/KOACT® - 120 caps	45.00	33.75		
	Buy 4 bottles, price each	40.00	30.00		
00313	BONE-UP® - 240 caps	28.95	21.71		
	Buy 4 bottles, price each	27.21	20.41		
01379	BOOSTER - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01980	BOOSTER w/MACUGUARD™ OCULAR SUPPORT - 60 softgels	52.00	39.00		
	Buy 4 bottles, price each	48.00	36.00		
01661	BORON - 3 mg, 100 veg. caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		
00202	BOSWELLA - 100 caps	38.00	28.50		
	Buy 4 bottles, price each	30.00	22.50		
01802	BRAIN SHIELD® GASTODRIN - 60 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01253	BRANCHED CHAIN AMINO ACIDS - 90 veg. caps	19.50	14.63		
	Buy 4 bottles, price each	17.00	12.75		
01699	BREAST HEALTH FORMULA - 60 caps	34.00	25.50		
	Buy 4 bottles, price each	30.00	22.50		
00893	BRITE EYES III - 2 vials, 5 ml each	34.00	25.50		
	Buy 4 boxes, price each	32.00	24.00		

SUB-TOTAL OF COLUMN 2

No.		Retail Each	Member Each	Qty	Total
01203	BROMELAIN (SPECIALLY-COATED) - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	\$21.00 19.00	\$15.75 14.25		
00884	BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
C					
01653	CALCIUM CITRATE w/VITAMIN D - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
01651	CALCIUM D-GLUCARATE - 200 mg, 60 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
***01823	CALREDUCE SELECTIVE FAT BINDER - 120 mint chewable tablets Buy 4 bottles, price each	45.00 38.00	33.75 28.50		
01700	CARDIO PEAK™ w/STANDARDIZED HAWTHORN & ARJUNA - 120 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00916	CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01532	L-CARNITINE - 500 mg, 30 veg. caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01258	CARNOSOOTHE w/PICROPROTECT™ - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01687	CARNOSINE (SUPER) - 500 mg, 90 veg. caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	CAT MIX - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
01891	CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00550	CHLORELLA - 500 mg, 200 tablets	23.50	17.63		
01571	CHLOROPHYLLIN - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	CHO-LESS™ - 90 capsules	35.00	26.25		
01477	CHROMIUM ULTRA - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	CHROMIUM W/CROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
01503	CINSULIN® W/INSEA® AND CROMINEX® 3+ - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01906	CISTANCHE (STANDARIZED) - 30 veg. caps Buy 4 bottles, price each	20.00 16.00	15.00 12.00		
01818	CITRIMAX® (SUPER) - 180 veg. caps Buy 4 bottles, price each	40.00 38.00	30.00 28.50		
00818	CLA BLEND W/SESAME LIGNANS (SUPER) - 3,000 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	CLA BLEND w/GUARANA & SESAME (SUPER) -3,000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01896	COGNITEX® w/BRAIN SHIELD® - 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	COGNITEX® w/PREGNENOLONE & BRAIN SHIELD® - 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	COGNITEX® BASICS - 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 3

No.		Retail Each	Member Each	Qty	Total
01659	COGNIZIN® CDP CHOLINE CAPS - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$36.00 34.00	\$27.00 25.50		
01735	COMPLETE B-COMPLEX - 60 veg. caps Buy 4 bottles, price each	10.00 9.00	7.50 6.75		
01998	COMPREHENSIVE NUTRIENT PACKS ADVANCED - 30 packs Buy 4 boxes, price each	90.00 82.00	67.50 61.50		
00119	COPPER CAPSULES - 2 mg, 100 caps	9.91	7.43		
00949	COQ10 w/ α-LIMONENE (SUPER-ABSORBABLE) - 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	COQ10 w/ α-LIMONENE (SUPER-ABSORBABLE) - 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	COQ10 (SUPER-UBIQUINOL) - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	56.00 52.00 48.00	42.00 39.00 36.00		
01733	COQ10 w/BIOPOQ® (SUPER UBIQUINOL) - 100 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	54.00 50.00 46.00	40.50 37.50 34.50		
01426	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 53.00 50.00	43.50 39.75 37.50		
01427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 30 softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01431	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -200 mg, 30 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
80154	COSMESIS ADVANCED LIGHTENING CREAM - 1 oz jar Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80155	COSMESIS ADVANCED PEPTIDE HAND THERAPY - 4 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80152	COSMESIS ADVANCED TRIPLE PEPTIDE SERUM - 1 oz bottle Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
80140	COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - .33 oz Buy 2 bottles, price each	49.00 42.00	36.75 31.50		
80139	COSMESIS AMBER SELF MICRODERMABRASION - 2 oz Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80118	COSMESIS ANTI-AGING MASK - 2 oz Buy 2 bottles, price each	72.00 63.36	54.00 47.52		
80151	COSMESIS ANTI-AGING REJUVENATING FACE CREAM - 2 oz jar Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80153	COSMESIS ANTI-AGING REJUVENATING SCALP SERUM - 2 oz bottle Buy 2 bottles, price each	46.00 39.00	34.50 29.25		
80134	COSMESIS ANTI-GLYCATION SERUM - 1 oz W/BLUEBERRY & POMEGRANATE EXTRACTS Buy 2 bottles, price each	33.00 31.35	24.75 23.51		
80133	COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz Buy 2 bottles, price each	32.00 30.40	24.00 22.80		
80127	COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz Buy 2 jars, price each	45.00 42.80	33.75 32.10		
80128	COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz Buy 2 jars, price each	59.00 51.92	44.25 38.94		

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
C CONTINUED					
80117	COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz Buy 2 jars, price each	\$64.00 57.49	\$48.00 43.12		
80121	COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz Buy 2 jars, price each	58.00 51.04	43.50 38.28		
80105	COSMESIS ANTI-REDNESS & ADULT BLEMISH LOTION - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80147	COSMESIS BIOFLAVONOID CREAM - 1 oz jar Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80144	COSMESIS BROCCOLI SPROUT CREAM - 1 oz Buy 2 jars, price each	46.00 39.00	34.50 29.25		
80120	COSMESIS CORRECTIVE CLEARING MASK - 2 oz Buy 2 jars, price each	64.50 56.76	48.38 42.57		
80141	COSMESIS DNA REPAIR CREAM - 1 oz jar Buy 2 jars, price each	49.00 42.00	36.75 31.50		
80108	COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz Buy 2 bottles, price each	74.95 65.95	56.21 49.46		
80123	COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz Buy 2 jars, price each	69.50 61.16	52.13 45.87		
80107	COSMESIS FINE LINE-LESS - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80131	COSMESIS HAIR SUPPRESS FORMULA - 4 oz Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80137	COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz Buy 2 jars, price each	53.00 45.43	39.75 34.07		
80115	COSMESIS HEALING MASK - 2 oz Buy 2 bottles, price each	64.50 56.76	48.38 42.57		
80102	COSMESIS HEALING VITAMIN K CREAM - 1 oz Buy 2 bottles, price each	79.50 69.96	59.63 52.47		
80109	COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80110	COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz Buy 2 bottles, price each	58.00 51.04	43.50 38.28		
80138	COSMESIS HYDRATING ANTIOXIDANT FACE MIST - 4 oz Buy 2 bottles, price each	39.95 38.00	29.96 28.50		
80103	COSMESIS LIFTING & TIGHTENING COMPLEX - 1 oz Buy 2 tubes, price each	74.50 65.56	55.88 49.17		
80146	COSMESIS LYCOPENE CREAM - 1 oz jar Buy 2 jars, price each	28.00 25.40	21.00 19.05		
80135	COSMESIS MELATONIN CREAM - 1 oz Buy 2 jars, price each	33.00 27.10	24.75 20.33		
80114	COSMESIS MILD FACIAL CLEANSER - 8 oz Buy 2 bottles, price each	59.00 51.92	44.25 38.94		
80122	COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz Buy 2 jars, price each	64.00 56.32	48.00 42.24		
80111	COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz Buy 2 bottles, price each	74.00 65.12	55.50 48.84		
80106	COSMESIS REJUVENATING SERUM - 1 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80150	COSMESIS RENEWING EYE CREAM - 1/2 oz Buy 2 jars, price each	65.00 57.00	48.75 42.75		
80142	COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz Buy 2 bottles, price each	46.00 39.00	34.50 29.25		

SUB-TOTAL OF COLUMN 5

No.		Retail Each	Member Each	Qty	Total
80112	COSMESIS SKIN LIGHTENING SERUM - 1/2 oz Buy 2 bottles, price each	\$85.00 74.80	\$63.75 56.10		
80130	COSMESIS SKIN STEM CELL SERUM - 1 oz Buy 2 bottles, price each	74.00 69.00	55.50 51.75		
80143	COSMESIS STEM CELL CREAM W/ALPINE ROSE - 1 oz jar Buy 2 jars, price each	66.00 58.00	49.50 43.50		
80148	COSMESIS TIGHTENING & FIRMING NECK CREAM - 2 oz jar Buy 2 jars, price each	39.00 35.00	29.25 26.25		
80116	COSMESIS ULTRA LIP PLUMPER - 1/3 oz Buy 2 bottles, price each	64.00 56.32	48.00 42.24		
80101	COSMESIS ULTRA WRINKLE RELAXER - 1 oz Buy 2 bottles, price each	89.95 79.76	67.46 59.82		
80113	COSMESIS UNDER EYE REFINING SERUM - 1/2 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80104	COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz Buy 2 bottles, price each	74.50 65.56	55.88 49.17		
80129	COSMESIS VITAMIN C SERUM - 1 oz Buy 2 bottles, price each	85.00 74.80	63.75 56.10		
80136	COSMESIS VITAMIN D LOTION - 4 oz Buy 2 bottles, price each	36.00 33.66	27.00 25.25		
80145	COSMESIS VITAMIN E-ESSENTIAL CREAM - 1 oz Buy 2 jars, price each	28.00 26.00	21.00 19.50		
80149	COSMESIS YOUTH SERUM - 1 oz Buy 2 bottles, price each	65.00 57.00	48.75 42.75		
00862	CRAN-MAX® - 500 mg, 60 veg. caps Buy 4 bottles, price each	17.50 15.00	13.13 11.25		
01424	CRAN-MAX® with UTIROSE™ (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01529	CREATINE CAPSULES - 120 veg. caps Buy 4 bottles, price each	10.95 9.25	8.21 6.94		
01746	CREATINE WHEY GLUTAMINE POWDER - 454 grams (vanilla) Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01429	CR MIMETIC LONGEVITY FORMULA - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
*33840	CRWAY GREAT GLUCOSE CONTROL CD	98.00	82.00		
**CRWAY	CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE	195.00	195.00		
00407	CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps Buy 4 bottles, price each	38.00 35.00	28.50 26.25		
01808	CURCUMIN® w/GINGER & TURMERONES (ADVANCED BIO)-30 softgels Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01804	CYTOKINE SUPPRESS™ w/EGCG - 30 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
D					
00658	7-KETO® DHEA METABOLITE - 25 mg, 100 caps Buy 4 bottles, price each	\$28.00 24.00	\$21.00 18.00		
01479	7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01640	DHA (VEGETARIAN SOURCED) - 30 veg. softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00607	DHEA - 25 mg, 100 tablets (dissolve in mouth) Buy 4 bottles, price each	14.00 11.75	10.50 8.81		
01478	DHEA COMPLETE - 60 veg. caps Buy 4 bottles, price each	48.00 43.20	36.00 32.40		

SUB-TOTAL OF COLUMN 6

No.		Retail Each	Member Each	Qty	Total
00335	DHEA - 25 mg, 100 caps Buy 4 bottles, price each	\$18.00 15.00	\$13.50 11.25		
00454	DHEA - 15 mg, 100 caps Buy 4 bottles, price each	14.00 12.00	10.50 9.00		
00882	DHEA - 50 mg, 60 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01689	DHEA - 100 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01358	DIGEST RC - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
01671	D,L-PHENYLALANINE CAPSULES - 500 mg, 100 veg. caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
01540	DMAE BITARTRATE - 150 mg, 200 veg. caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
00059	DMG - 125 mg, 60 tablets Buy 4 boxes, price each	24.80 22.69	18.60 17.02		
01570	DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
00544	DOG MIX - 100 grams powder Buy 4 jars, price each	19.50 16.00	14.63 12.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
E					
01528	ECHINACEA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00625	EPA/DHA (MEGA) - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01737	ESOPHAGEAL GUARDIAN (Berry flavor) - 60 chewable tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01706	EXTRAORDINARY ENZYMES - 60 caps Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
01514	EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
F					
01054	FACE MASTER® PLATINUM	\$199.00	\$199.00		
00965	FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01717	FAST-C® w/DIHYDROQUERCETIN - 120 veg. tabs Buy 4 bottles, price each	26.00 24.00	19.50 18.00		
20053	FEM DOPHILUS® - 30 caps	25.95	19.46		
20055	FEM DOPHILUS® - 60 caps	39.95	29.96		

SUB-TOTAL OF COLUMN 7

No.		Retail Each	Member Each	Qty	Total
01064	FEMMESENSE MACAPAUSE® - 120 veg. caps	\$34.99	\$26.24		
01728	FERNBLOCK® w/RED ORANGE COMPLEX (ENHANCED) - 30 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
01670	FIBER FOOD CAPS - 200 veg. caps Buy 4 bottles, price each Buy 10 bottles, price each	16.00 14.00 13.00	12.00 10.50 9.75		
00718	FIBRINOGEN RESIST™ - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
01749	FLAX SEED (ORGANIC GOLDEN GROUND) - 14 oz.	11.67	8.75		
01821	FLORASSIST® HEART HEALTH PROBIOTIC - 60 caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01825	FLORASSIST® PROBIOTIC - 30 liquid caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01439	FOLATE (OPTIMIZED) (L-METHYLFOLATE) 1,000 mcg - 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01641	FOLIC ACID + B12 CAPSULES - 200 veg. caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
01544	FORSKOLIN - 10 mg, 60 veg. caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
01513	FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00993	FUCOXANTHIN-SLIM™ - 90 softgels Buy 4 bottles, price each	44.00 39.00	33.00 29.25		
G					
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels Buy 4 bottles, price each	\$42.00 37.00	\$31.50 27.75		
00759	GAMMA E TOCOPHEROL w/SESAME LIGNANS - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	(OPTIMIZED) GARLIC - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
01301	GH PITUITARY SUPPORT DAY FORMULA - 120 tabs Buy 4 bottles, price each	48.00 44.00	36.00 33.00		
01302	GH PITUITARY SUPPORT NIGHT FORMULA - 120 veg. caps Buy 4 bottles, price each	25.00 22.50	18.75 16.88		
***01228	GINGER FORCE® - 60 softgels	31.95	23.96		
01658	GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 veg. caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
01648	GINKGO EXTRACT 28/7 (SUPER) - 120 mg, 100 veg. caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
00756	GLA WITH SESAME LIGNANS (MEGA) - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	(L) GLUTAMINE CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	(L)-GLUTAMINE POWDER - 100 grams Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
00522	GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps Buy 4 bottles, price each	38.00 32.00	28.50 24.00		
01541	GLUTATHIONE, CYSTEINE & C - 100 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00314	L-GLUTATHIONE (MEGA) - 250 mg, 60 caps	39.64	29.73		
01731	GLYCEMICPRO™ TRANSGLUCOSIDASE - 60 veg. caps Buy 4 bottles, price each	48.00 42.00	36.00 31.50		

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
G CONTINUED					
01669	GLYCINE - 1,000 mg, 100 veg. caps Buy 4 bottles, price each	\$12.00 10.80	\$9.00 8.10		
01091	GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01411	GRAPE SEED EXTRACT w/RESVERATROL & PTEROSTILBENE - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01604	GREEN COFFEE EXTRACT COFFEEGENIC® - 200 mg, 90 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01620	GREEN COFFEE EXTRACT COFFEEGENIC® - 400 mg, 90 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
00953	GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 24.00	22.50 18.00		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps Buy 4 bottles, price each	30.00 24.00	22.50 18.00		
01545	GUTSY CHEWY DIGESTIVE (CITRUS FLAVOR) - 8 tablets	11.50	8.63		
01546	GUTSY CHEWY DIGESTIVE (WILD BERRY FLAVOR) - 8 tablets	11.50	8.63		
H					
01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
01738	HCA (GARCINIA) - 90 veg. caps Buy 4 bottles, price each	17.00 15.00	12.75 11.25		
01393	HEPATOPRO - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
01435	HOMOCYSTEINE RESIST - 100 veg caps Buy 4 bottles, price each	24.00 21.60	18.00 16.20		
01527	HUPERZINE A - 200 mcg, 60 veg caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00661	HYDRODERM® - 1 oz Buy 2 bottles, price each	79.95 65.33	59.96 49.00		
I					
*01060	i26® HYPERIMMUNE EGG - 140 grams powder	\$54.99	\$46.75		
01704	IMMUNE MODULATOR W/TINOFEND® - 60 veg. caps Buy 4 bottles, price each	17.00 15.00	12.75 11.25		
00955	IMMUNE PROTECT W/PARACTIN® - 30 veg. caps Buy 4 bottles, price each	29.50 26.55	22.13 19.91		
01905	IMMUNE SENESCENCE PROTECTION FORMULA™ - 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01049	INNERPOWER™ - 530 grams powder	42.00	31.50		
01674	INOSITOL CAPSULES - 1,000 mg, 360 veg. caps Buy 4 bottles, price each	62.00 58.00	46.50 43.50		
01292	INTEGRA-LEAN® AFRICAN MANGO IRVINGIA - 150 mg, 60 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01248	IODINE COMPLETE (ADVANCED) - 180 tablets	46.00	36.50		
01677	IRON PROTEIN PLUS - 300 mg, 100 caps Buy 4 bottles, price each	28.00 26.00	21.00 19.50		
01492	IRVINGIA W/PHASE 3™ - 120 veg. caps CALORIE CONTROL COMPLEX (OPTIMIZED AFRICAN MANGO) Buy 4 bottles, price each	56.00 48.00	42.00 36.00		
J, K					
00056	JARRO-DOPHILUS EPS™ - 60 veg. caps	\$22.95	\$17.21		
01759	JARRO-DOPHILUS EPS™ - 30 caps	39.95	29.96		
01724	K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels Buy 4 bottles, price each	30.00 27.00	22.50 20.25		

SUB-TOTAL OF COLUMN 9

No.		Retail Each	Member Each	Qty	Total
01600	KRILL HEALTHY JOINT FORMULA - 30 softgels Buy 4 bottles, price each	\$32.00 29.00	\$24.00 21.75		
01050	KRILL OIL PHOSPHOMEGA™ - 60 softgels	33.95	25.46		
00316	KYOLIC® GARLIC FORMULA 102 - 200 veg. caps	26.45	19.84		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps	27.45	20.59		
00789	KYOLIC® RESERVE - 600 mg, 120 caps	27.95	20.96		
L					
01681	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps Buy 4 bottles, price each	\$52.00 48.00	\$39.00 36.00		
00020	LECITHIN - 16 oz. granules Buy 4 jars, price each	15.00 12.50	11.25 9.38		
01955	LIFE EXTENSION MIX™ - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01957	LIFE EXTENSION MIX™ W/EXTRA NIACIN - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01954	LIFE EXTENSION MIX™ - 490 caps Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01956	LIFE EXTENSION MIX™ POWDER - 14.81 oz Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
01965	LIFE EXTENSION MIX™ - 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01967	LIFE EXTENSION MIX™ W/EXTRA NIACIN 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01964	LIFE EXTENSION MIX™ - 490 caps w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01966	LIFE EXTENSION MIX™ POWDER - 14.81 oz w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
01608	LIVER EFFICIENCY FORMULA - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01639	5-LOX INHIBITOR W/APRESFLEX® - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01678	L-LYSINE - 620 mg, 100 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels Buy 4 bottles, price each	35.00 30.00	26.25 22.50		
M					
01885	MACUGUARD™ OCULAR SUPPORT - 60 softgels Buy 4 bottles, price each	\$22.00 19.80	\$16.50 14.85		
01886	MACUGUARD™ OCULAR SUPPORT w/ASTAXANTHIN - 60 softgels Buy 4 bottles, price each	42.00 38.00	31.50 28.50		
01459	MAGNESIUM CAPS - 500 mg, 100 veg. caps Buy 4 bottles, price each	12.00 10.00	9.00 7.50		
01682	MAGNESIUM CITRATE - 160 mg, 100 veg. caps Buy 4 bottles, price each	9.00 7.50	6.75 5.63		
01668	MELATONIN - 300 mcg, 100 veg. caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		

SUB-TOTAL OF COLUMN 10

No.		Retail Each	Member Each	Qty	Total
01083	MELATONIN - 500 mcg, 200 veg. caps Buy 4 bottles, price each	\$18.00 16.00	\$13.50 12.00		
00329	MELATONIN - 1 mg, 60 caps Buy 4 bottles, price each	5.00 4.63	3.75 3.47		
00330	MELATONIN - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01786	MELATONIN TIME RELEASE - 3 mg, 60 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00331	MELATONIN - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	MELATONIN - 3 mg, 60 veg. lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01734	MELATONIN (Fast Acting Liquid) - 3 mg (Natural Citrus-Van) Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01787	MELATONIN TIME RELEASE - 300 mcg, 100 veg. tabs Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01788	MELATONIN TIME RELEASE - 750 mcg, 60 veg. tablets Buy 4 bottles, price each	8.00 7.00	6.00 5.25		
01536	METHYLCOBALAMIN - 1 mg, 60 veg. lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	METHYLCOBALAMIN - 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	MIGRA-EZZE™ (BUTTERBUR) - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01800	MIGRA-MAG w/BRAIN SHIELD® - 90 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01522	MILK THISTLE (EUROPEAN) - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01822	MILK THISTLE (EUROPEAN) - 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01817	MILK THISTLE (EUROPEAN) - 120 softgels Buy 4 bottles, price each	44.00 40.00	33.00 30.00		
01698	MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01769	MITOCHONDRIAL BASICS w/BIOPQQ® - 30 caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01768	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ® - 120 caps Buy 4 bottles, price each	94.00 84.00	70.50 63.00		
00065	MK-7 - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01279	MOUTHWASH W/POMEGRANATE - 16 oz Buy 4 bottles, price each	18.50 17.00	13.88 12.75		
00451	MSM (METHYLSULFONYLMETHANE) - 1,000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		
N					
01534	N-ACETYL-L-CYSTEINE - 600 mg, 60 veg. caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
01904	NAD+ CELL REGENERATOR™ - 100 mg, 30 veg. caps Buy 4 bottles, price each	34.00 26.00	25.50 19.50		
00066	NATTOKINASE - 60 softgels	25.50	19.13		
01807	NATURAL APPETITE SUPPRESS (ADVANCED) - 60 veg. caps 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
00984	NATURAL BP MANAGEMENT - 60 tablets Buy 4 bottles, price each	\$44.00 40.00	\$33.00 30.00		
01892	NATURAL ESTROGEN - 60 veg. tabs Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01221	NATURAL FEMALE SUPPORT - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
01626	NATURAL SEX FOR WOMEN® 50+ (ADVANCED) - 90 veg. caps Buy 4 bottles, price each	59.00 45.33	44.25 34.00		
01444	NATURAL SLEEP® - 60 veg. caps Buy 4 bottles, price each	13.00 10.00	9.75 7.50		
01551	NATURAL SLEEP® w/ MELATONIN (ENHANCED) - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	NATURAL SLEEP® w/o MELATONIN (ENHANCED) - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01445	NATURAL SLEEP® MELATONIN - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	NATURAL STRESS RELIEF - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01603	NEURO-MAG™ MAGNESIUM L-THREONATE - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01602	NEURO-MAG™ L-THREONATE W/CALCIUM & VITAMIN D 225 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01903	NK CELL ACTIVATOR™ - 30 veg. tablets Buy 4 bottles, price each	45.00 42.00	33.75 31.50		
00373	NO-FLUSH NIACIN - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
O					
01824	OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRAT(ADVANCED) 500 mg, 60 veg. caps • Buy 4 bottles, price each	\$36.00 32.00	\$27.00 24.00		
01819	OMEGA WITH KRILL & ASTAXANTHIN (SUPER) - 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	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 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	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 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	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 24.00	25.50 23.25 18.00		
01485	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 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	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL) 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
CONTINUED					
01901	ONE-PER-DAY - 60 tablets Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01328	ONLY TRACE MINERALS - 90 veg. caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
P					
01789	PALMETTOGUARD™ SAW PALMETTO w/BETA SITOSTEROL -30 softgels Buy 12 bottles, price each	\$15.00 12.00	\$11.25 9.00		
00073	PANCREATIN - 500 mg, 50 caps	13.22	9.92		
01323	PEAK ATP® WITH GLYCOCARN® - 60 veg. caps Buy 4 bottles, price each	54.00 50.00	40.50 37.50		
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder	109.95	82.46		
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps	79.95	59.96		
01811	PEONY IMMUNE - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00673	PGX™ PLUS MULBERRY (WELLBETX®) -180 veg. caps	34.95	26.21		
00865	PHARMA GABA® - 60 chewable tablets Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01676	PHOSPHATIDYL SERINE CAPS - 100 mg, 100 veg. caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
01390	PHOSPHOMEGA® - 60 softgels	39.95	26.96		
01436	POLICOSANOL - 10 mg, 60 veg. caps Buy 4 bottles, price each	20.00 15.00	15.00 11.25		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps Buy 4 bottles, price each	19.50 17.55	14.63 13.16		
01797	POMI-T® - 60 veg. caps Buy 4 bottles, price each	33.33 30.00	25.00 22.50		
00577	POTASSIUM IODIDE - 1 box, 14 tablets Buy 4 boxes, price each	6.95 5.25	5.21 3.94		
01500	PQQ CAPS W/BIO-PQQ® - 10 mg, 30 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01647	PQQ CAPS W/BIO-PQQ® - 20 mg, 30 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00302	PREGNENOLONE - 50 mg, 100 caps Buy 4 bottles, price each	26.00 22.00	19.50 16.50		
00700	PREGNENOLONE - 100 mg, 100 caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
**01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
01576	PREVAGEN® - 10 mg, 30 caps	60.00	45.00		
01577	PREVAGEN® ES - 20 mg, 30 caps	70.00	52.50		
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	59.95	44.96		
01441	PROGESTACARE FOR WOMEN - 4 oz cream Buy 4 bottles, price each	35.00 32.00	26.25 24.00		
01898	PROSTATE FORMULA (ULTRA NAT) 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01742	PROTEIN-ISOLATE (WHEY) VANILLA - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		
01743	PROTEIN-ISOLATE (WHEY) CHOCOLATE - 1 lb. powder Buy 4 jars, price each	30.00 27.00	22.50 20.25		

SUB-TOTAL OF COLUMN 13

No.		Retail Each	Member Each	Qty	Total
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla - 520 gr Buy 4 bottles, price each	\$30.00 26.60	\$22.50 19.95		
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate - 660 gr Buy 4 bottles, price each	30.00 26.60	22.50 19.95		
01812	PROVINAL® PURIFIED OMEGA-7 - 30 softgels Buy 4 bottles, price each	27.00 24.00	20.25 18.00		
01508	PTEROPURE® - 50 mg Pterostilbene 60 veg. caps Buy 4 bottles, price each	32.00 30.00	24.00 22.50		
01587	PURE PLANT PROTEIN - Veg. Vanilla 540 grams powder Buy 4 jars, price each	38.00 35.00	28.50 26.25		
01637	PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT -100 mg, 60 veg. caps Buy 4 bottles, price each	64.00 60.00	48.00 45.00		
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 19.80	16.50 14.85		
Q, R					
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01030	RED YEAST RICE (Bluebonnet)- 600 mg, 60 veg. caps	16.95	13.56		
00605	REGIMINT - 60 enteric-coated caps Buy 4 bottles, price each	19.95 18.67	14.96 14.00		
01708	REISHI EXTRACT MUSHROOM COMPLEX - 60 veg. caps Buy 4 bottles, price each	30.00 27.00	22.50 20.25		
01448	REJUVENEX® BODY LOTION - 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	REJUVENEX® FACTOR FIRMING SERUM - 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	REJUVENEX® (ULTRA) - 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	REJUVENIGHT® (ULTRA) - 2 oz Buy 4 jars, price each	39.95 36.00	29.96 27.00		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01930	RESVERATROL W/NAD+ CELL REGENERATOR™ (OPTIMIZED) - 30 veg. caps Buy 4 bottles, price each	42.00 36.00	31.50 27.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	46.00 41.33	34.50 31.00		
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	11.75 10.58	8.81 7.94		
01900	RIBOGEN™ FRENCH OAK WOOD EXTRACT - 200 mg, 300 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00972	(D) RIBOSE POWDER - 150 grams Buy 4 jars, price each	27.50 24.75	20.63 18.56		
01473	(D) RIBOSE TABLETS - 100 veg. tabs Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01609	RICH REWARDS® BREAKFAST GROUND COFFEE - 12 oz. bag	13.00	9.75		
01730	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag Natural Mocha	15.00	11.25		
01729	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE - 12 oz. bag Natural Vanilla	15.00	11.25		

SUB-TOTAL OF COLUMN 14

No.		Retail Each	Member Each	Qty	Total
01612	RICH REWARDS® BREAKFAST BLEND WHOLE BEAN COFFEE - 12 oz. bag	\$13.00	\$9.75		
01610	RICH REWARDS® DECAFFEINATED ROAST GROUND COFFEE - 12 oz. bag	14.00	10.50		
01712	RICH REWARDS™ BLACK BEAN VEGETABLE SOUP - 32 oz. bottle	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01530	RICH REWARDS™ CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle	11.95	8.96		
	Buy 6 bottles, price each	11.25	8.44		
01531	RICH REWARDS™ (SPICY) CRUCIFEROUS VEGETABLE SOUP - 32 oz. bottle	11.95	8.96		
	Buy 6 bottles, price each	11.25	8.44		
01705	RICH REWARDS™ LENTIL VEGETABLE SOUP - 32 oz. bottle	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01810	RICH REWARDS™ MUNG BEAN SOUP W/TURMERIC - 32 oz. bottle	13.00	9.75		
	Buy 6 bottles, price each	12.25	9.19		
01820	RICH REWARDS™ PROTEIN COFFEE CREAMER - Vanilla - 270 grams	26.00	19.50		
	Buy 4 jars, price each	23.00	17.25		
01208	R-LIPOIC ACID (SUPER) - 240 mg, 60 veg. caps	49.00	36.75		
	Buy 4 bottles, price each	45.00	33.75		
00070	RNA CAPSULES - 500 mg, 100 caps	17.95	13.46		
	Buy 4 bottles, price each	16.16	12.12		
S					
01432	SAFFRON w/SATIREAL® (OPTIMIZED) - 60 veg. caps	\$36.00	\$27.00		
	Buy 4 bottles, price each	32.00	24.00		
00358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets	16.00	12.00		
	Buy 8 boxes, price each	14.00	10.50		
00453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
00557	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets	28.00	21.00		
	Buy 6 boxes, price each	24.00	18.00		
01055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets	66.00	49.50		
	Buy 4 bottles, price each	60.00	45.00		
01740	SEA-IODINE™ - 1,000 mcg, 60 veg. caps	8.00	6.00		
	Buy 4 bottles, price each	7.20	5.40		
00046	SELENIUM - 2 oz dropper bottle	11.95	8.96		
01679	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 veg. caps	12.00	9.00		
	Buy 4 bottles, price each	11.00	8.25		
00318	SERRAFLAZYME - 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00284	SHARK LIVER OIL (NORWEGIAN) - 1,000 mg, 30 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01684	SILYMARIN - 100 mg, 50 veg. caps	9.25	6.94		
	Buy 4 bottles, price each	8.25	6.19		
01596	SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT® - 30 veg. liquid caps	25.00	18.75		
	Buy 4 bottles, price each	23.00	17.25		
00961	SODZYME® w/GLISODIN® AND WOLFBERY - 90 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	24.00	18.00		
00657	SOLARSHIELD SUNGLASSES - 1 pair smoke color	12.99	9.74		
	Buy 2 pairs, price each	11.50	8.63		
01097	SOY EXTRACT (ULTRA) - 150 veg. caps	87.00	65.25		
	Buy 4 bottles, price each	78.00	58.50		
00432	STEVIA™ EXTRACT (BETTER) - 100 packets, 1 gram each	9.95	7.46		
00438	STEVIA™ ORGANIC LIQUID EXTRACT (BETTER) - 2 oz liquid	11.00	8.25		
01476	STRONTIUM - 750 mg, 90 veg. caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01649	SUPER ABSORBABLE SOY ISOFLAVONES - 60 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		

SUB-TOTAL OF COLUMN 15

No.		Retail Each	Member Each	Qty	Total
01790	SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL - 60 softgels	\$28.00	\$21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		
01778	SUPER SELENIUM COMPLEX - 200 mcg, 100 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	12.00	9.00		
	Buy 12 bottles, price each	11.00	8.25		
T					
01723	TART CHERRY EXTRACT w/STANDARDIZED CHERRYPURE® - 60 veg. caps	\$22.00	\$16.50		
	Buy 4 bottles, price each	20.00	15.00		
00199	TAURINE - 1,000 mg, 50 caps	8.95	6.71		
	Buy 4 bottles, price each	8.00	6.00		
00133	TAURINE POWDER - 300 grams	20.00	15.00		
	Buy 4 bottles, price each	16.88	12.66		
01304	THEAFLAVIN STANDARDIZED EXTRACT - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01683	(L) THEANINE - 100 mg, 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	20.50	15.38		
††01038	THERALAC PROBIOTICS - 30 caps	47.95	35.96		
00668	THYROID FORMULA™ (METABOLIC ADVANTAGE) - 100 caps	21.95	16.46		
00349	TMG POWDER - 50 grams	14.00	10.50		
	Buy 4 bottles, price each	11.00	8.25		
01859	TMG - 1,000 mg, 60 veg. liquid caps	13.00	9.75		
	Buy 4 bottles, price each	12.00	9.00		
00781	TOCOTRIENOLS WITH SESAME LIGNANS - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	36.00	27.00		
01400	TOCOTRIENOLS (SUPER-ABSORBABLE) - 60 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01278	TOOTH PASTE - 4 oz (Mint)	9.50	7.13		
	Buy 4 tubes, price each	8.67	6.50		
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.60	22.20		
01803	TRI SUGAR SHIELD™ - 60 veg. caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01386	TRUFIBER® - 180 grams	32.95	24.71		
01389	TRUFLORA PROBIOTICS - 32 veg. caps	42.95	32.21		
01722	L-TRYPTOPHAN - 500 mg, 90 veg. caps	33.00	24.75		
	Buy 4 bottles, price each	30.00	22.50		
01721	TRYPTOPHAN PLUS (OPTIMIZED) - 90 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.00	21.75		
01916	TWO-PER-DAY - 60 tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01915	TWO-PER-DAY - 120 tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01914	TWO-PER-DAY - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00326	L-TYROSINE - 500 mg, 100 tablets	12.98	9.74		
V					
00213	VANADYL SULFATE - 7.5 mg, 100 veg. tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00408	VENOTONE - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		

SUB-TOTAL OF COLUMN 16

Buyers Club Order Form

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No.		Retail Each	Member Each	Qty	Total
V CONTINUED					
01327	VINPOCETINE - 10 mg, 100 tablets	\$18.00	\$13.50		
	Buy 4 bottles, price each	14.00	10.50		
00372	VITAMIN B3 NIACIN - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	VITAMIN B5 - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
01535	VITAMIN B6 - 250 mg, 100 veg. caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	VITAMIN B12 - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	VITAMIN C w/ DIHYDROQUERCETIN - 1,000 mg, 60 veg. tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	VITAMIN C w/ DIHYDROQUERCETIN - 1,000 mg, 250 veg. tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	VITAMIN C (BUFFERED) POWDER - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
01736	(EFFERVESCENT) VITAMIN C-MAGNESIUM CRYSTALS - 180 grams	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01732	VITAMIN D3 - 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01753	VITAMIN D3 - 1,000 IU, 90 softgels	7.00	5.25		
	Buy 4 bottles, price each	6.00	4.50		
01751	VITAMIN D3 - 1,000 IU, 250 softgels	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
01713	VITAMIN D3 - 5,000 IU, 60 softgels	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01718	VITAMIN D3 - 7,000 IU, 60 softgels	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01758	VITAMIN D3 w/SEA-IODINE™ - 5,000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
00864	VITAMIN D3 Liquid Emulsion - 2,000 IU, 1 oz.	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01741	VITAMINS D AND K w/SEA-IODINE™ - 60 caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01763	VITAMIN E (NATURAL) - 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	VITAMIN K2 (LOW-DOSE) - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
X					
00409	XYLIWHITE™ MOUTHWASH - 16 oz	\$10.00	\$7.50		
Z					
01813	ZINC HIGH POTENCY - 50 mg, 90 veg. caps	\$7.95	\$5.96		
	Buy 4 bottles, price each	7.00	5.25		
01561	ZINC GLUCONATE/OXIDE LOZENGES - 18.75 mg, 60 veg. lozenges	9.00	6.75		
	Buy 4 bottles, price each	8.00	6.00		
NEW 01961	ZINC ACETATE LOZENGES (ENHANCED) - 18.75 mg, 30 veg. lozenges	12.00	9.00		
	Buy 2 bottles, price each	8.00	6.00		
***01051	ZYFLAMEND® WHOLE BODY - 120 softgels	64.95	48.71		

SUB-TOTAL OF COLUMN 17

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SUB-TOTAL COLUMN	2	
SUB-TOTAL COLUMN	3	
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SUB-TOTAL COLUMN	15	
SUB-TOTAL COLUMN	16	
SUB-TOTAL COLUMN	17	

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Sub-Total A (Sub-total of Columns 1 through 17)	
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Shipping	
GRAND TOTAL (Must be in U.S. dollars)	

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33844	ABUNDANCE: THE FUTURE IS BETTER THAN YOU THINK • by Steven Kotler and Petere Diamandis 2012	\$26.99	\$20.24		
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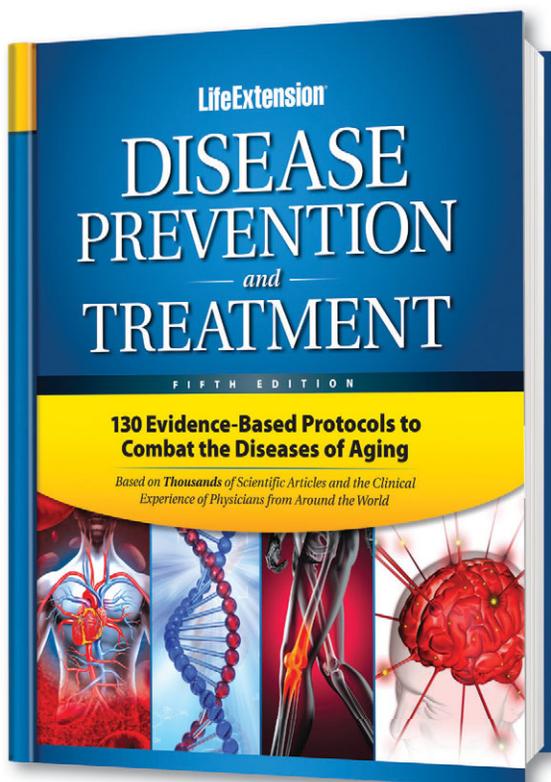
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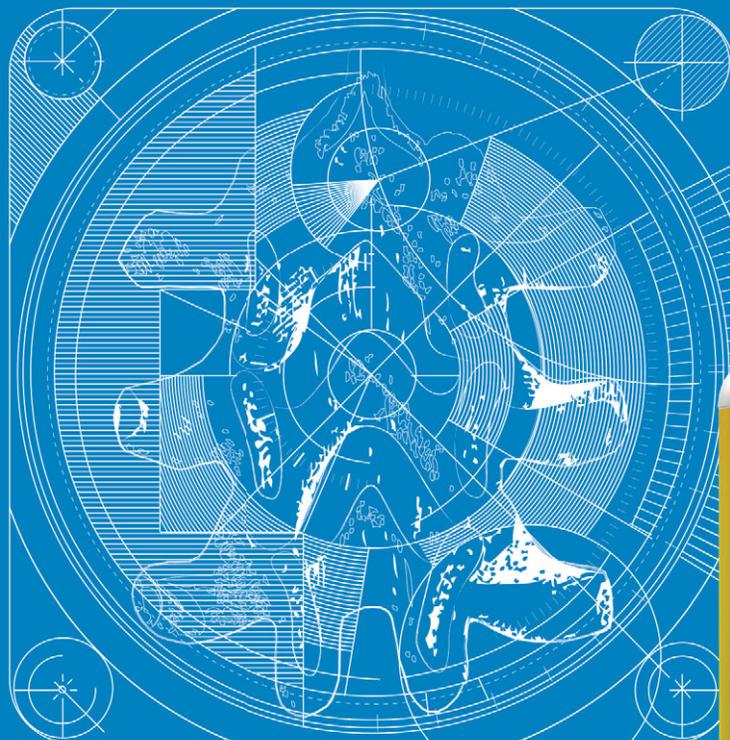


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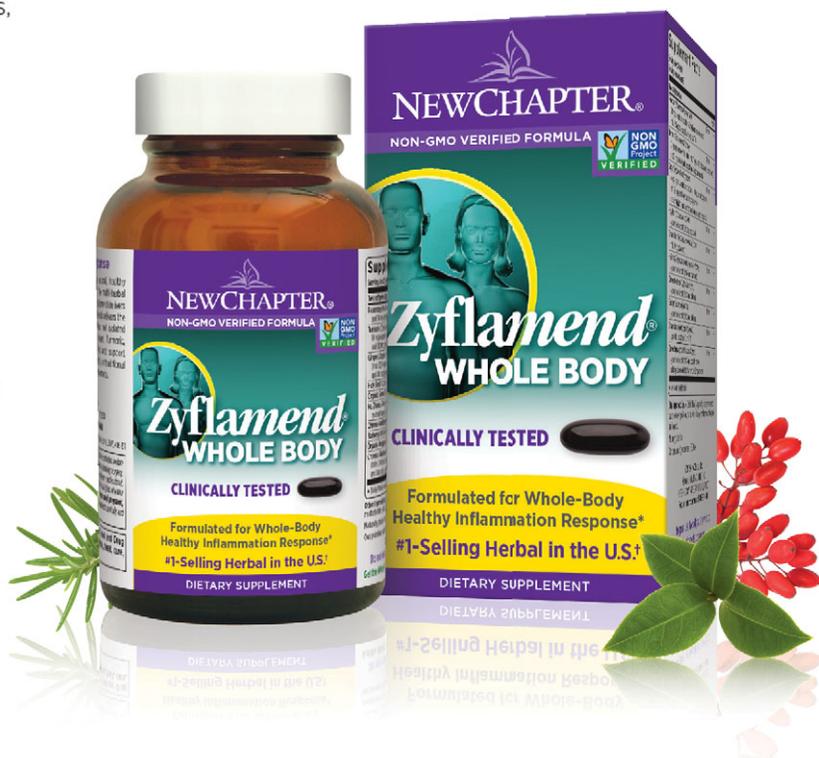
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Contains wheat.

References

1. *Biophys Chem.* 2010 Aug;150(1-3):144-56.
2. *Chemistry and Physics of Lipids.* Apr 2007; 146(2):67-75.
3. *Int J Cosmet Sci.* 2010 July 14.
4. Baran R, Maibach H, eds. *Textbook of Cosmetic Dermatology.* 3rd ed. Taylor & Francis;2005:177.

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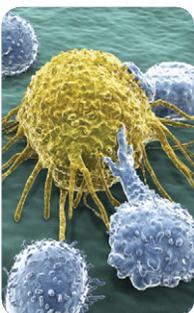
7 WHY MOST ZINC LOZENGES FAIL

The *Journal of the American Medical Association* has reported that taking the correct **form** and **dose** of **zinc lozenges** cuts duration of the **common cold** by about **50%**! The key is initiating **zinc acetate lozenges** at the very **first** cold symptom with the objective of halting colds before they take hold.



22 GAIN CONTROL OVER CHRONIC FATIGUE SYNDROME

Nearly **4 million** Americans suffer from **chronic fatigue syndrome**. Fortunately scientists have identified that **roburin** extracted from oak wood can help safely manage **fatigue** symptoms.



34 PROTECTION AGAINST ENVIRONMENTAL CANCER

Many cancers today are in part caused by environmental toxins that cause our healthy cells to mutate. Studies show that low-cost **chlorophyllin** neutralizes dietary carcinogens before they damage DNA.



46 A MISSING LINK TO HEART HEALTH

Restoring healthy magnesium levels reduces the rate of cardiovascular disease by **40%**, of sudden cardiac arrest by **77%**, of cancer by **50%**, and of all-cause mortality by **40%**.



58 RELIEF FROM CONSTANT INFLAMMATION

Low-level inflammation contributes to **six** of the **ten** causes of death. **Boswellia** extract significantly reduces general inflammation, including that of osteoarthritis and colitis.



93 ASK THE DOCTOR: CHOOSING THE RIGHT HORMONE TEST

As you age, hormone testing is key to any longevity program. However, numerous factors can affect what testing methods you and your doctor choose. Scott Fogle, ND, explains how to assess the best hormone tests for your needs.