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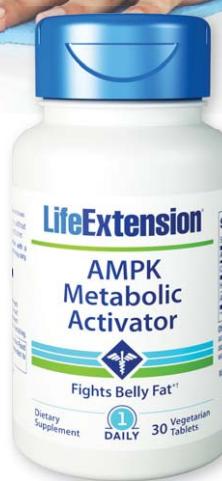
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BY WILLIAM FALOON

# The Harsh Penalty for Willful Ignorance

In 1968, **Lyndon Johnson** announced he would not accept the nomination of his party for another term as president of the United States.

Lyndon Johnson (LBJ) suffered severe **coronary artery** occlusion. Conventional medicine had no safe treatment. LBJ knew that men in his family did not live much beyond 60 years.

In **1955**, LBJ had the first of several heart attacks. Suffering chronic angina pain, LBJ declined to run for re-election at age **59** and died at **64**.

Move forward a few decades and vast improvements occurred in prevention and treatment of **heart disease**. So much so that **Bill Clinton, George W. Bush, and Dick Cheney** were spared the fate of **Lyndon Johnson**.

In the years spanning **1980** to **2014**, there was an astounding **50%** decline in cardiovascular-related deaths.<sup>1</sup> The reasons have a lot to do with what readers of this magazine practice every day to reduce their risk of **atherosclerosis**.

There have also been massive enhancements in coronary artery **stenting** and **surgical bypass** procedures. None of these interventions are perfect, but they're better than enduring chronic chest pain, disability, and fatal heart attack, as LBJ and others suffered during his era.

But did **Lyndon Johnson** really have no effective treatment option in **1968**? And are other former presidents following optimal coronary prevention strategies today?

Even a cursory review uncovers startling lapses by presidential cardiologists in initiating steps to prevent and reverse coronary artery blockage. This fate often befalls high-end individuals who get the "best" of conventional care, which inherently overlooks **novel** approaches to better treatments.

This tragedy persists today because many people are not utilizing affordable methods to identify their **vascular risk** factors in time.

## Lyndon Johnson's Long Battle With Coronary Artery Disease

- First heart attack at age **46** (1955)
- Chronic angina (chest) pain
- Declined to run for re-election at age **59**
- More major heart attacks
- Dead at age **64** (1973)

(Conventional Treatments Lacking)



President **Dwight Eisenhower** suffered his first heart attack in **1955**. He had an ischemic **stroke** in **1957**.

By the time of his death in **1969**, Eisenhower suffered seven heart attacks, along with multiple diseases related to the unhealthy lifestyle of his era.<sup>2</sup>

**Lyndon Johnson** was **46** years old when his first heart attack struck in **1955**. LBJ suffered angina pain until he succumbed to heart disease in **1973**.<sup>3</sup>

In **1972**, former president **Harry Truman** died from coronary artery disease,<sup>4</sup> as did almost one million other Americans that year.

Back in those days, recovery from a heart attack was a slow and arduous process. Doctors recommended bed rest, no physical activity, and little in the way of dietary changes.

Was this **vascular disease** carnage necessary? A review of the published literature dating back to the **1940s** reveals millions could have been spared...if only their doctors had bothered paying attention.<sup>5-7</sup>

## Pioneer of Modern Cardiology

**John Gofman, M.D., Ph.D.**, was a physicist turned medical doctor whose early work on radioactive isotopes resulted in his being recruited to work on **The Manhattan Project** to develop the first **atomic bomb**.

Dr. Gofman's expertise on the biological effects of **radiation** caused him to take a controversial position. He documented how diagnostic **X-rays** are a cause of **cancer** and **artery disease**, something most in the medical establishment still refuse to accept.<sup>8-13</sup>

In **1947**, Dr. Gofman began research that led him to conclude that **cholesterol** is a cause of **atherosclerosis**.<sup>6,7</sup>

Dr. Gofman and his colleagues were the first to show that specific fractions of cholesterol such as **LDL** (low-density lipoprotein) contribute to clogged arteries.<sup>14</sup>

In **1951**, Dr. Gofman was involved in the publication of possibly the first book advocating **low-fat/low-cholesterol** diets to prevent heart disease.<sup>15</sup>

**John Gofman** was a **Life Extension**® member. I was privileged to have Dr. Gofman call me to express his gratitude for warning our readers about the dangers posed by radiation-emitting imaging devices (such as CT scans). Dr. Gofman regretted that so few physicians paid attention to his books, which documented higher **cancer** rates in those exposed to medical radiation.

So, in **1951**, Dr. Gofman, a prestigious individual, promoted a book that revealed the role of **diet** and **LDL cholesterol** in arterial disease. Yet mainstream cardiology behaved as if this scientific evidence did not exist.

In **1959** and again in **1965**, the **FDA** proclaimed it illegal for food makers to promote healthy diet as a way of preventing artery disease.<sup>16-18</sup>

## Role of Nathan Pritikin

**Nathan Pritikin** was a millionaire inventor in areas as diverse as engineering, photography, and aeronautics.

## Bill Clinton's Struggle With Coronary Artery Blockages

Bill Clinton underwent procedures in 2004 and 2010 to reopen blocked coronary arteries. Surgical complication resulted in his being rehospitalized.

**2004 - Coronary Bypass, Age 58**

**2010 - Coronary Stents, Age 63**

(These procedures were not safely available to LBJ in the 1955-1973 era.)



## George Bush Diagnosed and Treated Before He Suffered a Heart Attack

George W. Bush underwent aggressive diagnostics before his heart was damaged by a heart attack.

According to a news report, *"He was more than 95 percent occluded. With a blockage like that in a main artery you're supposed to die..."*

**2013 - Coronary Stent, Age 67**

<http://www.foxnews.com/health/2013/10/15/george-w-bush-artery-was-5-percent-blocked-source-says.html>



In 1957, at age 40, Pritikin was diagnosed with severe **coronary artery disease**. Faced with a lifetime of ever-increasing disability, he pored over the scientific literature and formulated a diet and exercise program to treat his ailment.<sup>19</sup> After nine years of trial and error, he had effectively treated himself.

Long before the medical establishment acknowledged the role of poor diets causing serious illness, Pritikin created a program using food and exercise as medicine.

Pritikin was an engineer...not a doctor. His revolutionary departure from the flawed theories of the **1950s** caused him to become a public enemy of the medical establishment.

Despite many clinical successes, **Nathan Pritikin** was accused of being a **charlatan**. For much of the **1970s**, Pritikin waged battles with government and private health agencies, as well as the **American Medical Association**.<sup>20,21</sup> The establishment refused to accept that what one ate had anything to do with heart disease risk.

In 1987, the *Journal of the American Medical Association* announced a study that showed **regression of atherosclerosis** in the coronary arteries of humans who reduced their blood cholesterol by a similar degree as was accomplished using the **Pritikin** protocol.<sup>22</sup>

Had **Dwight Eisenhower** or **Lyndon Johnson** paid attention to published scientific studies linking poor diets to coronary artery disease, they could have been spared years of suffering and premature death.

### Improved Heart Attack Prevention

We know far more now than what **John Gofman** and **Nathan Pritikin** uncovered more than 60 years ago.

Back in those early days, there were no well-known effective methods to lower vascular risk factors (such as elevated LDL) other than strict low-calorie/ultra low-fat diets. Few people of that era were willing to give up their bacon,

butter, steak, and eggs, let alone start eating healthy vegetables and fruit.

Today we know that not all **fats** are dangerous. For instance, solid data supports the value of extra-virgin **olive oil**<sup>23-25</sup> and **omega-3** fatty acids in lowering cardiovascular risk and risk of dying from cardiovascular disease.<sup>26-29</sup>

In lieu of the ultra low-fat diet espoused by Nathan Pritikin, the preponderance of data indicates that following a **Mediterranean**-style diet is an effective and practical way to reduce one's cardiovascular risks.<sup>30,31</sup>

What's more, there is a new test that measures factors that oxidize **LDL**, and thus provides a better marker of correctable vascular risk than **John Gofman's** discovery of **LDL** in the late **1940s**.

Since our inception, **Life Extension**<sup>®</sup> has advised healthy people to keep their **LDL** (low-density lipoprotein) below **100 mg/dL**. Those with pre-existing coronary artery disease should strive to push **LDL** below **70 mg/dL**.

The medical community now concurs with our **LDL** guidelines.

I'm pleased that we can now identify earlier stages of atherosclerosis using a **blood test** that measures **apolipoprotein B**.

I'm even more excited that we are able to add **apolipoprotein B** to our popular **Male** and **Female Panels** at no extra charge!

## Danger of Elevated Apolipoprotein B

**Apolipoprotein B** is found on all non-HDL cholesterol particles, such as LDL and VLDL.

The *higher* the **ApoB** number the more dangerous the situation. Higher **ApoB** generally equates to a higher amount of glycated and oxidized **LDL** particles, which are initiators of dangerous arterial plaque.<sup>32</sup>

Having a higher **ApoB** (apolipoprotein B) level can be a stronger heart attack predictor than **LDL cholesterol**.<sup>33,34</sup>

Until recently, testing one's blood for **apolipoprotein B** (ApoB) was expensive. Even today, commercial labs charge **\$150** for this test (ApoB) of vascular risk.

## Check Your Apolipoprotein B at No Added Cost!

Those with high **apolipoprotein B** blood levels are at greater risk for coronary artery disease.<sup>35</sup>

If an **apolipoprotein B** blood test comes back high, steps can be initiated to correct this.

The incredible news is that **apolipoprotein B** has been added to the **Male** and **Female Blood Panels** many of our supporters have done each year.

The addition of this vascular risk marker makes these comprehensive blood panels a greater value...at no additional cost!

## How Blood Tests Are Saving Lives

Every day, we at **Life Extension**® receive calls from people asking what they should do to reduce their degenerative disease risks. My response is that we have no idea until we review their **blood test** results.

In many cases, blood test panels that new people submit consist of little more than measures

of glucose, lipids and liver/kidney function. Omitted almost always are tests for **C-reactive protein**, **DHEA**, **homocysteine** and other controllable risk factors

To resolve this lack of data, we combined the most powerful indicators of **heart attack/stroke** risk into comprehensive **Male** and **Female Blood Panels**.

The retail price of having all these tests done can approach **\$900**. We've been able to use our high volume to drive the cost of these popular panels down to **\$199** during our annual **Lab Test Super Sale**.

I'm proud of how we've added more tests to these panels over the years, such as **25-hydroxyvitamin D** and **hemoglobin A1c**...without raising the price!

We sometimes find our supporters are taking too much **vitamin D** or **DHEA** and are able to suggest they reduce their dose. In other cases, we identify markers that predispose one to cancer, dementia, atherosclerosis, or kidney failure.

Once uncovered via **comprehensive blood testing**, most people are able to move these markers into safer ranges.

## Alive Because of Biomedical Advances

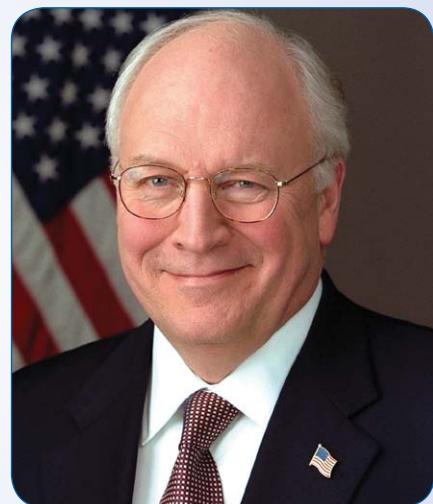
**Dick Cheney survived multiple heart attacks and eventual heart failure. He is alive only because of technological advances.**

**1988 - Coronary Bypass, Age 47**

**2000 - Coronary Stents, Age 59**

**2010 - Ventricular Assist, Age 69**

**2012 - Heart Transplant, Age 71**



## Life Extension's Early Contributions to 50% Decline in Cardiovascular Mortality

**1981: DHEA replacement**

**1981: Homocysteine reduction**

**1983: Low-dose aspirin**

**1983: Coenzyme Q10**

**1996: Public access to blood tests**

We defied conventional "reference ranges" for glucose, LDL, and blood pressure, arguing that **optimal** ranges were far lower than mainstream medicine believed at the time.



### Annual Lab Test Super Sale

The high cost and hassles of blood testing in conventional settings precludes many people from availing themselves of a proven preventive diagnostic.

We resolved this problem 22 years ago by enabling readers of this magazine to order low-cost **blood tests** direct, and then to visit a **drawing station** in their area at their convenience.

Results come back in less than a week and are emailed and mailed directly to you. If you have any questions, our **Wellness Specialists** are available to assist seven days/week at no charge.

Once a year, we **discount** prices of all blood tests. This serves as a convenient reminder to have one's annual tests performed and **save 50%** in the process.

People often comment on the degree of variability in blood results that can occur over a year's time. This variance can be a result of normal aging, use of a new drug, or lifestyle alteration.

In any case, gaining knowledge that a blood marker is out of balance enables corrective actions to be taken before serious illnesses manifest.

This year's blood test sale expires on June 4<sup>th</sup>, 2018.

To order the new **Male** or **Female Blood Panels** (that now include **ApoB**) at the bargain price of **\$199**, call **1-800-208-3444** (24 hours) or log on to:

[LifeExtension.com/labservices](http://LifeExtension.com/labservices)

### Summary

I hope the historical data conveyed in this editorial enable readers to understand that **atherosclerosis** is a normal part of **aging**.

One reason **heart attacks** did not kill more people in years **1900-1944** is that average life expectancy during this period was only **55 years**.

Now that people are living longer, they need to be vigilant in protecting against arterial occlusion, and it starts with **comprehensive blood tests**.

For longer life,

William Faloon, Co-Founder  
Life Extension Buyers Club

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## Harsh Penalty for Willful Medical Ignorance

Turn back the clock just 54 years, and history reveals how the **FDA** and medical establishment ridiculed the notion that **poor diets** were a cause of **artery disease**.

This medical ignorance resulted in the most famous political leaders of their day keeling over from **heart attacks** before the public's eyes.

For example, **Dwight Eisenhower** smoked four packs of cigarettes a day until he quit in 1949. Combined with his high saturated-fat intake, he was at great cardiac risk. Here is what President Eisenhower ate the day of his first heart attack:<sup>36</sup>

- Breakfast: sausage, bacon, mush, hotcakes
- Lunch: hamburger with raw onion
- Dinner: roast lamb

Heart attack and/or stroke claimed the lives of most of the presidents in the past century including Theodore Roosevelt, William Taft, Woodrow Wilson, Calvin Coolidge, Franklin Roosevelt, and Richard Nixon (hemorrhagic stroke).



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# MALE AND FEMALE BLOOD TEST PANELS

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

## ■ MALE PANEL

### CARDIAC MARKERS

**NEW** **Apolipoprotein B (ApoB)**  
**Homocysteine**  
**C-Reactive Protein** (high sensitivity)

### LIPID PROFILE

**Total Cholesterol**  
**LDL** (low-density lipoprotein)  
**HDL** (high-density lipoprotein)  
**Triglycerides**

### METABOLIC PROFILE

**Glucose**  
**Hemoglobin A1c**  
**Kidney function tests:** creatinine, BUN, uric acid, BUN/creatinine ratio  
**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase  
**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron  
**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio

### COMPLETE BLOOD COUNT (CBC)

**Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW  
**White Blood Cell count including:** lymphocytes, monocytes, eosinophils, neutrophils, basophils  
**Platelet count**

### CANCER MARKER

**PSA (Prostate Specific Antigen)**

### HORMONES

**Free and Total Testosterone**  
**DHEA-S**  
**Estradiol** (an estrogen)  
**TSH** (thyroid function)  
**Vitamin D (25-hydroxyvitamin D)**

## ■ FEMALE PANEL

### CARDIAC MARKERS

**NEW** **Apolipoprotein B (ApoB)**  
**Homocysteine**  
**C-Reactive Protein** (high sensitivity)

### LIPID PROFILE

**Total Cholesterol**  
**LDL** (low-density lipoprotein)  
**HDL** (high-density lipoprotein)  
**Triglycerides**

### METABOLIC PROFILE

**Glucose**  
**Hemoglobin A1c**  
**Kidney function tests:** creatinine, BUN, uric acid, BUN/creatinine ratio  
**Liver function tests:** AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase  
**Blood minerals:** calcium, potassium, phosphorus, sodium, chloride, iron  
**Blood proteins:** albumin, globulin, total protein, albumin/globulin ratio

### COMPLETE BLOOD COUNT (CBC)

**Red Blood Cell count including:** hemoglobin, hematocrit, MCV, MCH, MCHC, RDW  
**White Blood Cell count including:** lymphocytes, monocytes, eosinophils, neutrophils, basophils  
**Platelet count**

### HORMONES

**Progesterone**  
**Estradiol** (an estrogen)  
**Free and Total Testosterone**  
**DHEA-S**  
**TSH** (thyroid function)  
**Vitamin D (25-hydroxyvitamin D)**

## ■ Lab Test Super Sale • March 26 through June 4, 2018. ■

**Retail price: \$400 • Your Price: \$199**

To obtain these comprehensive Male or Female Panels at these low prices, call **1-800-208-3444** or log on to [www.LifeExtension.com/labservices](http://www.LifeExtension.com/labservices) to order your requisition forms.

Then—at your convenience—you can visit one of the blood-drawing facilities provided by LabCorp in your area or at the **Life Extension Nutrition Center** in Ft. Lauderdale.

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

# Maintain Endothelial Plaque Stability with **ARTERIAL PROTECT**



**Arterial Protect** can help stabilize endothelial plaque and promote healthy blood flow throughout the body.\*

	Retail Price	Your Price
1 bottle	\$44	\$33
4 bottles		\$29 each

**Item# 02004 • 30 vegetarian capsules**

#### Reference

\* *Int Angiol.* 2014 Feb;33(1):20-6.

**Note:** Do not change dosing or discontinue cardiovascular medications unless advised to do so by your physician.

Pycnogenol® and Centellicum® are registered trademarks of Horphag Research and the use of this product is protected by U.S. and international patents.



For full product description and to order **Arterial Protect**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

## Cleveland Clinic Journal Supports Non-Fasting Blood (Lipid) Testing

An article in the prestigious *Cleveland Clinic Journal of Medicine* has taken a stand in support of performing lipid blood tests without fasting.\*

This stance echoes the opinion of **Life Extension®** as expressed in the *As We See It* column of our May 2017 issue.

The authors, Dr. Zareen Farukhi and Dr. Samia Mora, say that while fasting was for many years the standard practice, nonfasting testing has been gaining acceptance in medical institutions around the world.

They point out that past concerns—such as that an increase in triglyceride concentrations after consuming a fatty meal could reduce the validity of the results—haven't been borne out by research.

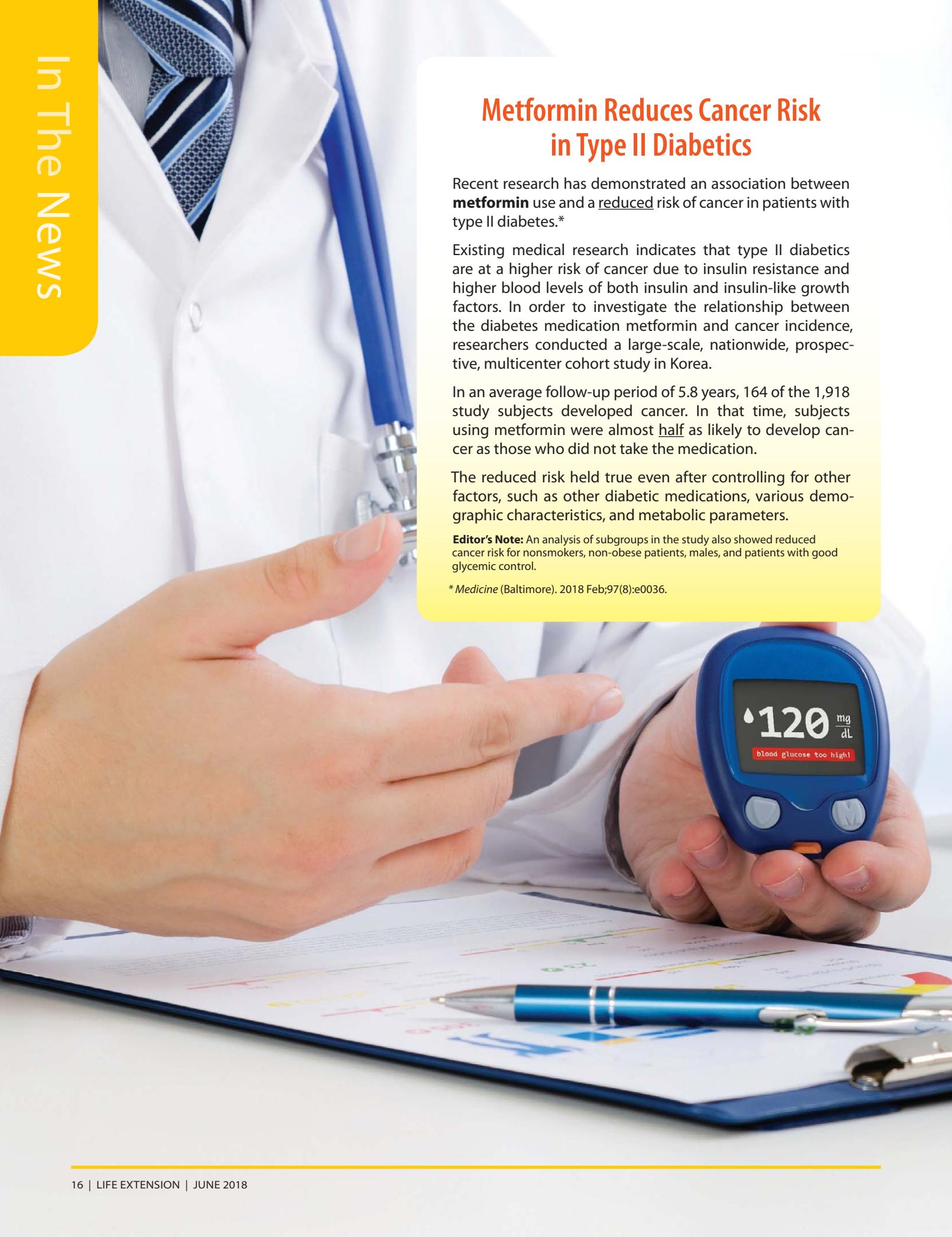
As well, the authors write that recent studies "suggest that postprandial effects do not diminish and may even strengthen the risk associations of lipids with cardiovascular disease, in particular for triglycerides."

Moreover, in some patients, such as those with diabetes or metabolic syndrome, fasting could mask abnormalities in high-triglyceride metabolism that can only be detected with a non-fasting test.

The doctors conclude: "For most patients, non-fasting lipid testing is appropriate. It is evidence-based, safe, valid, and convenient."

**Editor's Note:** The study authors believe that more widespread adoption of nonfasting lipid blood tests by U.S. healthcare providers would improve quality of care and patient and clinician satisfaction.

\* *Cleve Clin J Med.* 2017 Dec;84(12):919-922.



## Metformin Reduces Cancer Risk in Type II Diabetics

Recent research has demonstrated an association between **metformin** use and a reduced risk of cancer in patients with type II diabetes.\*

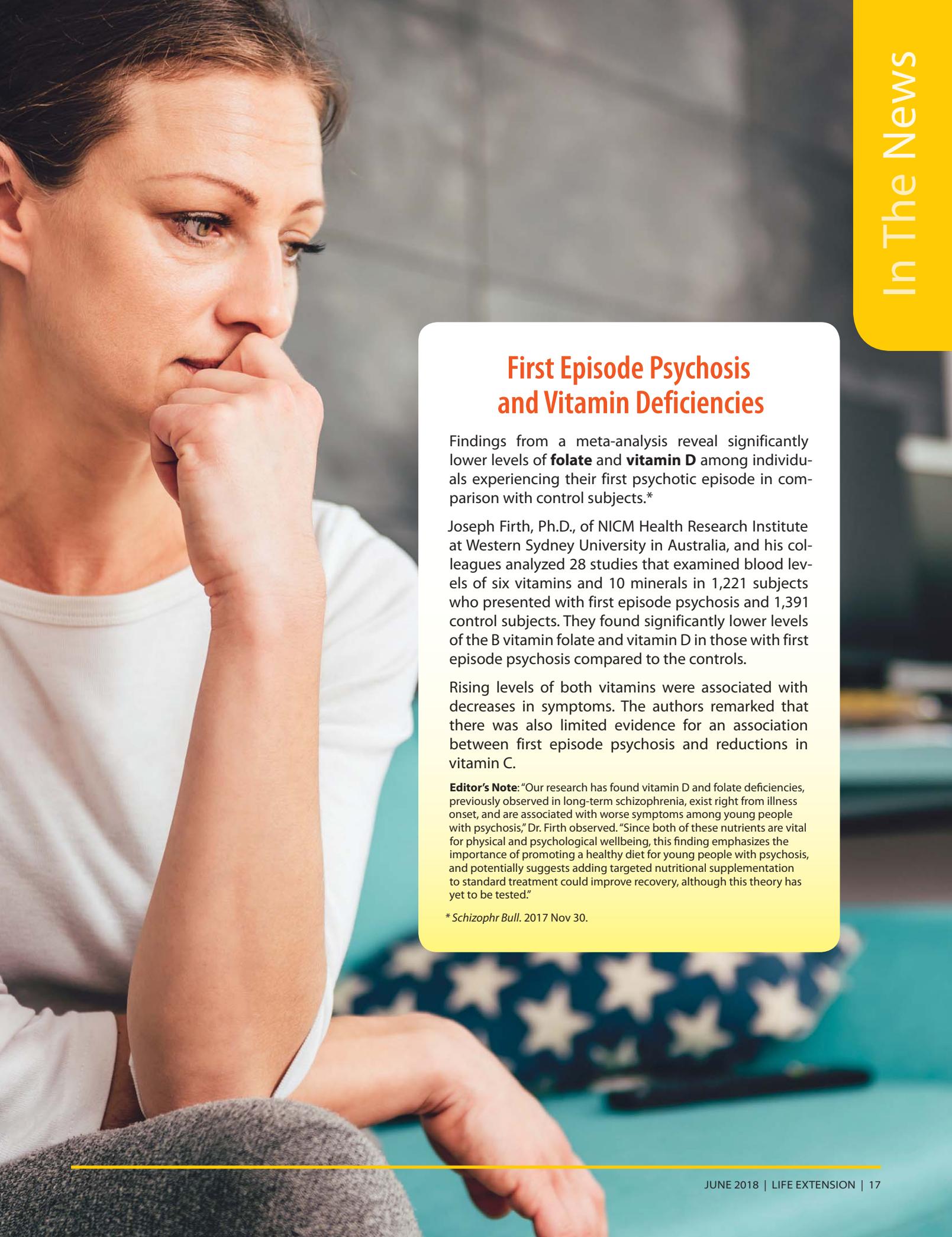
Existing medical research indicates that type II diabetics are at a higher risk of cancer due to insulin resistance and higher blood levels of both insulin and insulin-like growth factors. In order to investigate the relationship between the diabetes medication metformin and cancer incidence, researchers conducted a large-scale, nationwide, prospective, multicenter cohort study in Korea.

In an average follow-up period of 5.8 years, 164 of the 1,918 study subjects developed cancer. In that time, subjects using metformin were almost half as likely to develop cancer as those who did not take the medication.

The reduced risk held true even after controlling for other factors, such as other diabetic medications, various demographic characteristics, and metabolic parameters.

**Editor's Note:** An analysis of subgroups in the study also showed reduced cancer risk for nonsmokers, non-obese patients, males, and patients with good glycemic control.

\**Medicine (Baltimore)*. 2018 Feb;97(8):e0036.



## First Episode Psychosis and Vitamin Deficiencies

Findings from a meta-analysis reveal significantly lower levels of **folate** and **vitamin D** among individuals experiencing their first psychotic episode in comparison with control subjects.\*

Joseph Firth, Ph.D., of NICM Health Research Institute at Western Sydney University in Australia, and his colleagues analyzed 28 studies that examined blood levels of six vitamins and 10 minerals in 1,221 subjects who presented with first episode psychosis and 1,391 control subjects. They found significantly lower levels of the B vitamin folate and vitamin D in those with first episode psychosis compared to the controls.

Rising levels of both vitamins were associated with decreases in symptoms. The authors remarked that there was also limited evidence for an association between first episode psychosis and reductions in vitamin C.

**Editor's Note:** "Our research has found vitamin D and folate deficiencies, previously observed in long-term schizophrenia, exist right from illness onset, and are associated with worse symptoms among young people with psychosis," Dr. Firth observed. "Since both of these nutrients are vital for physical and psychological wellbeing, this finding emphasizes the importance of promoting a healthy diet for young people with psychosis, and potentially suggests adding targeted nutritional supplementation to standard treatment could improve recovery, although this theory has yet to be tested."

\* *Schizophr Bull.* 2017 Nov 30.

## Low Vitamin D Levels Predict Erectile Dysfunction in Diabetics

An article published in *The Aging Male* reveals an association between decreased serum **vitamin D** levels and a greater risk of erectile dysfunction (ED) in diabetics.\*

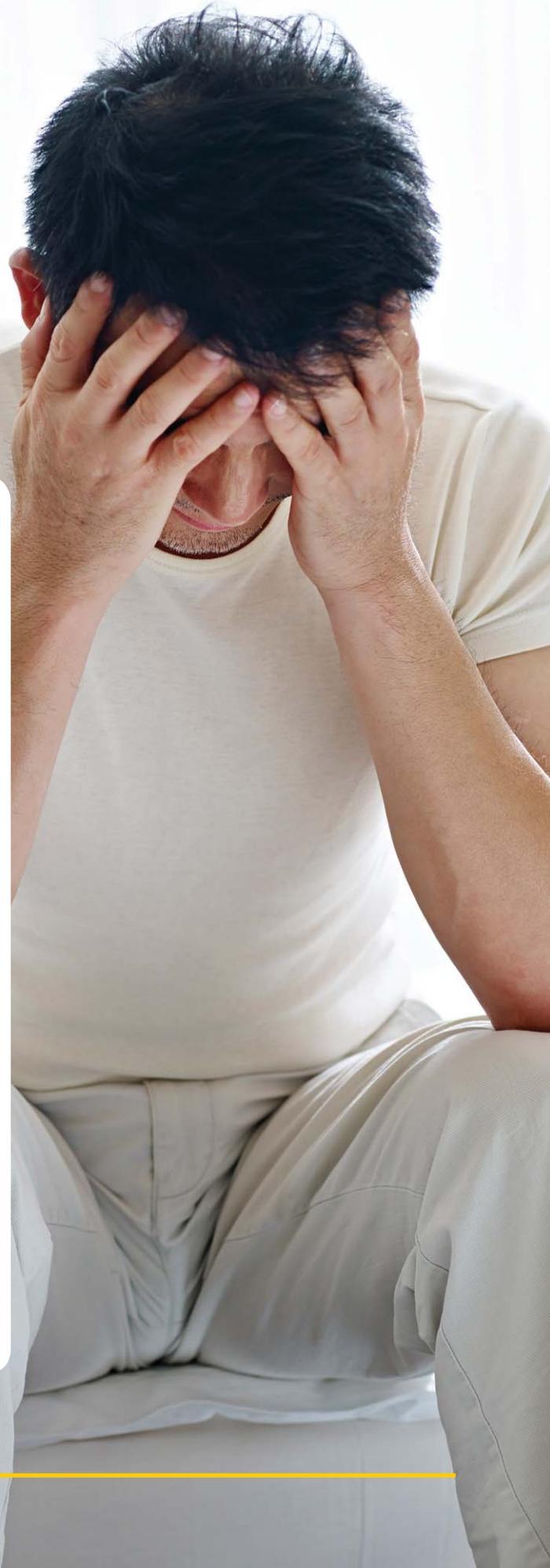
The study included 98 diabetic men. International Index of Erectile Function (IIEF-5) questionnaire scores determined the presence and severity of ED, with higher scores indicative of no ED.

Among the 77 participants with the condition, 45 had moderate ED and 32 had severe ED. Blood samples were analyzed for 25-hydroxyvitamin D levels, hormones and other factors.

A moderate correlation was observed between increased vitamin D levels and higher IIEF scores, particularly among those between 45 and 65 years of age. Men whose IIEF-5 scores were indicative of severe ED had vitamin D blood levels that averaged only **10.51 ng/mL**, which was significantly lower than the average levels of participants with no or moderate ED. (Optimal blood levels of **25-hydroxyvitamin D** are considered **50-80 ng/mL**.)

**Editor's Note:** "There is a significant relationship between 25(OH)D deficiency and ED in male patients with type II diabetes mellitus," the authors write. "This relationship is considered to be mediated by increased nitric oxide production by 25(OH)D in endothelial cells through various pathways, inhibition of apoptosis and prevention of endothelial dysfunction by preventing against oxidative stress."

\* *Aging Male*. 2017 Sep 23:1-5.



# DHEA

## FOR ALL NEEDS

**DHEA** is one of the most important hormones in your body. It supports immune function, mood, sex drive, and lean muscle mass.

**DHEA** levels markedly decline with age.

Because everyone's needs are different, **Life Extension**® offers DHEA in different encapsulated potencies, along with a dissolve-in-the mouth tablet.

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4 bottles		<b>\$9 each</b>

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### DHEA 25 mg capsules

	Retail Price	Your Price
1 bottle	\$16	<b>\$12</b>
4 bottles		<b>\$11 each</b>

Item #00335 • 100 capsules



### DHEA 25 mg tablets

	Retail Price	Your Price
1 bottle	\$14	<b>\$10.50</b>
4 bottles		<b>\$8.81 each</b>

Item #00607 • 100 dissolve-in-mouth tablets



### DHEA 50 mg capsules

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

Item #00882 • 60 capsules



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and to order **DHEA**,  
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**Caution:** Consult a physician or licensed, qualified healthcare professional before using these products if you have, or have a family history of, breast cancer, prostate cancer, or other hormone-sensitive diseases.



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L-92® is a registered trademark of Asahi Calpis Wellness Co., Ltd.



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The **Two-Per-Day** multinutrient formula is superior to commercial multivitamins because it provides vastly **higher** potencies of most **vitamins, minerals and plant extracts**.

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Item #02215 • 120 tablets

	Retail Price	Your Price
1 bottle	\$23	<b>\$17.25</b>
4 bottles		<b>\$15.50 each</b>

Each bottle provides a two-month supply.

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6-Time Winner!

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



BY STEVEN ANDREWS, PREAMBLE BY WILLIAM FALOON



# *The Search for Natural Products to Support Sexual Health*

It's hard to believe that 20 years have passed since the **FDA** approved **Viagra®** to treat **erectile dysfunction**.

Starting in **1998**, this drug class generated a flurry of media headlines, endless TV ads, and lively public discourse about what was a socially repressed topic, i.e., loss of **sexual function** with age.

**Viagra®**, **Cialis®**, and **Levitra®** work rapidly to enhance penile blood flow through inhibition of an enzyme called **phosphodiesterase type 5** (PDE5). This prescription drug class is known as **PDE5 inhibitors**.

Reduced penile **blood flow**, though an important aspect of **erectile dysfunction**, does not address other factors crucial for sexual satisfaction including interest and desire.

In addition, cost and safety are important considerations with prescription drugs of this class.

When **Viagra®** was launched it cost around **\$7** per pill. At one time the price rose as high as **\$65 per pill**. Both these prices are outlandish since the active ingredient costs only pennies per pill.

Frightening reports of men experiencing **blindness** and **permanent vision damage** after use of these drugs has haunted this drug class for years, though this risk has been persistently downplayed by the pharmaceutical industry lobby.

Price gouging and safety concerns associated with prescription erectile-dysfunction drugs have prompted a search for safer alternatives.

We at **Life Extension®** found that many "natural" formulas promising immediate, dramatic increases in sexual performance were spiked with either the same drug(s) as **Viagra®** and **Cialis®** or very close structural analogs to prescription drugs. This immediately disqualified these products from our consideration.

That's why we were excited when we recently learned about a **ginger-like root** that has a long tradition of use in South Asia.<sup>1-3</sup> Published studies show that in contrast to the rapid effects of PDE5 inhibitors on local penile blood flow, taking this natural ingredient over time can result in improvements in erectile function, response time, and intercourse satisfaction in a **modest, sustainable**, and most importantly, **safe fashion**.<sup>1,4</sup>

Preclinical studies reveal how this plant extract *gently supports local blood flow while enhancing brain responses to sexual stimuli*.<sup>3,5-9</sup> In other words, this **ginger-like root** works on both the brain and the body to enhance the sexual experience. **Human** studies demonstrate noticeable results after about 30 days.<sup>1,4</sup>

Due to controversies surrounding sex enhancement products, **Life Extension** also conducted a small study of the effects of this **ginger-like extract** in men with age-associated decreases in sexual satisfaction. We wanted to further assess safety and efficacy for this interesting ingredient.

In contrast to rapid vascular effects and potential safety risks associated with potent, prescription erectile-dysfunction drugs, this article reports on data supporting sustainable, modest improvements in age-related changes in sexual satisfaction with use of a **ginger-like root** extract over time.

It's a mistake to limit discussion of male sexual dysfunction to localized **erectile dysfunction**.

Male sexuality is about more than the mechanical aspects of erection. Sexual health includes interest, response, desire, and satisfaction.

Regarding these multiple factors, a **ginger-like root** extract called *Kaempferia parviflora* has attracted considerable interest.

Unlike other approaches to erectile dysfunction that focus exclusively upon rapid effects related to localized penile blood flow, this botanical compound appears to stimulate and support sensory and physical responses to erotic stimulation for increased satisfaction.

### Human Studies

Two **human** clinical trials in aging men show that this **ginger-like extract** improved parameters that indicate enhancement in the overall male sexual experience.<sup>1,4</sup>

In the first study, 45 men (average age 65 years) were divided into three groups that received either a **placebo**, a **25 mg** dose of *Kaempferia* extract, or **90 mg** of *Kaempferia* extract daily for eight weeks.<sup>1</sup>

Men taking the **90 mg**/day dose had a **quicker** erectile **response time** to visual erotic stimuli compared to placebo. The time from stimulus to full erection was cut in half (from about 10 to about 5 minutes).<sup>1</sup>

Men in the **25 mg** group also had improvements in response time, but these did not achieve statistical significance, indicating that the dose was not high enough.

The supplemented men also experienced improvements in penile **circumference** (penile girth) over time. The **circumference** of those taking **90 mg**/day rose by as much as **1-1.5 centimeters** (about half an inch) in one month—an increase that was largely sustained at two months.

Penile **length** also increased about a centimeter in both the flaccid and erect state, after one month, compared with placebo.<sup>1</sup>

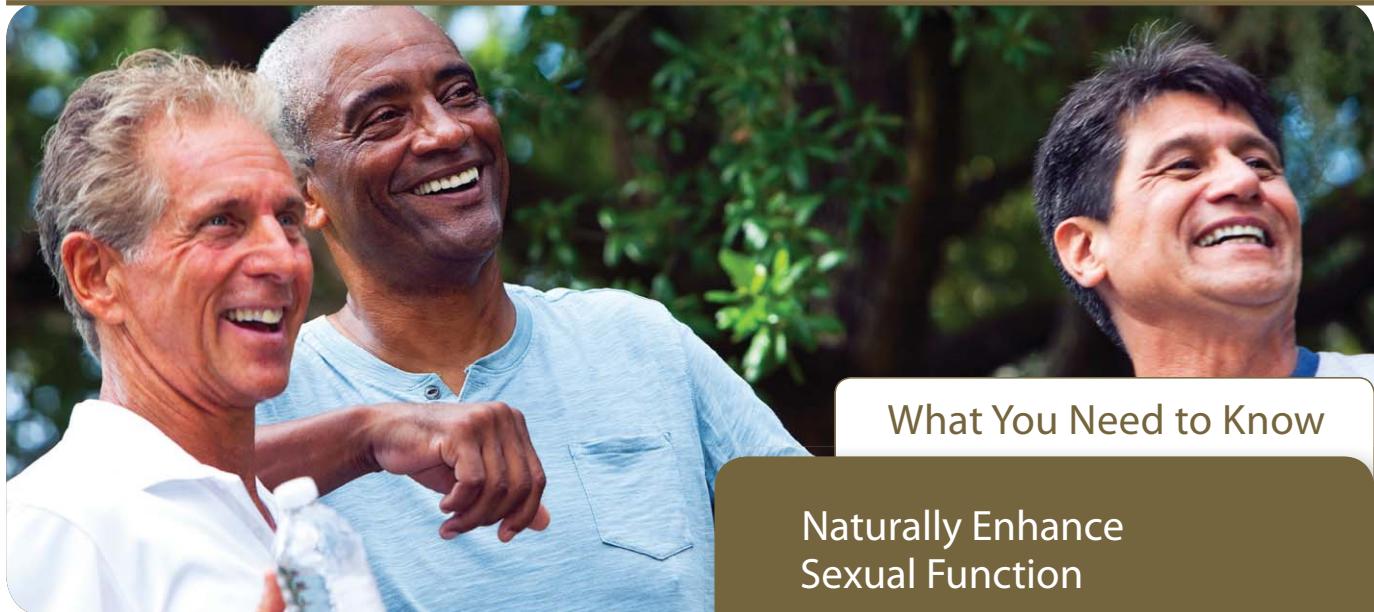
Longtime supporters of **Life Extension** know the crucial importance of healthy testosterone levels in supporting sexual health, as well as a variety of other aspects of overall health, in aging men. This study revealed no significant changes in testosterone or other sex hormones between the placebo and treated groups, during or after the study.<sup>1</sup> This finding suggests that ***Kaempferia* extract** works by mechanisms beyond androgens (male sex hormones).

The researchers speculated that these findings may reflect involvement of the blood-vessel dilator **nitric oxide**.<sup>1</sup>

Endothelial **nitric oxide** enables **arteries** to expand and contract with youthful elasticity. With aging, **nitric oxide** levels decline, setting the stage not only for erectile problems but greater risk of cardiovascular disorders.

Stated simply, an inadequate release of **nitric oxide** results in constricted blood vessels that obstruct healthy blood flow.<sup>10</sup>





## What You Need to Know

### Naturally Enhance Sexual Function

- Erectile dysfunction affects millions of American men, and not all of them are elderly.
- Erectile dysfunction has many causes, including diminished brain processing of erotic stimuli and reduced blood flow to the penis.
- Powerful prescription erectile dysfunction drugs improve erectile function by inhibiting the PDE5 enzyme, allowing an erection to persist, but worrisome safety risks like blindness and permanent vision loss continue to plague this drug class despite the pharmaceutical industry's attempts to downplay the risks.
- Extracts of *Kaempferia parviflora* have a centuries-old safety record, and gently support vascular health as well as emotional and psychological aspects of the sexual experience.
- *Kaempferia* extracts appear to enhance the brain's perceptions of the sensory inputs required for sexual arousal and increase production of nitric oxide, which relaxes blood vessels to allow an erection to begin.
- Human studies now demonstrate that *Kaempferia* extract taken over time helps support male sexual function, supports penis size, improves erectile response time, and enhances overall sexual satisfaction.

### Increased Sexual Satisfaction

In a second study completed in **2017**, researchers at **Life Extension** conducted a small open-label (no placebo) clinical study in 13 healthy older men (50-70 years old) who experienced mild dissatisfaction with their sexual health, likely reflecting mild-to-moderate erectile dysfunction associated with aging.<sup>4</sup>

Men in this study took *Kaempferia* extract standardized to **5%** of the active compound, 5,7-dimethoxyflavone (**5,7-DMF**), at a slightly higher dose of **100 mg**.<sup>4</sup> The active **5,7-DMF** compound has been shown in lab studies to be important for *Kaempferia*'s mechanisms of action.<sup>6</sup>

Outcome measures were based on the men's reported experiences while taking the supplement, as opposed to physiological measurements.

After 30 days, there was a significant average increase in **International Index of Erectile Function** scores. This is a validated 15-item questionnaire used to assess the severity of erectile dysfunction.<sup>11,12</sup> Higher scores indicate greater erectile function.

Furthermore, the average score for the single question, "When you attempted intercourse, how often were you able to penetrate your partner?" rose significantly.

On the global assessment question, "Has the product you have been taking improved your erections?" an impressive **61.5% of men reported that the supplement improved their erections, an indication of a strong positive sexual experience.**<sup>4</sup>

No hormone changes and no indicators of safety problems were identified in this study.

These findings indicate that *Kaempferia* extract (standardized to **5% 5,7-DMF**) can improve not only erectile dysfunction specifically, but also other important parameters of the male sexual experience.

## Link between Erectile Dysfunction and Cardiovascular Disease

Men with erectile dysfunction have a higher risk of **cardiovascular disease**, and are more likely to die prematurely compared with men having normal erectile function. This is regardless of age and other cardiovascular factors.<sup>13,14</sup>

That's because initiating, achieving, and sustaining an erection all depend on the mechanics of controlled blood flow through arteries and veins—the same blood-flow parameters that are required for good heart health. This makes erectile function a close indicator of how well vascular (blood vessel) and endothelial (blood vessel lining) processes are working.<sup>13,15</sup>

The most important common thread between erectile dysfunction and cardiovascular disease is **endothelial dysfunction**.<sup>16,17</sup> This occurs when vital cells lining blood vessels fail to properly control blood flow and pressure, resulting in impaired distribution of blood flow.

A major cause of **endothelial dysfunction** is **nitric oxide** deficit.

While the first symptom of **nitric oxide deficit** may be **erectile dysfunction**, it is also an early indicator of vascular disorders that may result in heart attack or stroke.<sup>17-21</sup>

It's critical for men to understand these facts, particularly because so many relatively young men are now experiencing erectile dysfunction, which may indicate early cardiovascular disease that would otherwise go undetected.<sup>13,14</sup>

### Significant Risk Factor

*Nonarteritic anterior ischemic optic neuropathy* (NAION) is the most common acute optic neuropathy in people older than age 50, with between approximately 1,500 to 6,000 cases occurring in the U.S. each year.<sup>24,25</sup>

This frightening condition is characterized by sudden, usually painless loss of vision in one eye, which confers an increased risk of vision loss in the other eye.

Many of the risk factors for developing NAION also predict erectile dysfunction (ED), such as hypertension, diabetes, hyperlipidemia, and smoking.<sup>26-28</sup>

Despite the pharmaceutical industry constantly downplaying persistent reports of patients developing NAION after taking Viagra® or other PDE5 inhibitors like Cialis® or Levitra®, regulatory agencies have requested that the prescribing information for all three marketed PDE5 inhibitors be updated to reflect this concern.

This means:

- Erectile dysfunction may be an early warning sign of underlying atherosclerotic disease, but also
- Ideal treatment for erectile dysfunction would carry benefits, rather than certain risks, for the cardiovascular system.

This is what makes the underlying mechanism of *Kaempferia* ginger-like extract so exciting.

### How It Works

Animal and laboratory studies have taught us much about how **Kaempferia extract** improves sexual and cardiovascular health.

Two studies in sexually mature rats showed that ingesting the extract for four weeks improved the animals' sexual motivation, as indicated by the time taken to mount a female.<sup>5,22</sup>

One of those studies also documented a significant increase in **blood flow** to the **genitals**, an important indicator of vascular health.<sup>5</sup>

In another study of aging rats, *Kaempferia* supplementation for three weeks resulted in improved copulatory and sexual behaviors, including shorter times to mounting females and penetrating them, and an increased number of mounting and insertion attempts.<sup>3</sup>





Based on these and other findings, scientists suspect that *Kaempferia* has multiple key mechanisms of action.

The first mechanism seems to activate **brain responses** to sexual stimuli.

*Kaempferia* extract appears to increase the overall **desire** to engage in sex once presented with sufficient sensory stimulation. This is an action unique to *Kaempferia* that is not a feature of the most common erectile-dysfunction drugs.

The second mechanism involves improvements in **blood-vessel function** throughout the body—with special impact on a highly sensitive recipient of blood flow, the penis. By improving arterial and endothelial function, ***Kaempferia* extract** permits better delivery of arterial blood to the penis.

This action produces the clinical effects of improved erectile response times, while increasing the overall size of the erect penis.<sup>1,4</sup>

*Kaempferia* exerts this effect in large part by promoting the production of **nitric oxide**, which helps relax arteries everywhere in the body. It is this particular action that shows so much promise in preventing multiple types of cardiovascular disease as well as erectile dysfunction.<sup>4,7-9,23</sup>

### Additional Research

Studies in lab animals reveal that *Kaempferia* significantly improves **blood flow** through the spermatic artery, which provides blood to the testes.<sup>5</sup>

More detailed analyses show that the increased blood flow arises from favorable shifts in intracellular signaling molecules such as **cyclic GMP** (cGMP) and

**nitric oxide**. These effects are also found in animals treated with the drug sildenafil (Viagra®).<sup>9</sup> However, these vascular effects are far more potent with prescription PDE5 inhibitors.

In this study, the vascular benefits of *Kaempferia* were identified not only in arteries supplying the penis and testes, but also in the **heart**, contributing to overall cardiovascular health.

In isolated portions of rat aorta, the active component of *Kaempferia*, **5,7-DMF** triggered significant relaxation, which would produce a larger space for blood to flow through. These shifts were also traced to higher levels of muscle-relaxing nitric oxide and cGMP, as well as beneficial shifts in calcium ion movements.<sup>7</sup>

*Kaempferia* extract was shown to share an important mechanism of action with drugs sold for erectile dysfunction, i.e. *inhibition* of the enzyme **PDE5**.<sup>6</sup> Again, however, vascular effects mediated through inhibition of this *enzyme* are far more potent with **PDE5 inhibitor drugs**, though safety risks are also linked to this drug class's potency.

This *enzyme* (PDE5) normally sends a **signal** to reduce blood flow through arteries in the penis, which causes penile vascular pressure to drop and the erection to wilt. *Inhibiting* the PDE5 enzyme helps sustain the erection effectively.<sup>9</sup>

Taken together, these findings on *Kaempferia* extract show it can benefit male sexual health for the very reasons it favorably affects systemic vascular health. By allowing arteries to relax and offer minimum resistance to blood flow, this **ginger-like root extract** offers intriguing potential systemic benefits.

## Summary

Sexual dissatisfaction plagues millions of American men.<sup>1,13,14</sup>

Men with diminished sexual function are at greater risk of early death from cardiovascular disease.

Drugs like Viagra® or Cialis® rapidly improve blood flow to the penis and help sustain an erection. However, price gouging and worrisome safety concerns plague this potent drug class. In addition, they are of little use in promoting the psychosocial/emotional aspects of a sexual encounter.

**Kaempferia parviflora** provides the opportunity for a more comprehensive approach with sustained use over time.

Data suggest that a specific *Kaempferia* extract taken over time helps safely support and enhance the sensory experience of sex, making an erection (and subsequent satisfaction) more likely.

This **ginger-like extract** safely supports production of blood vessel-relaxing **nitric oxide**, which helps increase blood flow to the penis and **arteries** throughout the body.

In-vitro research shows that this extract targets the same *enzyme* as powerful drugs prescribed for erectile dysfunction.

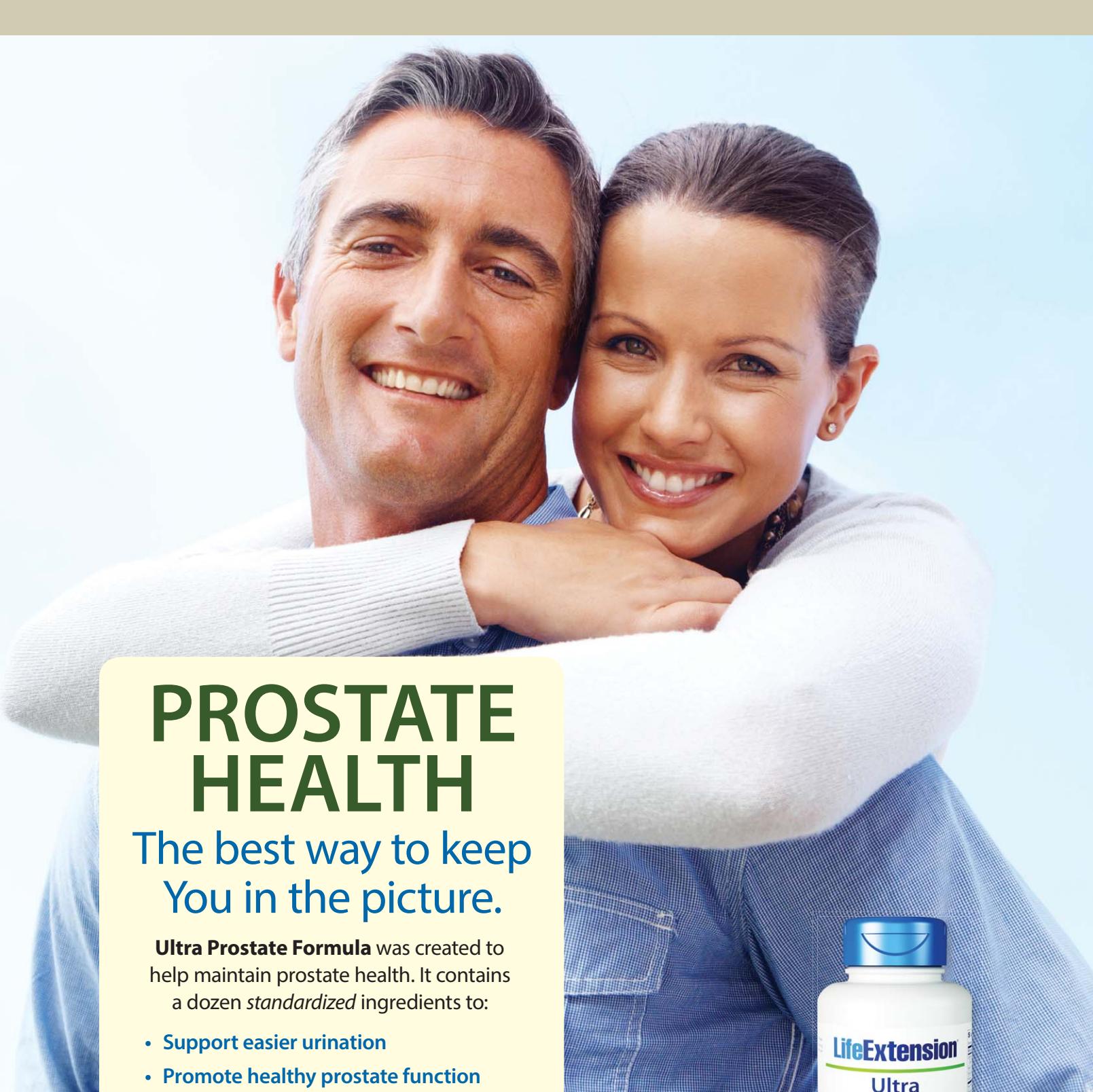
Human studies show that, over time, **Kaempferia** supplementation gently supports erectile function, with modest improvements in penile circumference (girth), and length, all the while supporting a generally more satisfying sexual experience.

Most importantly, because erectile dysfunction can be an indicator of life-threatening cardiovascular disease, supplementing with **Kaempferia** extract may offer the dual benefit of safely supporting sexual performance while potentially providing sustained, gentle support for the aging vascular system. ●

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

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# Brain-Restoring Impact of Magnesium L-Threonate

BY SUSAN GOLDSCHEIN

MIT researchers discovered and patented **magnesium L-threonate** based on its unique ability to boost **brain** levels of **magnesium**.

Rapid absorption and ability to **enter the brain** enables this **magnesium** to structurally reverse certain aspects of **brain aging**.<sup>1-4</sup>

A recent **human** study demonstrates the benefits of **magnesium L-threonate** in adults with **cognitive dysfunction, sleep disorders, and anxiety**.<sup>1</sup>

The most startling finding is a reversal of more than **nine years** in clinical measures of **brain aging** in people who supplemented with **magnesium L-threonate**.

**Magnesium L-threonate** (MgT) was developed at the Massachusetts Institute of Technology.<sup>2</sup>

**MgT** (pronounced “Mag T”) is special because of the way it boosts brain magnesium levels when taken orally. This effect is due to its unique ability to cross the **blood-brain barrier**.<sup>2</sup>

Research has shown that once **MgT** gets into the brain, it increases the density of synapses, which are the communication **connections** between brain cells.<sup>1</sup>

This is critical because loss of synaptic density is associated with **brain shrinkage** and **cognitive decline**.<sup>5,6</sup>

### Published Human Data

Scientists at three independent institutions carried out a randomized, double-blind, placebo-controlled clinical trial of **MgT** in older adults with cognitive impairment.<sup>1</sup>

To participate in the study, candidates had to be between the ages of 50 and 70, and have self-reported complaints of memory problems, sleep disorders, and anxiety.<sup>1</sup>

This study was based on the premise that **sleep** and **anxiety** disorders correlate with perceived **memory loss**.<sup>7</sup> Those who report **mild cognitive impairment** and who also have **sleep** and **anxiety** disorders are more likely to develop **Alzheimer's**.<sup>1,8-11</sup>



In this multi-center study, participants were randomly assigned to receive **placebo** or **magnesium L-threonate** in the dose of **1,500-2,000 mg** each day (depending on body weight) for 12 weeks.

Baseline **cognitive testing** commenced before people started taking **MgT** or **placebo**. These cognitive tests were then repeated at six-week and 12-week points.<sup>1</sup>

The following four separate tests were used to evaluate cognitive function:

- Executive function
- Working memory
- Attention
- Episodic memory (ability to recall fleeting events)

Findings from this study revealed:

#### 1. MgT improved body magnesium status.

After 12 weeks researchers found significant increases in red blood-cell concentration and in urinary excretion of magnesium in the treated group.<sup>1</sup> Increased urinary excretion indicates that large amounts of magnesium have been absorbed, while increased levels in red blood cells show high circulating levels of magnesium in the body.

#### 2. MgT improved cognitive abilities.

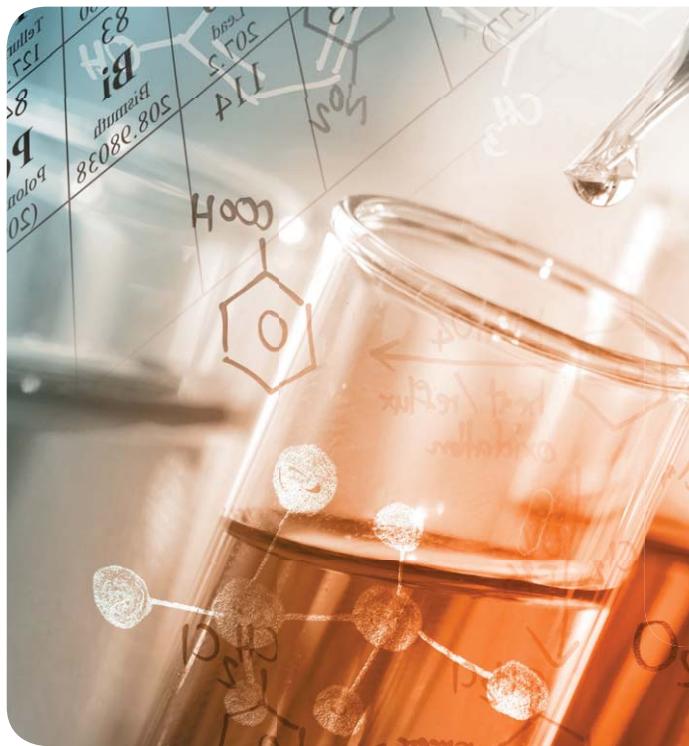
Using a test of visual attention and task switching, researchers saw significant increases in performance speed for executive function and cognitive processing. These benefits appeared as early as week six on some of the tests.<sup>1</sup> Most tellingly, the overall composite scores for all tests of the **MgT**-supplemented group increased significantly compared with baseline scores and with those of placebo recipients at weeks six and 12.

#### 3. MgT reduced fluctuation in cognitive ability.

When cognitive functions are worse on some days than others, it is a warning sign of developing mild cognitive impairment.<sup>12,13</sup> In the present study, while placebo recipients showed considerable fluctuation in their cognitive scores, those in the **MgT** group had primarily positive changes.<sup>1</sup>

#### 4. MgT reversed clinical measures of brain aging.

This is a significant finding, which we'll explain in more detail in the next section.



## What You Need to Know

### Support Brain Function With Magnesium L-Threonate

- A new human study using a unique, highly-available form of magnesium, magnesium-L-threonate, or MgT, shows that 12-week administration not only boosts performance on individual cognitive tests, but also *reverses brain aging* by more than nine years in older adults with cognitive impairment.
- Our brains shrink as we age, victims of steady declines in the numbers and functions of our brain cells and their cerebral “switchboards” known as synapses.
- Loss of those synapses is currently the best predictor of cognitive decline, the slowing and wandering of our wits as we age.
- Scientists now believe that preventing the loss of synapses, and promoting their density, has incredible potential for preventing cognitive decline.
- Animal studies confirm that MgT has remarkable capacity to promote new synapse formation and enhance plasticity in ways that preserve youthful brain function.
- We only get one brain apiece to last our entire lives – MgT supplementation appears to be indispensable in preserving our best brain function.

### Understanding Your Brain Age

Brains do not **functionally** age at the same rate as whole-body **chronological** age.

For example, a **60-year-old** person can have a brain age of **70**, meaning they are **functioning** at an “older” level.<sup>1</sup>

This variance of brain aging is based on measurable performance and physiological parameters.<sup>14-17</sup>

In the **MgT** study discussed earlier, the average **chronological age** of all subjects in the study was **57.8 years**. Their average baseline “functional” brain age, however, was estimated to be **68.3 years**.

In other words, the study subjects were about **10 years older** in terms of their **cognitive function**.<sup>1</sup>

What the researchers found next was remarkable.

The average **functional** brain age of subjects receiving **MgT** supplements **decreased** from an older **69.6** years at the start of the study, to **60.6** after just six weeks of treatment.

That’s a **nine-year reduction** in **brain age** in a matter of weeks.<sup>1</sup> This improvement continued until week 12 with total **reduction** in brain age of **9.4 years**.

By the end of the study, **cognitive abilities** were brought almost back to **normal** for their **younger** chronological age in subjects who took **MgT**.

In other words, MgT treatment was found to reverse these measured aspects of **brain aging** until it was nearly identical to their cognitively healthy peers.<sup>1</sup>

Overall, the results of this clinical trial are potentially game-changing for the aging population. The study found that MgT significantly improved cognitive performance on several standardized tests, while reducing the fluctuations in performance that are a warning of developing cognitive impairment in the future.

It also showed a reversal of the **brain age** of MgT-supplemented subjects by nearly a **decade**.

### How MgT Regenerates Aging Brains

The study detailed above shows that MgT improved cognitive function in aging adults, and helped “rejuvenate” their brains towards normal function for their age.

The key takeaway of this study is that achieving higher **brain levels** of **magnesium** results in a **younger** brain.

Previous studies give us insight into how. They demonstrate that increasing magnesium concentrations in cultured brain cells from the hippocampus (the area of the brain where memories are stored and retrieved) increases both **synaptic density** and **brain plasticity**.<sup>18,19</sup>

Here's why this is important:

- **Synaptic density** is a measure of the structural integrity of brain **synapses**. The greater the synaptic density, the more efficient the cognitive processing.<sup>20</sup>
- **Plasticity** is a measure of how readily synaptic connections can change with new stimuli. It is the equivalent of learning at the cellular level.<sup>21-24</sup>

Getting more magnesium into brain cells is not as simple as adding it to the diet. That's because of the complex regulatory functions of the blood-brain barrier.<sup>25</sup>

As a result, consuming a typical magnesium compound rather than **magnesium L-threonate** (MgT) doesn't affect brain functions like cognition and memory because much of it does not reach the brain.<sup>2</sup> In fact, studies show that raising human blood magnesium levels **300%** changes magnesium in cerebrospinal fluid by less than **19%**.<sup>26</sup>

Research shows that **MgT increases synaptic density** in precisely the brain regions most crucial to executive function and memory.<sup>2,4</sup> These are the two most critical processes in something as simple as recognizing that a red light means “stop.”

Studies in aging rats and in a mouse model of Alzheimer's disease have also shown that MgT enhances synaptic plasticity and is capable of reversing cognitive impairment.<sup>2,4</sup>

### Overcoming Anxiety

Animal studies demonstrate that MgT helps reduce fear-related memories, and prevents fear memories from becoming over-generalized—actions that contribute directly to reductions in **anxiety**.<sup>3,27</sup>

While fear plays an important role in keeping us safe from real threats, persistent fearful memories from a specific traumatic occurrence, such as a car accident, can cause us to become anxious and even paralyzed into inactivity.<sup>3,27,28</sup>

A supplement like MgT that can squelch fearful memories, while also helping our brains put them into context, represents a real step forward in addressing debilitating elements of brain aging.



## Summary

The mineral **magnesium** has emerged as a major contributor to the integrity of microscopic **synaptic** structures of the brain.

But getting high amounts of magnesium into the brain is complicated because it has difficulty penetrating the **blood-brain barrier**.

**Magnesium L-threonate**, or **MgT**, is unique because it enters the brain more efficiently and reaches brain cells, offering a novel delivery system for this valuable neurochemical.

In a remarkable **human** study, MgT was found not only to effectively boost brain magnesium concentrations, but also to significantly improve performance and speed on a battery of cognitive tests in adults with early cognitive impairment.

Even more dramatically, MgT supplementation reduced brain age by more than **nine years**. That represents a **reversal** in these clinical measures of brain aging.

**MgT** is available as a dietary supplement for anyone interested in proactive brain-aging protection. ●

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

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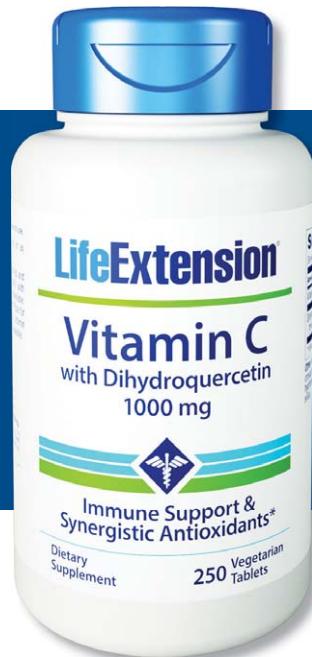
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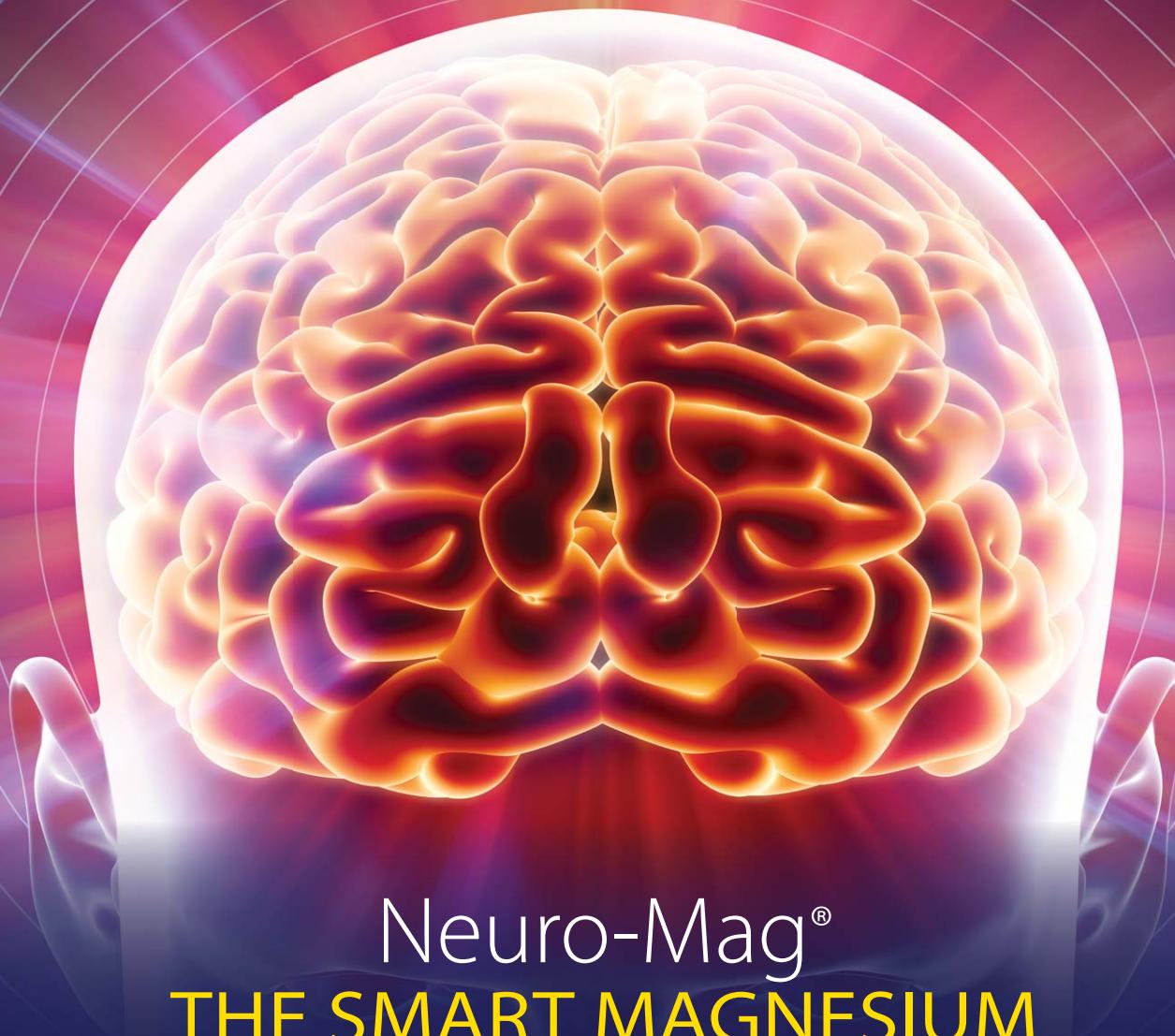
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BY GENE RICHMOND





# Pomegranate Thwarts Cancer on Multiple Levels

For years, scientists have been intrigued by **pomegranate's** potential anti-cancer benefits.

Researchers are now discovering bioactive compounds in pomegranate can help thwart cancer at *multiple stages of the development process.*<sup>1-3</sup>

Pomegranate compounds are demonstrating the ability to protect against initial DNA mutations and impede existing cancers from spreading.<sup>1-7</sup>

All parts of the **pomegranate** plant, including the fruit, peel, and seeds, are rich in compounds that protect against chemical and physical threats to our cells.

These compounds include several families of **polyphenols** called **tannins** and **flavonoids.**<sup>1,3-5,8,9</sup>

## Pomegranate's Multiple Anti-Cancer Actions

Pomegranate extracts help combat cancer in several of the stages of tumor development.

Firstly, they interfere with multiple factors that damage DNA and cause the crucial first mutations of genetic material.<sup>1,10,11</sup>

If a **mutation** does occur, pomegranate extracts can:

- Impede the **cell replication cycle**.<sup>1,7,12-14</sup>
- Facilitate the death of mutated cells by **apoptosis**.<sup>6,9,12,15-17</sup>
- Impede new blood-vessel growth, or **angiogenesis**. This helps starve rapidly dividing tumors of nutrients and oxygen.<sup>9,18-20</sup>

If a malignant cell mass still manages to develop, pomegranate extracts impair its ability to invade local tissues and metastasize to distant ones.<sup>12,15,21</sup>

## A Potent Cancer Blocker

Pomegranate extracts also have the unique ability to promote the production of a *protective enzyme* known as **paraoxonase-1**, or **PON-1**.<sup>8,22-30</sup>

PON-1 blocks the inflammation and oxidative stress that can contribute to the initial DNA damage that can trigger cancer.<sup>31-41</sup>

People with cancer have been found in multiple studies to have reduced levels of PON-1, while those with the poorer prognosis often have the *lowest* levels of PON-1 activity.<sup>31-41</sup>

Restoring and promoting PON-1 activity may be a powerful means of blocking cancer formation at its earliest stages—while reducing oxidative stress and inflammation can be beneficial at multiple stages.

As we'll see next, these **anti-cancer** actions play a role in pomegranate's ability to help prevent four of the most common—and deadliest—cancers: prostate, breast, colorectal, and lung.

## Pomegranate Slows Prostate Cancer Growth

Prostate cancer is the second leading cause of cancer-related death in American men.<sup>42</sup> Both animal and human studies have shown pomegranate's ability to slow prostate tumor growth and prevent prostate cancers from forming.

Animal studies have found that pomegranate extracts *slow* prostate tumor growth in the lab and in

mice prone to prostate cancer.<sup>16,19,42-46</sup> The extracts work by inhibiting cell proliferation (inducing apoptosis), reducing inflammation, and inhibiting new blood-vessel formation—many of the anti-cancer mechanisms mentioned above.<sup>9,16,19,42,45</sup>

In the most dramatic of these studies, **100%** of mice bred to be prone to prostate cancer developed tumors by 20 weeks, compared to only **20%-30%** of those receiving pomegranate fruit extract.<sup>43</sup> More importantly, the supplemented mice lived as much as **114%** longer than the control animals.

Human studies have also shown pomegranate's ability to slow prostate cancer growth, as demonstrated by PSA scores.

Prostate-specific antigen (PSA) is a reliable marker of the rate of prostate cancer growth. The **PSA doubling time** is the standard indicator of tumor growth rate. The shorter the doubling time, the more aggressive the tumor.

Among men with rising PSA, pomegranate supplementation lengthened the PSA doubling time by **1.6- to 3.6-fold**.<sup>47,48</sup>

This represents increases of **6** to **39** months in the time it took the PSA to double, a respectable slowing of tumor growth by any standard.<sup>47,48</sup>





## What You Need to Know

### Pomegranate Combats Cancer

- Pomegranate extracts contain large amounts of a wide range of polyphenols known to have cancer-preventive properties.
- Studies now show that pomegranate has tremendous potential to act as a powerful chemopreventive agent against prostate, breast, colorectal, and lung cancers through a series of overlapping, complementary mechanisms.
- These mechanisms include protecting DNA from damage, inhibiting excessive cell growth, promoting natural cancer-cell death by apoptosis, and preventing cancer from spreading.
- Regular pomegranate extract supplementation, one of nature's greatest sources of bioactive polyphenols, may help protect the body from succumbing to cancer-causing processes.

### Protection Against Breast Cancer

Breast cancer is the most common cancer among all women.<sup>49</sup> It strikes nearly a quarter of a million women each year, killing more than 41,000.<sup>49</sup>

Most breast cancers are *hormone-dependent*, meaning that high levels of **estrogen** help the cancer to grow and spread.

**Anti-estrogen** therapies are a common form of treatment. They work by either lowering estrogen levels or by stopping estrogen from stimulating cancer growth.

A smaller percentage of breast cancers are *hormone-independent*, making them harder to treat using anti-estrogen therapies.

Pomegranate extracts have shown preventive activity in laboratory studies against estrogen-dependent breast cancer cells,<sup>6,50,51</sup> with a pair of related human cancer cell studies finding that pomegranate peel and seed extracts inhibited the growth of breast cancer cells by more than 80%.<sup>52,53</sup>

Pomegranate has the unique ability to interact with the body's normal hormone metabolism, making it especially beneficial against the more common hormone-dependent breast cancers.

Compounds found in pomegranates can inhibit the *enzymes* that convert less active forms of estrogen into cancer-promoting estrogen molecules.<sup>54</sup>

These results show pomegranate can block specific pathways that link estrogen metabolism to breast cancer.

### Early Promise in Colorectal Cancer Prevention

Colorectal cancers are the third leading cause of cancer-related deaths in the U.S., accounting for more than 50,000 fatalities each year.<sup>55</sup>

Colon cells are constantly exposed to the flow of waste matter, toxins, and other materials capable of imposing powerful oxidative stress on cells. This makes them prime candidates for DNA damage, inflammation, and other factors that contribute to cancer.

The good news about colorectal cancers is that these tumors are also directly exposed to beneficial nutrients that we ingest.

Pomegranate extract is one of the best candidates for colorectal cancer chemoprevention because its **polyphenols** are delivered directly to human colonic tissues after consumption.<sup>56</sup>

In animal models of colorectal cancer, pomegranate extracts consistently—and significantly— inhibited tumor growth, reducing both the size and number of tumors.<sup>57,58</sup> Pomegranate's anti-cancer mechanisms included upregulating cellular anti-cancer enzyme systems.<sup>57,58</sup>

One of pomegranate's most abundant classes of **polyphenols**, *punicalagins*, can inhibit enzymes capable of converting **pro-carcinogens** (precursors of cancer-causing molecules) into active **carcinogens**.<sup>59</sup>

Promising human studies have shown important alterations in genes and other markers of colorectal cancers when people supplement with pomegranate extracts.<sup>56,60,61</sup>

## Lung Cancer

Pomegranate extracts have demonstrated properties against lung cancers.

In particular, pomegranate extracts have anti-inflammatory properties. This is valuable in reducing cancer risk because of the tumor-promoting effects of chronic inflammation.<sup>14,20</sup>



In animal models of lung cancer, pomegranate extracts reduced the numbers of tumors<sup>10,20</sup> by as much as **66%** compared with unsupplemented animals.<sup>20</sup> These beneficial effects are attributed to slowing cell-replication and amplifying cell death by **apoptosis**.<sup>4,6,9,12,52</sup>

Finally, pomegranate extracts reduce production of specialized enzymes that cancer cells use to invade healthy cells.<sup>12</sup> This property can help prevent cancer cells from spreading to other tissues, which lowers the deadliness of *any* cancer.

## Summary

Pomegranate extracts have numerous properties capable of combatting cancer at multiple stages of the development process.

Studies show that pomegranate extracts protect DNA from mutations that trigger the earliest carcinogenic changes, inhibit cancer-cell growth, and help prevent cancer from spreading.

Pomegranate extracts show promise in preventing the growth and spread of four common types of cancer cells: prostate, breast, colon, and lung.

Their broad range of anti-cancer activities, attributable to their rich **polyphenol** content, makes them an excellent food and/or extract to ingest on a regular basis. ●

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

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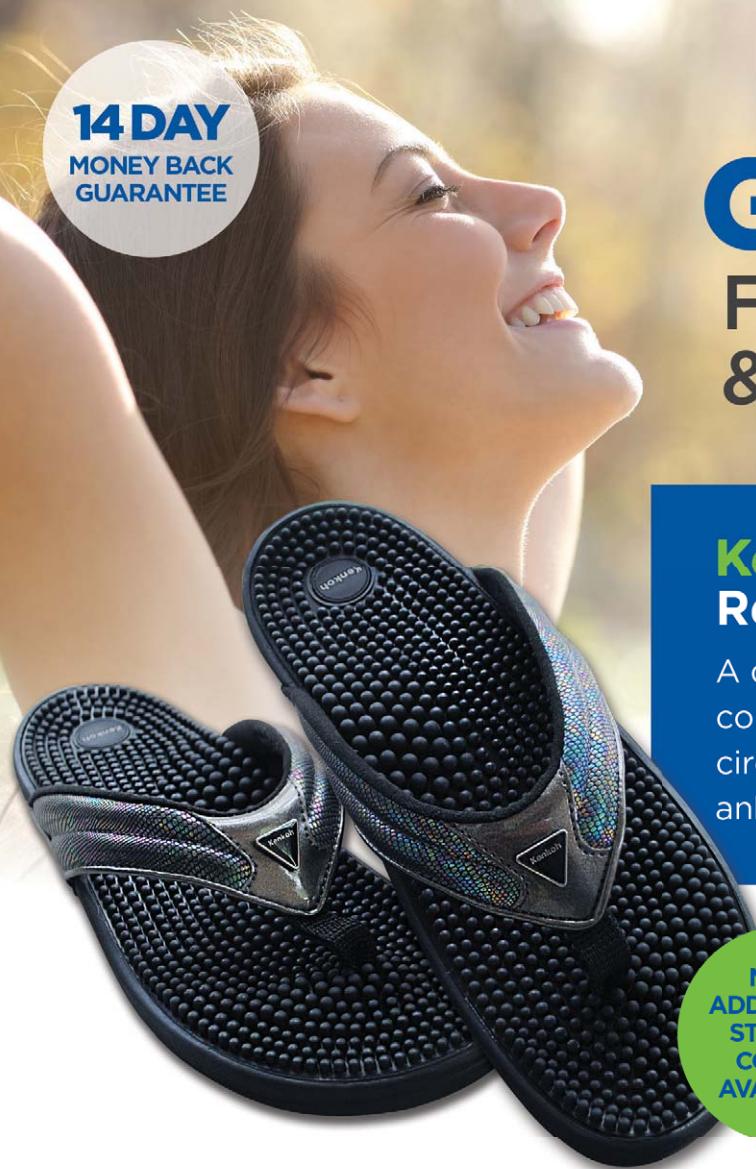
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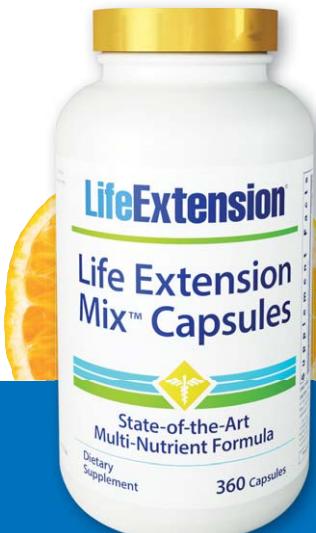
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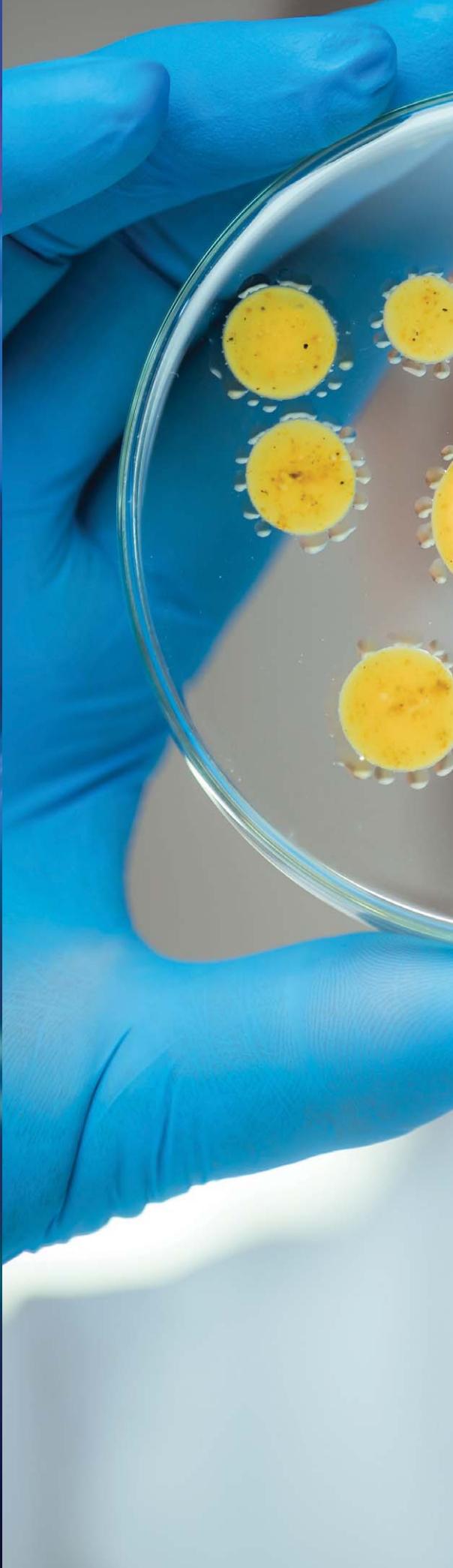
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BY STANLEY REMMICK





# How the Microbiome Controls Your Health

The discovery of the human **microbiome** is changing the ways we think about health and disease.

**Microbiome** is the term for the trillions of living organisms that reside in and on the human body. An estimated 100 trillion microorganisms live in the gut alone—that's up to ten times the number of cells that make up the body itself.<sup>1</sup>

While we're only beginning to understand the impact of the microbiome on our daily health, it's clear that the bacteria, diversity, and overall **balance** are intimately related to our states of health and disease.<sup>1</sup>

More than **70%** of the human immune system is found in the lining of the gut.<sup>2</sup>

Based on this information, researchers have now found a new kind of health-promoting therapy: targeted cultures of beneficial bacteria (probiotics) that are fine-tuned to modify *imbalanced* microbiomes back into a healthy equilibrium.

## What Goes Wrong? Introducing Dysbiosis

Microbiomes can become **imbalanced** through poor diet, drugs, unhealthy lifestyle, and toxins. This leaves a state in which a relatively small number of microorganisms attain an unhealthy dominance, often squeezing out other, beneficial ones.

Scientists call this a state of **dysbiosis**.<sup>3</sup>

Microbiome *imbalance*, in which some microorganisms thrive and others die, is being found to have direct connections with practically every chronic disease state in humans.<sup>4</sup>

To date, there's strong evidence that various states of **dysbiosis** in the gut contribute to:

- Intestinal disorders (irritable bowel syndrome, inflammatory bowel disease, colorectal cancer)<sup>5-7</sup>
- Brain disorders (Alzheimer's, Parkinson's, autism)<sup>8-10</sup>
- Mental health and mood disorders (major depression, anxiety, schizophrenia)<sup>11,12</sup>
- Heart and other cardiovascular disorders (coronary artery disease, atherosclerosis, high blood pressure)<sup>13-15</sup>
- Metabolic disorders (type II diabetes, metabolic syndrome)<sup>16,17</sup>



Equally compelling findings now exist for dysbiosis of the **oral** and **pharyngeal** (throat) microbiomes, which have been implicated in tooth cavities, gingivitis/periodontitis (gum disease), and susceptibility to respiratory infections and sore throats, respectively.<sup>18-23</sup>

## Probiotics Rebalance a Dysbiotic Microbiome

What can we do to restore the all-important **balance** to dysbiotic microbiomes?

The usual response of mainstream medicine is pharmaceuticals, but with few exceptions, drug therapy has not yet been proven effective in microbiome-related disorders. Killing bacteria with antibiotics is like using a sledgehammer to kill a fly—it's much more destructive than effective, killing off dozens or hundreds of healthy bacteria to cope with a few unhealthy bacteria.

Fortunately, we have a growing array of weapons in our arsenal to fight dysbiosis and restore healthy, balanced microbiomes, in the form of beneficial bacteria generally known as **probiotics**.

Probiotic bacteria are derived from populations of known beneficial microorganisms, which produce specific compounds that contribute to human health, or help to suppress the less-beneficial microorganisms.

Humans have been consuming probiotics for millennia in the form of fermented foods like yogurt, pickles, and sauerkraut, which are packed with billions of health-promoting bacteria.<sup>24-27</sup>

Remarkable progress has been made in the past few years to produce highly specific microbiome-targeted probiotics. Today, there are probiotic formulations available to help maintain overall balance in the gut microbiome, help prevent heart disease, improve mood disorders, enhance our immune systems, reduce our allergy risks, and even bolster oral health and ease sore throats.

Let's look at each of these areas briefly, to understand the promise of the targeted probiotic revolution.

## Multiple Bacterial Strains for Gut Microbiome Balance

Among the oldest and best-recognized probiotic bacteria, members of the *Lactobacillus* and *Bifidobacteria* families stand out for their safety and effectiveness.<sup>28,29</sup> Members of these groups have many gut-health benefits, which include reduced inflammation and improved cell-to-cell communications.<sup>30</sup>

Targeted probiotics have also been shown to improve healthy gene expression in intestinal immune cells—that gigantic community of human immune tissue that makes up more than **70%** of our total immune function.<sup>31</sup>



## What You Need to Know

### Microbiome and Disease

- We share our bodies with trillions of micro-organisms that contribute importantly to our state of health or disease.
- Collectively called the *microbiome*, these myriad species can, when in proper balance, protect us from underlying inflammation, leaky gut, and other fundamental disorders that lead to ill health.
- When imbalanced, or *dysbiotic*, microbiome communities can ravage our health and leave us vulnerable to a wide range of chronic diseases.
- Drugs don't help, and in fact can often make matters worse by suppressing growth of beneficial organisms.
- *Probiotics*, living bacteria with beneficial properties, can restore balance to dysbiotic microbiomes, permitting a self-healing process to begin.
- Studies show that carefully designed, scientifically supported probiotic bacteria, alone or in combinations, can improve many of the dysbiosis-associated disorders from which we suffer, including general gut health, cardiovascular and brain health, and immune function.
- Other probiotic formulations now show promise in reducing the burden of tooth decay, gingivitis, and throat infections by modulating oral and pharyngeal microbiomes.
- Eventually, we all fall victim to dysbiosis and its dangerous, lifelong consequences. Now we can all protect ourselves by using valuable, living communities of bacteria to rebalance ailing microbiomes.

Studies show that restoring the gut content of “friendly” bacteria can support healthy immune function.<sup>32</sup>

A balanced probiotic combination takes advantage of all of these findings, and adds an additional vital piece of technology, a specialized capsule that keeps the valuable bacteria alive through the path from the mouth, through the acid-filled stomach and past the enzyme-rich small intestine—a major challenge in delivering probiotics to their target environment in the large intestine.<sup>33</sup>

This high-tech formulation contains a proprietary blend of six proven probiotic strains, for a total of 15 **billion** microorganisms per dose. Designed to cling to the intestinal tract's lining, these six strains consist of:

- *Lactobacillus acidophilus* LA-14
- *Bifidobacterium lactis* BL-04
- *Lactobacillus paracasei* LPC-37
- *Lactobacillus rhamnosus* LR-32
- *Bifidobacterium bifidum/lactis* BB-02
- *Bifidobacterium longum* BB536®

For anyone who wants to address a *general state of dysbiosis* of the kind most of us have when we eat the occasional processed food, fail to get enough exercise, drink too much alcohol, or even simply live a stressful life, this *balancing* formulation is a wise choice.

## Probiotics Support Heart Health

Cardiovascular disease remains the leading killer of older Americans, but recent findings linking cardiovascular health to gut microbiome imbalance may offer new hope in the prevention arena. Many of the factors that increase heart-disease risk are influenced by gut dysbiosis: inflammation, cholesterol and other lipid levels, and even the tendency for blood to clot.<sup>34</sup>

A highly specific probiotic has now been developed, comprised of a single beneficial strain of *Lactobacillus*. Called *Lactobacillus reuteri* 30242, this unique microorganism has been shown in clinical trials to safely support healthy cholesterol in adults who are already within the normal range.<sup>34-36</sup> Furthermore, *L. reuteri* 30242 has the ability to support healthy levels of a cholesterol carrier protein called apoB-100, which influences how and where cholesterol is delivered to body tissues.<sup>37</sup>

This unique probiotic strain also reduces a key marker of inflammation associated with cardiovascular disease, C-reactive protein, or CRP.<sup>37</sup>

Finally, *L. reuteri* 30242 can support healthy levels of the blood clotting factor **fibrinogen**, which may help to reduce the risk of artery-blocking clots that can lead to heart attacks or stroke.<sup>37</sup>

People with known cardiovascular risk factors should pay special attention to *L. reuteri* 30242 as part of their daily supplement regimen.

## Mood Improvements With Probiotic Combination

Gut microbes help process a wide range of *signaling molecules*, including many essential hormones and neurotransmitters that brain cells use to communicate and send impulses.<sup>38</sup> And inflammatory changes, driven in part by gut dysbiosis, can contribute to mood disorders such as major depression.<sup>12,39,40</sup>

Researchers around the world have been chasing formulations capable of manipulating gut microbiome constituents to favorably affect brain function. A leading contender has emerged in the form of two specialized bacterial strains, *Lactobacillus helveticus* R0052 and *Bifidobacterium longum* R0175.<sup>41-43</sup>

Human clinical studies on this specialized combination have shown significant improvements in mood, accompanied by reductions in perceived stress levels, while also demonstrating enhanced relaxation abilities.<sup>41-43</sup> People with depression and/or anxiety should seriously consider use of this probiotic combination as a way of lightening mood and potentially easing symptoms of anxiety.



## Probiotic Formulation Boosts Immune Function

The human immune system is one of nature's recurring miracles, capable of discerning minute differences in molecular structures to help protect us from infections, as well as detecting and destroying incipient cancer, shutting down its destructive machinery to prevent damage to our own tissues.

The human intestinal tract is where our immune systems meet our gut microbiome. It is now becoming clear that the gut microbiome plays an outsized role in "teaching" the immune system to distinguish between our own cells and other threatening cells and molecules. When the gut microbiome and immune system work together, we develop appropriate **immune tolerance**, so that our bodies learn to attack only real offenders and avoid destructive impact on our own tissues.

In particular, our bodies protect themselves with a specialized antibody called **immunoglobulin A (IgA)**, which aids in the distinction between self, tolerable bacteria, and invaders.<sup>44</sup> Forward-thinking scientists have recognized that gut bacteria can influence **IgA** levels, thereby supporting immune function.

A multi-component blend of probiotics has been developed that promotes healthy **IgA levels**.<sup>45,46</sup> Strong IgA responses protect human mucous membranes in the nose, throat, and respiratory system from immune challenges and support a normal, robust immune response.

This probiotic blend is specially designed to support immune health by enhancing IgA levels year-round. It contains *Bifidobacterium lactis* BS01, *Lactobacillus plantarum* LP01, *L. plantarum* LP02, *L. rhamnosus* LR04, and *L. rhamnosus* LR05, which have been shown to reduce the incidence and severity of respiratory diseases during the cold season.<sup>46</sup> The formulation also includes *Bacillus subtilis* CU1®, which has been shown to stimulate immune responses in elderly subjects during the dangerous winter season.<sup>45</sup>

Although this combination has been especially effective in preventing wintertime infections, there is every reason to believe that its IgA-enhancing properties can provide important year-round immunological support.<sup>45</sup>

### Throat Protection with Specialized Probiotic

The throat and oral microbiomes are also important in protecting our health. Makeup of the throat (pharyngeal) microbiome may be particularly important in preventing wintertime sore throats, including strep and viral infections.

A specialized strain of probiotic called *Streptococcus salivarius* K12 is a harmless strep species with unique weapons: it releases two potent **lantibiotics** (bacterially-produced antibiotics that destroy other bacteria).<sup>47,48</sup> In particular, the lantibiotics produced by *S. salivarius* K12 target *S. pyogenes*, the species responsible for the classic strep throat.<sup>47</sup>

A human study showed that *S. salivarius* K12 in the form of a slow-release chewable tablet delivering a billion colonies of the organism significantly reduced (by more than **90%**) episodes of strep throat, while a control group showed no change.<sup>47</sup> This study demonstrated an enormous 30-fold reduction in the number of days on antibiotic treatment, a benefit to the entire microbiome.

For anyone who wants freedom from strep throat, and to reduce their annual antibiotic exposure, *S. salivarius* K12 is the probiotic of choice.

### Oral Health Promotion With Paired Probiotic Lozenge

A tremendous proportion of U.S. adults suffer from oral health disorders, particularly cavities and the gum disease gingivitis (which may progress to periodontitis, resulting in tooth loss). These disorders are not only uncomfortable and unsightly, but also have been associated with higher risks of systemic disease, especially cardiovascular disorders.<sup>49,50</sup>

Dental plaque is a leading contributor to cavities and gingivitis and is a rich environment for destructive bacteria that contribute to oral dysbiosis.<sup>49-51</sup>

Another unique strain of *S. salivarius*, called M18, produces its own lantibiotics targeting *S. mutans*, a major component of plaque and a known cause of cavities.<sup>51</sup> This bacterium also produces enzymes with the potential to weaken and loosen plaque on teeth and gums.<sup>51</sup>

A clinical study of *S. salivarius* M18 vs. placebo showed a significant reduction in plaque scores in treated, but not placebo, subjects.<sup>51</sup>

A second component of this formulation is *Lactobacillus plantarum* L-137, a probiotic capable of activating human immunity and reducing inflammation.<sup>52</sup> In a human clinical trial, this probiotic reduced **probing depth**, the depth of the pocket between tooth and gum where periodontal disease sets in and destroys both tooth and bone.<sup>52</sup>

Daily supplementation with this proven probiotic combination is an excellent way to augment regular brushing and flossing.



## Allergy Relief

Even seasonal allergic symptoms can be driven—and remedied—by microbiome modulation involving the immune system.

That's good news for the **30%** of adults (about 50 million) who suffer from seasonal allergies in the U.S.<sup>53,54</sup> In fact, allergies rank sixth in leading causes of chronic illness in America, costing society in excess of \$18 billion.<sup>53</sup> Sadly, much of that money is being wasted, while allergic people continue to suffer needlessly.

Virtually all allergy remedies on the market today attack symptoms from the end of a long biochemical-signaling cascade. None of them set to work on the primary source of allergic symptoms: an imbalance in the immune system's regulatory network that promotes the activity of reactive cells over that of more nuanced, regulatory cells.

Now, thanks to advanced scientific breakthroughs, two ingredients have been identified that act at the top of that signaling cascade, effectively retraining the immune system to take pollen and other allergens in its stride, and muting the excessive inflammatory responses that otherwise produce irritating allergy symptoms.

Studies show that between them, this combination of **dried baker's yeast fermentate**, a yeast fermentation product, plus **heat-treated *Lactobacillus L-92*** (HT L-92), an inactivated probiotic strain, can significantly and substantially reduce seasonal allergy symptoms, providing **43%** fewer days with nasal congestion, a **24%** reduction in swollen nasal passages (as evaluated by a physician), and a **31%** reduction in eye symptoms.<sup>55-57</sup>

## Summary

We're experiencing the beginning of a true medical revolution with the discovery of the trillions of bacteria that make up our microbiome. These bacteria provide countless opportunities to improve and protect our health through careful balancing of the community composition.

Imbalanced (dysbiotic) microbiomes are now associated with practically every chronic disease that plagues humanity. And restoring balance has been repeatedly shown to reverse the consequences of dysbiosis, to protect us from disease, and to enhance our health and the prospects for longevity.

We can't treat dysbiosis with drugs.

Studies now show that probiotic supplementation can **rebalance** dysbiotic microbiomes and protect us from disorders of the gut, brain, heart, and immune system. Similarly, probiotics targeting the oral and throat microbiomes can protect us against dental disease, gingivitis, and throat infections.

These potent formulations are only the beginning of a new era in medicine, when we learn to engage in partnerships with the other living beings that share our bodies and encourage them to ease us into better biological balance for longer, healthier lives. ●

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

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# HEALTHY YOU!



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4 bottles		<b>\$13 each</b>

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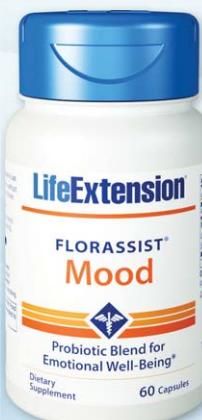


## FLORASSIST® Nasal

- Balances immune response to seasonal changes.

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1 bottle	\$36	<b>\$27</b>
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Item #02208 • 30 vegetarian capsules



## FLORASSIST® Mood

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# Vitamin D: Surprising Link Between Bone Health and Metabolism

Vitamin D is best known for bone health, but its potential role in **cancer prevention** has made it one of the most popular supplements today.

A recent study reveals a new benefit of vitamin D: **metabolic health**.

In a new article, Italian scientists reviewed previous studies on vitamin D and found a connection to bone and metabolic health.

In their review of the literature, the researchers showed strong associations between inadequate vitamin D levels and inflammation, osteoporosis, insulin resistance, and type II diabetes.<sup>1</sup>

The scientists concluded that vitamin D may become an important therapeutic agent in the fight against metabolic disease, as well as disorders caused by inflammation.

## Vitamin D: The Bone Vitamin

For older individuals, vitamin D deficiency contributes to osteoporosis and higher fracture risk.<sup>2-4</sup> Educated seniors supplement with vitamin D and other nutrients to reduce their loss of bone density.

Vitamin D has **anti-inflammatory** properties that are also important when it comes to preventing osteoporosis.

In recent years, we have come to understand that osteoporosis is an **inflammation-driven** condition.<sup>2,6-8</sup>

Inflammation disrupts the delicate balance between **bone breakdown** (resorption) and **bone formation**, favoring resorption and *slowing new bone formation*.<sup>2</sup>

Today, it is recognized that people with chronic inflammatory conditions generally have weaker, less well-mineralized bones than healthy adults of the same age—a clear-cut demonstration of the role of inflammation in bone health.<sup>6,7</sup>

Vitamin D works in multiple ways to rein in the immune system's excessive inflammatory responses. This makes it clear that vitamin D provides far more comprehensive bone support than simply enhancing calcium absorption.

These findings reveal vitamin D to be a modulator of inflammation as a means of preserving bone strength.<sup>1</sup>

It opens the door to other important roles for vitamin D.

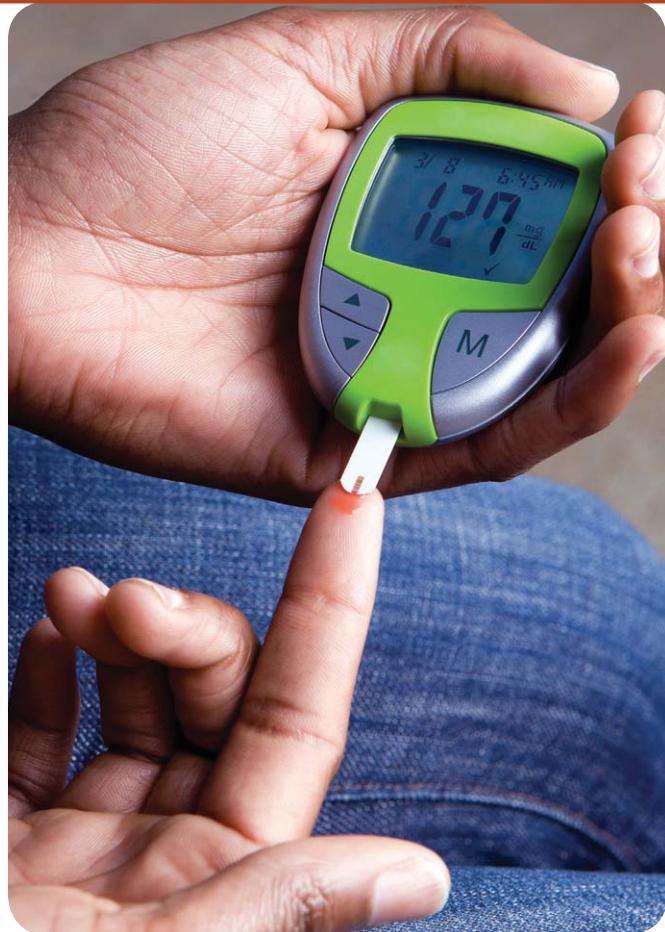
## Vitamin D and Metabolic Changes

Vitamin D is a hormone that has specific receptors that trigger structural, functional, and metabolic changes throughout the body. It is vitamin D's role as a steroid-like hormone that triggered research that brings together the impact of **inflammation** on both bone and metabolic health.

This research pointed out previous studies that showed vitamin D's multiple actions on blood sugar and other metabolic factors. These studies show that vitamin D deficiency is implicated in a low-grade, chronic inflammatory state associated with insulin resistance, metabolic syndrome, and the risk of developing type II diabetes.<sup>1</sup>

Even in nondiabetics, lower vitamin D levels correlate with poorer insulin responsiveness, meaning less control over blood sugar.<sup>1</sup> Low plasma vitamin D levels are also closely correlated with higher body mass index (BMI), fat mass, and waist circumference.<sup>1</sup>

But *correlation* between nutrient status and health status does not prove a *cause-and-effect* relationship. Clinical trials are required to establish that kind of connection—and that's exactly what we'll examine next.



## Vitamin D's Role in Blood-Sugar Control

Studies have repeatedly shown that when animals are vitamin D deficient, supplementation with the vitamin reduces inflammation and improves insulin sensitivity.<sup>1</sup>

Human studies have also shown that vitamin D supplementation is effective at managing blood sugar and other metabolic abnormalities—especially in people with low vitamin D levels.

In type II diabetics who were **vitamin D deficient** (blood levels less than **20 ng/mL**), taking **1,000 IU/day** of vitamin D3 led to improvements in endothelial function, improved measures of glucose-related protein damage (glycation), as well as in other markers of blood-vessel health.<sup>9</sup>

Proper dosing is especially important. For example, studies using just **400** or **800 IU/day** of vitamin D3 showed neither a reduction in diabetes incidence nor any change in blood-sugar levels,<sup>10,11</sup> whereas in subjects with low baseline vitamin D levels, **higher doses** of vitamin D proved highly effective.

In a study of subjects with low vitamin D3, providing **4,000 IU/day** of D3 led to significant improvements in insulin sensitivity and favorable reductions in fasting insulin levels.<sup>12</sup>

Perhaps the most compelling data on vitamin D use in supporting metabolic health comes from studies looking expressly at people *at risk* for type II diabetes, or prediabetics.<sup>1</sup> Such people have **impaired fasting glucose** (fasting sugar levels between 100 and 125 mg/dL), or **impaired glucose tolerance** (an abnormal rise in blood sugar following a metered dose of oral glucose).

Studies in these populations now show that supplementing with vitamin D3 daily *slowed* the rise in fasting blood sugar over time, improved pancreatic insulin secretion, and boosted insulin sensitivity.<sup>13,14</sup>

### Additional Mechanisms of Action

Vitamin D also has a direct impact on **insulin sensitivity and resistance** independent of its anti-inflammatory effect.<sup>1</sup> Studies show that vitamin D triggers increased insulin sensitivity and lowers blood sugar by at least three complementary mechanisms:

- Interactions with vitamin D receptors on skeletal muscle, where it may help to trigger maturation of developing glucose-hungry muscle cells.<sup>15</sup>
- Increased expression of insulin receptors on cells throughout the body. Those receptors in turn promote glucose transport from blood into cells.<sup>1</sup>
- Activation of a molecular complex called PPAR-delta, which regulates genes involved in burning sugar and fat for energy.<sup>1</sup>



Multiple other mechanisms by which vitamin D stimulates the transfer of sugar from blood into cells are gradually coming to light, including complex interactions with other hormone systems. It even appears to directly stimulate the pancreas to release insulin.<sup>1</sup>

### What You Need to Know

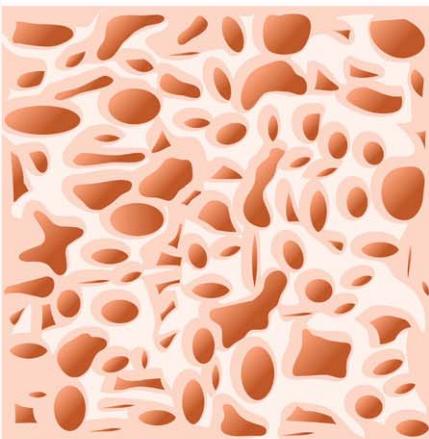
#### Vitamin D's Role in Bone and Metabolic Health

- Vitamin D is both vitamin and hormone, with wide-ranging effects throughout the human body.
- For years, vitamin D was known for its role in promoting calcium absorption for healthy bones.
- More recent studies have revealed that vitamin D has potent anti-inflammatory properties important to osteoporosis prevention that are distinct from its role in promoting calcium absorption.
- Those same anti-inflammatory properties have been shown to be effective at preventing and mitigating metabolic disturbances, particularly insulin resistance and type II diabetes.
- Human studies show that vitamin D supplementation is particularly effective in people with blood sugar and other metabolic abnormalities and low baseline vitamin D levels.
- Such studies demonstrate why higher doses of vitamin D are required for metabolic control.
- Studies like these make it clear that getting an annual vitamin D blood level, and supplementing as needed with vitamin D3, provides a multitargeted effect on both bone and metabolic health.

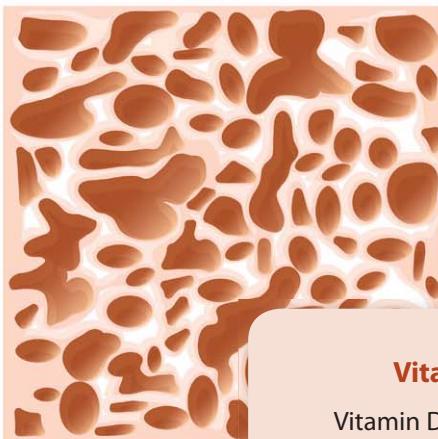
## LOSS OF BONE DENSITY

(Dark colors reflect areas of bone loss)

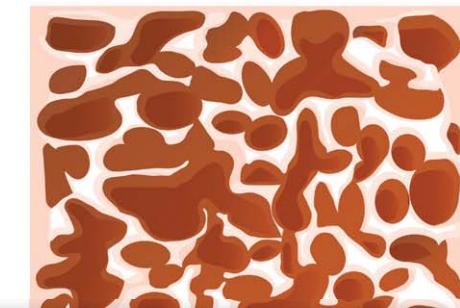
Normal Bone



Osteoporosis



Severe Osteoporosis



### Summary

Vitamin D arrived on the medical scene more than a century ago, and was largely viewed as the “calcium and bone vitamin.”

Recent studies show that such a view overly simplifies both bone health and vitamin D’s roles in the human body.

We now recognize that osteoporosis is an inflammatory disorder as much as it is a calcium-related disorder. We also now understand that vitamin D’s anti-inflammatory actions contribute as much to its anti-osteoporosis actions as its calcium-promoting properties.

Finally, the anti-inflammatory actions of vitamin D cross over from improving bone to maintaining healthy metabolic status by supporting normal insulin action and suppressing elevated blood sugar.

The human body is a miracle of interacting systems with unexpected relationships. Our new knowledge about vitamin D further highlights these surprising connections, and amplifies the case for maintaining ample vitamin D levels as we age.

For vitamin D, the typical dose range is **3,000 IU to 8,000 IU** daily, taken with a meal for better absorption.

Annual **blood tests** can enable one to know if they are taking the proper dose of vitamin D they need to achieve optimal levels. ●

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

### Vitamin D and Inflammation

Vitamin D was once thought of primarily for its role in bone health by promoting **calcium absorption**. More recently, it has been found to play an unexpected but important role in modulating immunity and inflammation.<sup>1</sup>

This property reveals two important facts:

1. Vitamin D is **doubly** important in osteoporosis, since we now know that inflammation plays a role in the bone condition.
2. It highlights vitamin D’s value as an essential actor in maintaining body-wide metabolic health.

Studies show that vitamin D suppresses the inflammation generated by fat tissue.

Under the influence of vitamin D, immune cells increase their production of *anti-inflammatory cytokines*, while reducing levels of *pro-inflammatory cytokines*.<sup>1</sup> Vitamin D has similar effects on cells called **lymphocytes** that are involved in regulating immune responses: It shifts their profile from an *inflammation-promoting* to an *inflammation-suppressing* one.

Vitamin D acts on immune system cell receptors, where binding to the vitamin triggers regulation of more than 1,000 genes.<sup>1</sup> These gene-regulatory properties likely account for vitamin D’s favorable effects on emerging cancer cells.

Inflammation is considered the “final common pathway” for numerous age-related disorders. The discovery of vitamin D’s anti-inflammatory actions means we can expect to see more studies widening the applications of vitamin D beyond preventing osteoporosis and diabetes, to its role in other chronic, inflammation-driven conditions that shorten lifespan and promote disease.

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BY ROBERT GOLDFADEN AND GARY GOLDFADEN, MD





# Revitalize Skin Around the Eyes

The skin around the eyes is up to **10 times** thinner and more delicate,<sup>1</sup> making it vulnerable to the effects of sun exposure, air pollutants, and protein cross links (glycation).<sup>2-5</sup>

These destructive factors lead to crow's feet, dark circles, and puffiness around the eyes.<sup>6,7</sup>

Application of a topical blend of **cucumber** extract and collagen-stimulating **peptides** can repair, soothe, and protect the skin around the eyes for a refreshed appearance.

## Cucumber Extract

Hearing the words “spa treatment” evokes the image of a person with cucumber slices on her eyes.

This go-to treatment for rejuvenating aging skin is based on cucumber’s healing properties.<sup>8</sup>

Cucumbers have a soothing effect and reduce skin swelling.<sup>9</sup> They also contain free-radical scavengers like caffeic acid, vitamin E, and vitamin C that reduce skin irritation and protect against UV-induced damage.<sup>10,11</sup>

*In-vitro* research shows that cucumber extract reduces activity of *enzymes* that break down **hyaluronic acid**, the skin’s natural moisturizer, along with elastin that gives skin suppleness and flexibility.<sup>12</sup>

Clinical studies indicate that cucumber extract decreases skin irritation, excess pigmentation and wrinkling, while improving overall moisture and elasticity.<sup>9</sup>

## Collagen-Stimulating Peptides

The formation of wrinkles (crow’s feet) and fine lines around the eyes are indicators of an aging **dermal matrix**—the structural framework responsible for skin renewal and vitality.<sup>13,14</sup>

The main component of the dermal matrix is **collagen**, in particular type I collagen, which forms mesh fibers responsible for skin’s strength and resiliency.<sup>14</sup>

When we are young, collagen *synthesis* and *breakdown* are **balanced** to ensure skin remains vibrant and youthful-looking.

But as we age, oxidative stress generated from sun exposure, air pollutants, and glycation produce destructive structural changes that favor collagen degradation.<sup>5,15,16</sup> As the skin around the eyes becomes thinner, the appearance of wrinkles and fine lines takes shape.

Scientists have found that two peptides work synergistically to restore normal collagen metabolism:<sup>17</sup>

- **Palmitoyl Oligopeptide** signals skin fibroblasts to increase collagen production.
- **Palmitoyl Tetrapeptide-7** prevents collagen degradation by reducing inflammatory mediators including interleukin-6.

An *in-vitro* study found that these **two peptides**:

- Increase **type I collagen** synthesis by **258%**.
- Increase **hyaluronic acid** by **164%**.
- Increase **fibronectin** by **179%.**<sup>18</sup>

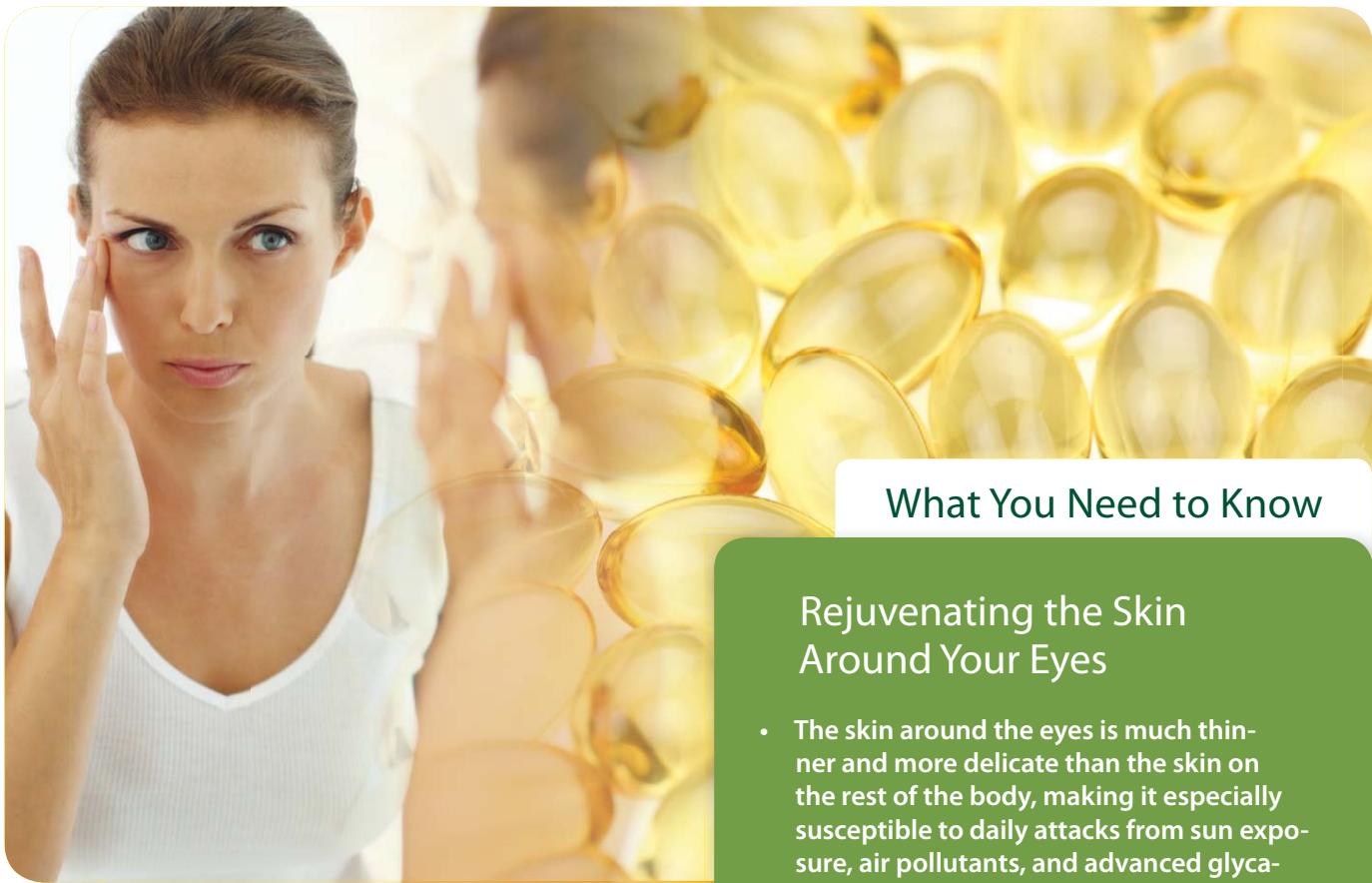
These findings translate into anti-wrinkling effects in humans.

## Human Study of Topical Peptides

In a two-month study involving 24 participants, twice-daily application to the crow’s feet of a topical cream containing these **two peptides** showed the following improvements compared to a placebo:<sup>18</sup>

- Area occupied by deep wrinkles **decreased** by **39.4%**.
- Wrinkle density **decreased** by **32.6%**.
- Roughness **decreased** by **16%**.
- Complexity **decreased** by **15.7%**.
- Main wrinkle depth **decreased** by **19.9%**.
- Main wrinkle volume **decreased** by **23.3%**.





## What You Need to Know

### Rejuvenating the Skin Around Your Eyes

- The skin around the eyes is much thinner and more delicate than the skin on the rest of the body, making it especially susceptible to daily attacks from sun exposure, air pollutants, and advanced glycation end products.
- These external and internal factors break down the dermal matrix—composed mostly of elastin, collagen, and hyaluronic acid—that provides strength, suppleness, and elasticity to skin.
- Research demonstrates that several topical compounds specifically target and rebuild the skin's matrix.
- Cucumber extract offers soothing, healing, and cooling properties, as well as powerful hydrating and antioxidant effects.
- Two peptides—Palmitoyl Oligopeptide and Palmitoyl Tetrapeptide-7—stimulate the synthesis of collagen while preventing its breakdown to prevent and reverse wrinkles around the eyes.
- Vitamin A and E induce beneficial changes to both superficial and deeper layers of the skin to inhibit and repair the damaging effects of ultraviolet radiation.

### Vitamin E

Topical application of vitamin E has been shown to penetrate the skin where it protects against UV-induced DNA damage<sup>19</sup> and reduces the inflammatory response after exposure to UV rays.<sup>20</sup>

Vitamin E also helps improve the ability of aging skin around the eyes to retain water, leaving it smooth and supple.<sup>21,22</sup>

### Vitamin A

Vitamin A (retinol) induces beneficial changes in the epidermis and dermis to reverse the clinical signs of sun-exposed skin, including wrinkles, hyperpigmentation, and rough texture.<sup>23,24</sup>

Studies show that when applied topically, vitamin A inhibits the activation of *signaling* pathways responsible for increasing collagen-degrading enzymes.<sup>25</sup>

In a double-blind, randomized trial involving 62 participants, topical application of retinol for 52 weeks reduced crow's feet by **44%** and mottled pigmentation by **84%**.

These visible improvements were accompanied by significant increases in type I procollagen—a precursor to collagen synthesis—and hyaluronic acid.<sup>26</sup>

## Summary

Most people's skin-care regimens fail to take into account that the **skin around the eyes** is far **thinner** and more delicate than the rest of the skin on their face.

This sets the stage for destructive attacks by external and internal factors.

Research shows that topical **cucumber extract**, collagen-stimulating **peptides**, and vitamins A and E nourish, hydrate, and rejuvenate the delicate eye area to diminish the appearance of crow's feet, dark circles, and puffiness. ●

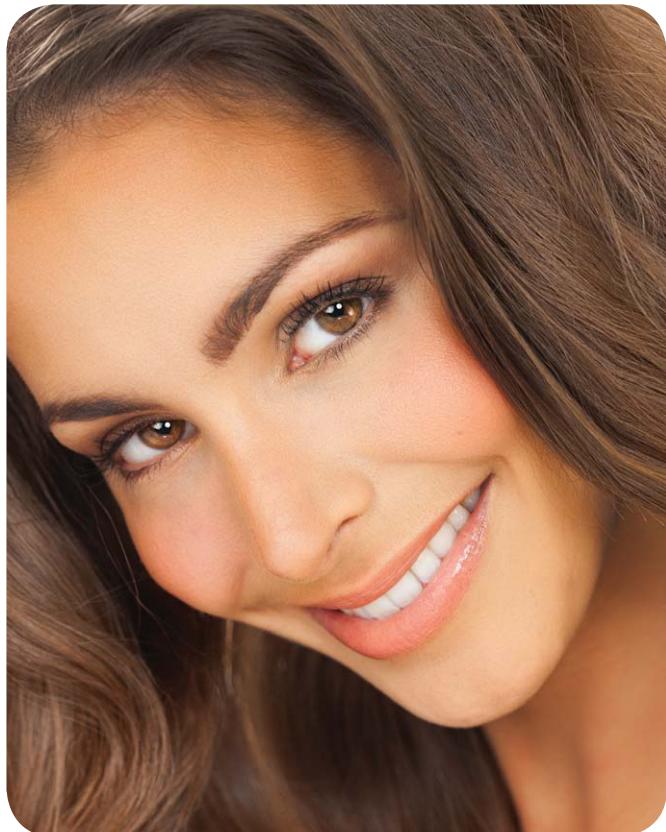
Gary Goldfaden, MD, is a clinical dermatologist and lifetime member of the American Academy of Dermatology. He is the founder of Academy Dermatology in Hollywood, FL, and Cosmesis Skin Care.

Dr. Goldfaden is a member of Life Extension®'s Medical Advisory Board. All Cosmesis products are available online.

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

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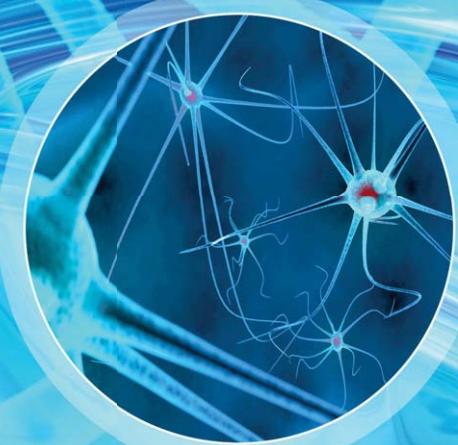
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MARY RUWART, PH.D.



BY GARRY MESSICK

## Mary Ruwart, Ph.D. Author of *Death by Regulation*

As a research scientist, ethicist, and libertarian author and activist, Dr. Mary J. Ruwart has had a long and accomplished career in various fields. But it was perhaps her position in the Upjohn Company, as a senior research scientist working on developing new therapies for diseases such as AIDS and liver cirrhosis, that gave her the greatest insight into serious problems stemming from the 1962 amendments to the Food and Drug Act.

Dr. Ruwart believes that these amendments, which are in effect to this day, have had the unintended, devastating consequence of causing millions of Americans to die prematurely.

"Regulations can have side effects that are just as deadly as drugs," she observes.

Alarmed by this state of affairs, Dr. Ruwart was moved to write her new book, *Death by Regulation: How We Were Robbed of a Golden Age of Health and How We Can Reclaim It*.

In the book, Dr. Ruwart details how the amendments have not significantly improved drug safety or effectiveness, have been extremely detrimental to innovation, have greatly slowed the process of getting important drugs from the lab to patients, and have shifted American healthcare from inexpensive preventions to expensive treatments.

**LE:** You trace the current problems of what you call “the deadly side effects of pharmaceutical regulations” back to the 1962 Kefauver-Harris amendments to the 1938 Food and Drug Act.

**MR:** Yes. The intent of the amendments was to protect the American public. Unfortunately, new laws, like new drugs, often have deadly side effects. Behind the scenes, the 1962 amendments reshaped the pharmaceutical, nutritional, and medical industries in ways that are detrimental to our health and longevity. Because of the way they were written, the amendments continue to metastasize into these three areas today. Almost all drug-related legislation passed since then has attempted, with limited success, to correct the ever-growing problems created by the amendments. The deadly side effects of the amendments have likely cost each and every one of us many years of life.

**LE:** What exactly did the Kefauver amendments do?

**MR:** They gave the FDA the power to decide which animal-safety studies that drug companies had to do before they could test their drugs on people. The FDA could determine what human studies were necessary for it to approve a drug as “safe and effective.” Before the amendments, a drug had only needed to be shown “safe for intended use.” Once a drug company asked the FDA to approve a drug, someone at the agency had to sign off rather than simply letting six months elapse without objection.

The FDA could determine manufacturing standards for the new drug and do inspections to insure that its dictates were met. The FDA was given jurisdiction over

all pharmaceutical advertising as well. In other words, the FDA was given unprecedented control over the entire drug development process in the hopes that drugs would not only be safe, but effective. Advertised accurately and manufactured carefully.

What the amendments actually did was to increase the time it takes for a new drug to move from the lab bench to the marketplace from about four years to 14 years over the next several decades. Terminally ill patients who couldn’t live with that delay had to turn to the black market in order to get access to potential cures. Every year, the costs of satisfying the FDA soared, resulting in ever-increasing prices at the pharmacy.

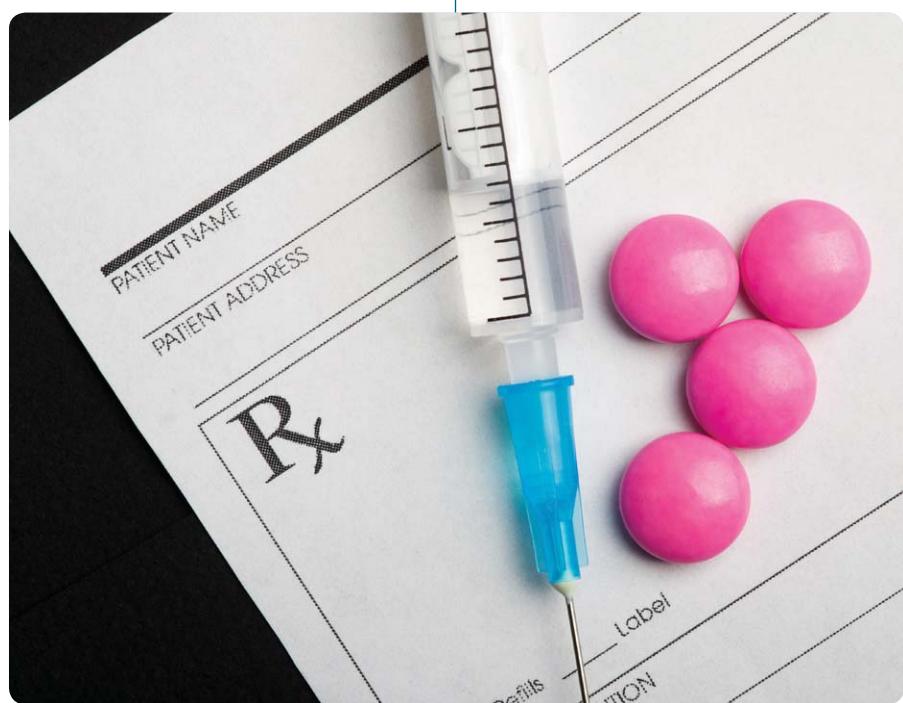
More than half of our potential innovations never made it to patients, as companies realized that they couldn’t recoup their investments under the new regulations. Investors began demanding a greater return as the amendments made it riskier to try to bring a drug to market.

**LE:** You argue that this has had catastrophic consequences.

**MR:** Loss of innovations and delays in the ones we do get have caused the premature death of almost half of the Americans who have died from disease since 1962. By discouraging the use of inexpensive supplements in favor of FDA-approved pharmaceuticals, the amendments shifted the healthcare paradigm in the United States from inexpensive prevention to costly treatment. The loss in lives and money from this shift is probably higher than the devastating cost of the amendment-driven reshaping of medical practice and the pharmaceutical industry, as every one of us has been adversely affected.

**LE:** This seems like it should be a major news story. Why isn’t it?

**MR:** Without insider information about how the amendments act behind the scenes, even a dedicated journalist would have a difficult time putting the story together.



In addition, most insiders have good reason to be silent. Blowing the whistle on the Kefauver amendments would make their job difficult and might even endanger the financial solvency of their company. Still, many might speak out if they thought their comments would be taken seriously instead of simply ridiculed. However, if drug companies or their employees tell the American public that the regulations meant to police the pharmaceutical industry and protect consumers often do just the opposite, their concerns are likely to be discounted. Such comments would, at best, be labeled politically incorrect, and, at worst, self-serving. Why risk your job, your company, and your good name when no one is likely to believe you anyway?

**LE:** Why does the FDA drug-approval process take so long?

**MR:** When I joined the Upjohn Company in the mid-1970s, I had no idea what was involved. Shortly after I arrived, however, I could hardly believe that any drug actually was able to jump through the maze of ever-changing regulatory hoops and make it to the marketplace.

Company chemists would make 5,000 to 10,000 potential new drugs, which were then studied in the test tube or in vitro (not in whole animals) to see if they slowed cholesterol synthesis, inhibited a particular enzyme that helped create the disease, or killed the target microbes. Drugs that looked promising might then be tested on animals to see if they worked in vivo (in whole animals) with few problematic side effects at the effective doses.

From the original batch of 5,000 to 10,000 compounds, about 250 began FDA-mandated animal-



safety testing and other preclinical work. Prior to the passage of the Kefauver amendments in 1962, pharmaceutical firms, not the FDA, decided which studies were most appropriate.

Somewhere between three to six years are now consumed by the in vitro, in vivo, and preclinical regulatory and animal safety (toxicology) studies. Since there were only a few instances of too little preclinical testing prior to passage of the amendments, it's not clear how much benefit the extended testing provides.

**LE:** What will be the benefits if and when the FDA undergoes major reform?

**MR:** Without the Kefauver amendments to the Food, Drug and Cosmetic Act, many of the legislative band-aids that were put in place to alleviate problems caused by the amendments would no longer be necessary. User fees driven by the Prescription Drug User Fee Act would be lower or nonexistent,

since FDA certification wouldn't be necessary for marketing. The seven-year monopoly that drug companies receive for orphan drug status would no longer be available, since there would be no more approvals. Because development costs would be lower without the amendments, fewer drugs would be orphans—many more would be able to recover the less intensive development costs. The Waxman Restoration Act wouldn't add to the patent life of drugs since clinical development times would plummet.

Instead of doing large human trials to get statistically significant results, drug companies would focus on smaller trials designed to determine which patients respond best to their potential new product. This will allow companies to target their product to those who will actually benefit. Because patients will be taking fewer drugs that *might* help them, the incidence of drug-drug interactions will go down. Deaths from “properly prescribed medications,” which now



rank close to the fifth largest cause of death, should go down too. Although the technology to determine who will benefit most from a particular drug is often available, pharmaceutical firms must focus instead on the outdated studies demanded by the FDA.

People who fear that earlier access might mean less safety could elect to only take drugs that have FDA certification, even though drugs could be marketed without it. Patients who want earlier access could also have it. Everyone could choose for themselves. That is the freedom upon which our country was founded.

**LE:** What other benefits might result without the amendments?

**MR:** As the marketplace adjusts to the less intensive regulatory climate, we'd see more innovation, both in pharmaceuticals and nutraceuticals. Without the amendments, the FDA could not pose restrictions on what manufacturers' representatives could

say to doctors. Supplement suppliers could educate physicians on the benefits of using natural products (e.g., vitamins) instead of drugs. Pharmaceutical firms would be able to combine their drugs with CoQ10 and other nutrients to lessen side effects. Instead of being at odds, drug companies and nutraceutical firms might find it profitable to collaborate on research, marketing, or product design.

Without the FDA's ability to dampen prevention through the use of natural products or combine them with pharmaceuticals to lessen side effects, physicians would likely become more knowledgeable about prevention. This will help the American public become healthier as well.

Since about two-thirds of the American populace is currently overweight, drug companies needn't worry that they will run out of people who will need treatment. Unfortunately, many people won't take the initiative to eat less, exercise more, or do other things to promote their well-being, even after being diagnosed with diabetes, cardiovascular disease, and other lifestyle-dependent maladies. Many will continue to prefer drugs to lifestyle changes or will find that we don't know enough about prevention to control their disease without drugs.

**LE:** What would be the implications for stem-cell therapies?

**MR:** Without the FDA able to treat stem-cell products as drugs that need to go through an intensive development program before those in need can benefit, stem-cell research will return to the United States, making it much more affordable. Individual physicians will no longer have to worry about

being continuously hauled into court simply because they have not checked all the regulatory boxes required by a bureaucratic development plan. Parents will not have to beg the agency to allow their children to try new treatments that might save their lives or keep them out of wheelchairs.

In short, we will once again be poised at a golden gateway of medical innovation as we were in the early 1960s. However, this time we will have better science, more know-how, and a better understanding of what spurs innovation and what squelches it. ●

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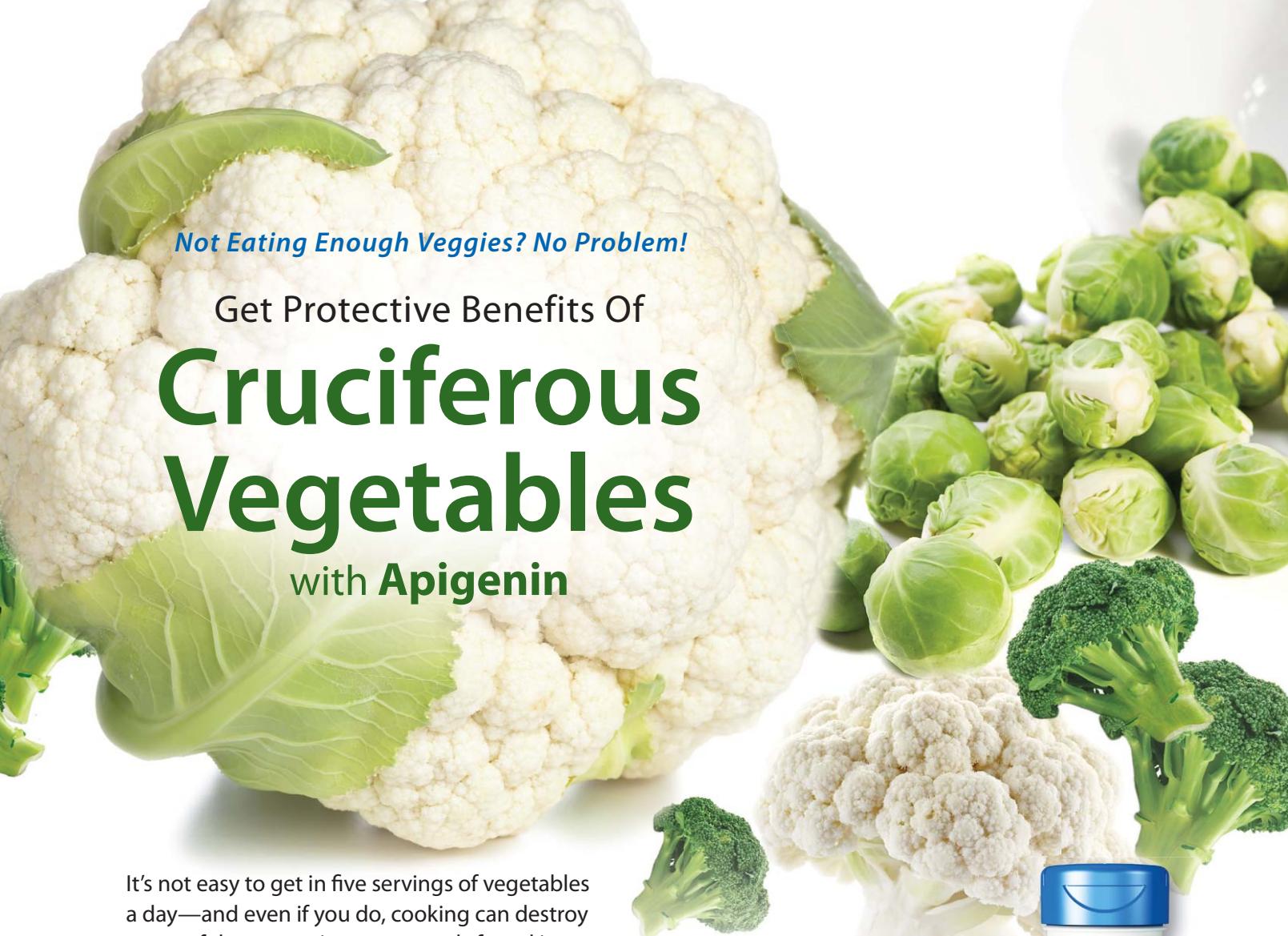
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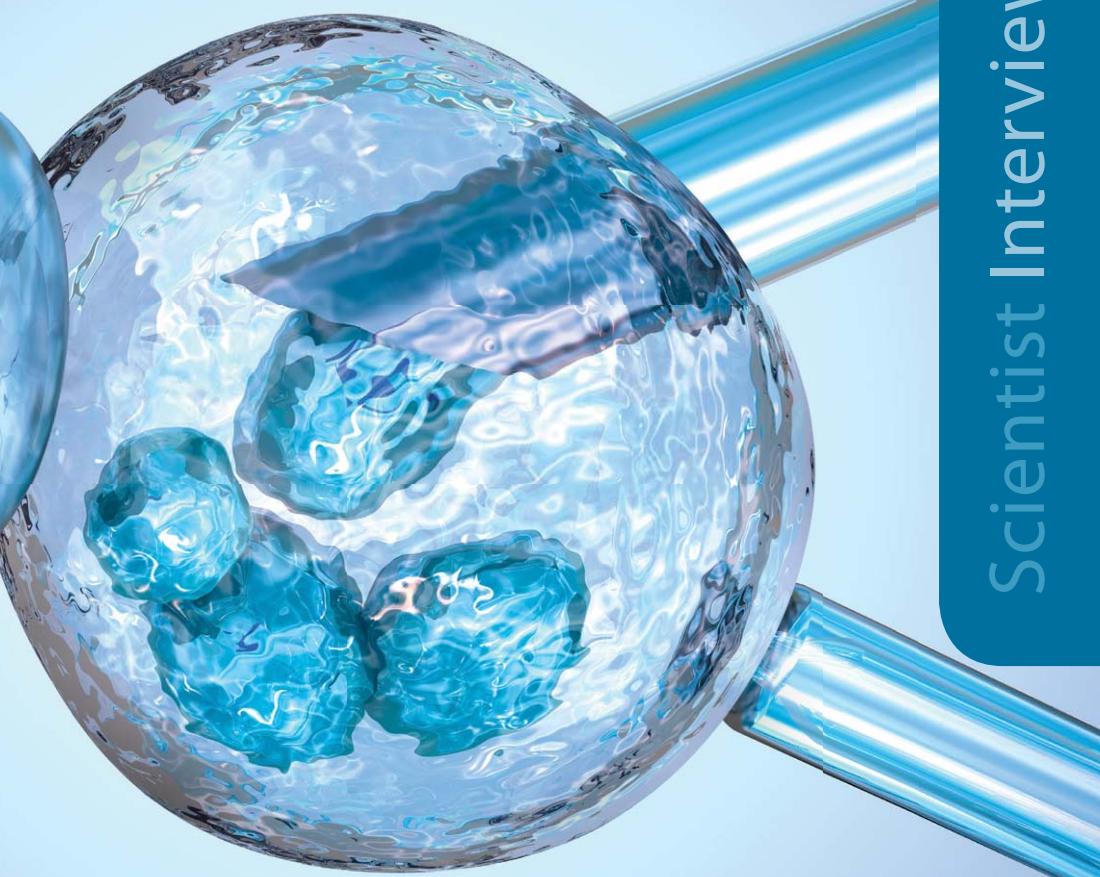
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BY JON VANZILE



DR. BERNARD SIEGEL



## The Coming Stem-Cell Revolution

This winter, a group of the world's leading stem-cell researchers, ethicists, and visionaries gathered in Miami to talk about a change that could disrupt human life as profoundly as the invention of the combustion engine, antibiotics, or the personal computer. The event was the World Stem Cell Summit, and the group assembled included luminaries such as **Life Extension**® advisory board member Dr. Aubrey de Grey and researchers representing top universities, national health agencies, and industry.

In this exclusive interview with **Life Extension**, Bernard Siegel, founder of the World Stem Cell Summit and executive director of the Regenerative Medicine Foundation, shares some findings from the Summit and explains how the early controversy over stem-cell research actually helped fuel the revolution.

**LE:** Thank you for joining us today. One of the remarkable things about the World Stem Cell Summit is the range of experts you attract from all over the world. Many of these experts believe that stem-cell research will one day be instrumental in defeating diseases that are common today and even in extending human lifespan. Where is stem-cell technology today, and where do you think we're heading?

**BS:** When I got involved in stem-cell research in 2002, it was all about embryonic stem cells. Embryonic stem cells were perceived as a potential cure for every disease, and the idea that they could be transformed into any cell in the human body was viewed as an elixir. When Dr. Michael West, who founded the revolutionary company Geron (and was the first scientist to isolate human embryonic stem cells for regenerative medicine), first saw embryonic stem cells, he thought it was like nuclear fusion. But it was all very controversial at the time, with some groups of people very opposed

to their use, and it attracted a lot of attention. There was a very contentious debate over their use. Looking back, I think that public debate was very important to where we are today. It created a giant demand among the public for these kinds of therapies. What came out of that controversy was a consumer movement where individuals saw stem cells as a potential cure for themselves, their family, and friends. That background is very important to understanding where we are today. Now we're not just talking about embryonic stem cells, but about the convergence of multiple technologies into a new field called regenerative medicine.

**LE:** What technologies do you mean?

**BS:** We're living on the cusp of a scientific and biomedical revolution that will change our lives, our children's lives and medicine. But the public hasn't really picked up on it yet. Society isn't really ready for this. It's the convergence of technologies beyond stem-cell research, like robotics, nanotechnology, big data. They've all exploded onto the scene at the same time. When I started this conference, we weren't able to reprogram cells. Now we can take a stem cell derived from bone marrow and reprogram it to an embryonic state. We have genetic engineering tools that allow us to snip out parts of the gene and reprogram it. The implications are astonishing, and not just for diseases. Aging will also be affected. The human life is going to extend.

**LE:** It's true that human lifespan increased dramatically over the last century, but the rate of increase has slowed, and in very recent years, has even regressed. When do you think we'll start to



see the practical effects of this technological revolution?

**BS:** Some of these technologies are already in the here and now. If you have access to healthcare and you live in the United States, you might already be lucky enough to have an extended lifespan. But in terms of major advances, I think it's hard to predict right now what the breakthrough will look like and when it will come. A black swan event is an unpredictable event, so it's very hard to know when we will have a black swan event. But I can confidently predict we will have one, and it will have a good effect. Imagine if we find a cure for something like diabetes...it'll stun the world.

**LE:** What are some of the disease targets researchers are going after?

**BS:** You can go into any disease and find folks who are interested in attacking that disease. Cell regeneration has emerged as a major focus. We had sessions on immunotherapies for cancer. And

you can't underestimate the potential for CRISPR technology to snip out bad code from the DNA and insert good code. What if we could cure genetic diseases in the embryo stage? I'm talking about diseases like Tay-Sachs. Tinkering with the human genome could change the way our species evolves.

**LE:** It makes sense that diseases based on simpler genetic defects would be the first targets, but what about the most costly and complicated diseases like Alzheimer's and heart disease? Genetics play a role there, but there's much more involved in the disease process.

**BS:** That's very true, and heart disease in particular is a challenging one. The father of mesenchymal stem cells (which are derived from various tissues in the adult and can differentiate into different types of cells) is here from Case Western University. There's an excellent clinical trial at the University of Miami using mesenchymal stem cells to help victims of cardiac disease. We're seeing incredible

results, but there's a lot of work left to do in the cardiac field. It's not the easiest disease to attack.

**LE:** What are some of the other technologies you're excited about?

**BS:** A few years ago, I went to a conference on regrowing organs. Dr. Anthony Atala from Wake Forest was there, and he's a co-chair at this year's Summit. Dr. Atala's specialty is bioprinting, bio inks, and creating scaffolds to grow new organs. It's very futuristic, the ability to grow new organs from a few cells. When you have people like Dr. Atala and the U.S. Military working toward the same goals alongside major donors, it's a sure thing that we'll see major leaps forward. One of the projects we're working on is setting up a database of regenerative cell outcomes to foster collaboration. There currently isn't anything like that.

**LE:** It's safe to say the government has historically been hostile to rapid medical progress. Do you see hope this will be any different?

**BS:** Right now, the head of the Food and Drug Administration understands regenerative medicine. They are working very hard to reach out to companies that are making breakthroughs. But



the public needs to get involved to push this forward. That's why the embryonic stem-cell debate was a net positive. It started as a political issue. If your view is that cells are a person and it's against your moral beliefs to use them in research, it's hard to advance. And there were many people who believed that and had objections to the research. But if you believe that those cells would be discarded, it becomes a moral imperative to use them. The debate was contentious, but it has subsided now that we have reprogrammed cells from adult cells. The question is no longer if we should move forward with this research. The question going forward will be how to get the benefits of regenerative medicine down into the public. Imagine if we have a cell therapy that can heal your joints, but it's expensive so your insurance isn't going to pay for it. Medicare won't pay for it. The public will need to move this forward through sheer demand.

**LE:** This kind of research is extremely expensive. Where is the funding coming from right now, and who stands to benefit?

**BS:** That's a fascinating question, actually. The early companies like Geron were like gold miners looking for gold. In those days, it was the pick and shovel companies that did well, companies like General Electric or companies that sold assay equipment. But going forward, I think the companies that have the broadest vision have the most potential. There is a lot of potential out there, and a lot of vested interests. Google's company, Calico, has a multimillion-dollar investment aimed at aging. We know there's gold in them thar hills, but we don't know which company will survive.

## About the World Stem Cell Summit

The World Stem Cell Summit was launched in 2003 by the non-profit Regenerative Medicine Foundation, where Bernard Siegel is a founder and director. The goal of the summit is to bring together leaders in the field of regenerative medicine, including research scientists, ethicists, representatives from government and industry, businesses, and sources of funding.

The 2018 program featured speakers from every corner of regenerative medicine, with break-outs on immunotherapy, government oversight and regulation, tissue engineering, investment patterns, and other areas of focus that can help push the field of regenerative medicine forward. •

**For more information on the Regenerative Medicine Foundation, visit**  
<https://www.regmedfoundation.org>  
**For more information on the World Stem Cell Summit, visit**  
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A native of Richmond, Virginia, Dr. Bernard Siegel founded the Genetics Policy Institute (now the Regenerative Medicine Foundation). He is committed to advocacy work on behalf of patients, doctors, and researchers in the regenerative medicine community. He is a recognized policy expert on stem-cell research, regenerative medicine and cloning.

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# Artichokes

BY GARRY MESSICK

The artichoke is a type of thistle—a part of the daisy family—that originates in the Mediterranean area. It has been cultivated as an edible vegetable for nearly 2,000 years, and perhaps longer.

The portion of the artichoke that we eat consists of flower buds that haven't yet bloomed and the heart, from which the buds spring.

Artichokes aren't common in Asia, but are often found in the cuisine of the Middle East, Europe, and the U.S. They also have some noteworthy health benefits.

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BY DR. SHANTI ALBANI



# Unique Test for Intestinal Complaints

For those troubled by intestinal problems such as gas, bloating, diarrhea, or constipation, it is often difficult to determine the exact cause and proper treatment.

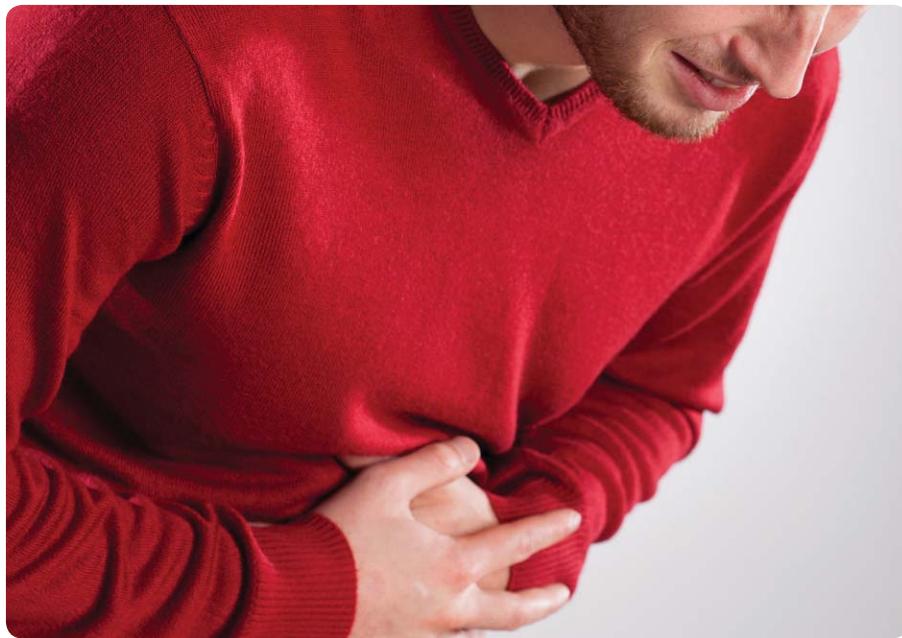
But now, as explained by Dr. Shanti Albani, there is an innovative home **breath test** that will help determine if the cause relates to bacterial overgrowth in the small intestines. The results may provide helpful answers to you and your physician.

**LE:** Many people suffer from intestinal ailments but have not been able to identify the cause of their symptoms. Now **Life Extension®** is offering a test that holds promise for those who suffer from chronic intestinal complaints, correct?

**SA:** That's true. We recently introduced a home test that looks for a common, but underappreciated problem called **small intestinal bacterial overgrowth (SIBO)**.

SIBO is thought to be the underlying cause in at least **60%** of irritable bowel syndrome (IBS) cases, and it is also suspected when people have chronic symptoms of gas, bloating, and intestinal discomfort, even without a diagnosis of IBS.

What excites me about this test is that once SIBO is identified, specific suggestions are available that can help support and improve microbial balance in the intestinal tract. Such an approach affords more relief than therapies designed only to manage intestinal discomfort without a lasting solution.



**LE:** Can you tell us more about what SIBO (small intestinal bacterial overgrowth) is?

**SA:** For optimum health, we should have a diverse and sizable population of bacteria in our large intestine, and comparably fewer bacteria in our small intestine. In fact, the bacterial population in our gut increases as we move through the small intestine toward the colon, but it is in the colon where the microbial populations expand exponentially. In the case of SIBO, bacteria that may be considered normal in the colon can populate and overgrow in the small intestine. This overgrowth causes gas, bloating, cramping, and even systemic symptoms such as brain fog and acne. The underlying cause of SIBO is almost always a loss of normal intestinal motility.

**LE:** By “loss of intestinal motility,” do you mean constipation, or can people who have loose stools also have SIBO?

**SA:** Both people with constipation and those with diarrhea can have

SIBO. There are two main types of movement within the intestine: peristalsis and the migrating motor complex (MMC). Peristalsis occurs during digestion and moves large food masses through the digestive tract. MMC occurs during the fasting state and sweeps residual undigested material and bacteria from the small intestine into the colon. So peristalsis is the primary mover of meals through the system and the MMC provides the small intestines with an important between-meal house-cleaning.

Underactive peristalsis is often associated with constipation and overactive is associated with diarrhea, but a faulty MMC is the main underlying cause of SIBO. When the MMC is not working properly, bacteria are not swept out of the small intestine and into the colon, thus they can grow and overpopulate in the small intestine. As the movements produced by peristalsis and the migrating motor complex are distinct, a compromised MMC and SIBO can occur in the presence of either diarrhea or constipation. If you ever hear your

stomach growling between meals, that is your MMC doing its job of moving excess bacteria and debris into the colon!

**LE:** Sounds like the migrating motor complex is like the street sweeper of the intestines! What could cause it to stop working?

**SA:** That is a great question. One thing we do know is that if you ever had food poisoning, your chances of developing SIBO are much higher. Other conditions that damage the nerves in the intestines, or interfere with motility can also cause SIBO. For example, hypothyroid, previous abdominal surgeries, use of opioid medications, poor eating habits, diabetes or even constant eating, since the migratory motor complex only functions between meals.

**LE:** You mentioned gas and bloating as key symptoms of SIBO, what else should someone look for?

**SA:** While gas, bloating, diarrhea, and/or constipation are hallmarks of SIBO, there are other clues to consider:

- Gut symptoms will sometimes temporarily improve with antibiotics as bacteria in the small intestine are eliminated.
- Gut symptoms are sometimes worse with fiber because the bacteria in the small intestine use the fiber as a food source and multiply.
- Individuals with SIBO may have nutritional deficiencies, as the many bacteria in the small intestine interfere with absorption and use much-needed nutrients for their own propagation.

- The health of our gut impacts the health of the rest of our body. Those with SIBO frequently suffer from acne, rosacea, depression, fatigue, fibromyalgia, and/or joint pain.

This is a condition with an extensive impact on health. I am excited to get the word out because identifying SIBO can make a huge difference in quality of life for many people.

**LE:** How is it possible for these bacteria to cause so many symptoms?

**SA:** When we eat carbohydrates and fiber, we should break down the carbs into sugar and absorb them for energy production. The fiber should pass into the colon where it feeds colonic bacteria and helps form the stool. When too many bacteria make their home in the small intestine, they steal our food, fermenting the carbohydrates and fiber we eat into large amounts of hydrogen and methane gas.

**LE:** So, that is what causes the gas, bloating, diarrhea, and constipation?

**SA:** Yes, hydrogen gas tends to activate peristalsis and cause diarrhea, while methane gas slows it down and is more associated with constipation. In addition, the bacteria themselves can be irritating to the intestines resulting in inflammation, altered immune response, leaky gut, and some of the body-wide symptoms we discussed earlier.

**LE:** I can see the importance of testing for SIBO! How does the test work?

**SA:** The SIBO test is a **breath test**. We mentioned that the bacteria in the small intestine can produce large amounts of hydrogen and methane gas. This gas is actually absorbed from the intestines into the bloodstream and then exhaled through the lungs. The SIBO test comes as a kit that is completed at home. The subject drinks a solution containing either the sugar lactulose or glucose and then collects breath samples in tubes as the solution moves through the intestine. It takes about 90-120 minutes for the sugar solution to move from the mouth to the colon. If significant amounts of hydrogen or methane gas are detected in the breath during that time, it strongly suggests that excessive bacteria in the small intestine are producing gas from the sugar and the person likely has SIBO.

**LE:** You mentioned that you can use either a lactulose or glucose solution for the test. Which one is better?

**SA:** First off, I want to avoid any confusion by pointing out that lactulose is distinct from lactose, the sugar found in milk and dairy. That being said, between the lactulose and the glucose, the lactulose solution has a distinct advantage. It turns out that humans cannot digest or absorb lactulose, only bacteria can use it. Since it is not absorbed, lactulose travels the full length of the small intestine revealing SIBO throughout its entirety, including the lower end of the small intestine where it most commonly occurs.

Although glucose is highly fermentable, it is absorbed in the upper portion of the small intestines, so, if SIBO exists in the lower



portion of the small intestines, it may be missed. We suggest starting with the lactulose SIBO test. If the test is negative and SIBO is still suspected, you can follow-up with a glucose SIBO test.

**LE:** Is this test something I can get through my doctor?

**SA:** Although the existence and clinical significance of SIBO has been well-established in the medical literature, unfortunately, it can take some time before this knowledge percolates into the way doctors practice medicine. So, although some forward-thinking doctors and gastroenterologists may offer SIBO testing, most doctors are still undereducated on the importance of SIBO and how to test for it. Naturopathic doctors are more likely to offer the testing, as well as holistic medical doctors.

**LE:** If someone suspects they have SIBO, is it safe to take probiotics like lactobacillus and bifidobacterium, or could these bacteria populate the small intestines and make things worse?

**SA:** Enough evidence has accumulated to say that multiple strains of bifidobacterium and lactobacillus may decrease symptoms and improve breath tests in individuals with SIBO. It is thought that probiotics can inhibit the growth of less beneficial bacteria, favorably modulate the immune system and help with intestinal motility. Taking all of this into consideration, a high-quality multistrain probiotic can be a valuable part of SIBO treatment and management.

**LE:** If someone does test positive for SIBO, what is the next step?

**SA:** Addressing SIBO is multifaceted and includes dietary changes, antibiotics or antimicrobial herbs, and agents to support intestinal motility. It is best to find a doctor who specializes in SIBO, but customers can also call in and speak with **Life Extension**'s specially trained Wellness Specialists who can assist them with finding a physician, provide helpful information and provide customized suggestions that they can discuss with their own doctor. ●

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

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Dr. Shanti Albani obtained her medical degree in Naturopathic Medicine in 2003 from the National University of Natural Medicine in Portland, Oregon. She practiced medicine for many years in central Mexico specializing in gastrointestinal disorders and hormone balance. During this time, she also owned a nutrition store and taught courses in bioidentical hormone replacement therapy for physicians. She has worked at **Life Extension** since 2010 and is currently the Manager of Clinical Information.

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○ DNA GENETIC CANCER RISK PROFILE** (LC100057)	\$398.66	\$224.25
With only a saliva sample, you can identify your risk for 25 hereditary cancers by analyzing 98 genes from your DNA including the well-known BRCA1, BRCA2, TP53, and APC. Not available in NY.		
○ APOE GENETIC TEST FOR ALZHEIMER'S AND CARDIAC RISK** (LC100059)	\$198.66	\$111.75
Apolipoprotein E (ApoE) is an important regulator of cholesterol and triglyceride levels in your blood and supports lipid transport and injury repair in your brain. Genetically, E4 is the strongest risk factor for developing Late Onset Alzheimer's disease. According to the National Institute of Health, inheriting a single copy of ApoE4 increases the risk of Alzheimer's disease by about three-fold. Inheriting two copies increases the risk by about 12-fold. In fact, almost 40% of AD patients have inherited an E4 allele.		

## WHAT'S NEW FOR 2018

○ SIBO HOME BREATH KIT (LACTULOSE)** (LC100063)	\$332	\$186.75
SIBO stands for <i>small intestinal bacterial overgrowth</i> . This condition occurs when certain bacterial populations proliferate too much in the small intestine. Healthy strains of bacteria are beneficial, but when unhealthy strains grow and expand too much, it leads to problems like gas, bloating, abdominal pain/distention, cramping, brain fog, and more. Research shows that up to 70% or more of those diagnosed with IBS have SIBO.		
○ NEUROTRANSMITTER PANEL** (LC100058)	\$265.33	\$149.25
Serotonin, Dopamine, Epinephrine, Norepinephrine, GABA, Glutamate, Glycine, Histamine and PEA. Alterations in these nine neurotransmitters play a significant role in contributing to symptoms such as cognitive disorders, depression, anxiety, diminished drive, fatigue and sleep difficulties, craving, addictions, pain and more. Not available in NY.		
○ TOXIC METALS PANEL (FECAL)** (LC100076)	\$226.66	\$127.50
The results of fecal elemental analysis can help you identify and eliminate dietary exposure to toxic metals, while also assessing the body's natural excretion of metals. The panel tests Antimony, Arsenic, Beryllium, Bismuth, Cadmium, Copper, Lead, Mercury, Nickel, Platinum, Thallium, Tungsten, and Uranium.		
○ OMEGA-3 INDEX COMPLETE** (LC100066)	\$132	\$74.25
Beneficial for everyone! People <u>not</u> taking omega-3/fish oil should check their baseline omega-3 index to see if it is in the desirable or concerning range. Those taking omega-3/fish oil supplements should take the test to see if they need to adjust their dosage. You want to target a range of <b>8%-12%</b> for your omega-3 index score.		

## 1-2-3 EASY How it works:

### ORDER

Call 1-800-208-3444 toll-free or visit [LifeExtension.com/LabServices](http://LifeExtension.com/LabServices).

### DRAW

For blood tests, take your form to a local lab. Collect at home for saliva, breath, etc.

### REVIEW

Go over results **for free** with our Wellness Specialists by calling 1-800-226-2370. You may wish to review them with your doctor as well.

### IT'S THAT SIMPLE! DON'T DELAY! CALL TODAY!

#### For Our Local Customers:

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**

#### Terms and Conditions

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



## ANNUAL LAB TEST PANELS

### WHOLE BODY HEALTH

	RETAIL PRICE	SUPER SALE PRICE
<input type="radio"/> <b>MALE LIFE EXTENSION PANEL ENHANCED (LC322582)</b> <b>CBC/Chemistry Profile</b> • DHEA-S • PSA (prostate-specific antigen) Homocysteine • C-Reactive Protein (high-sensitivity) • ApoB • Free Testosterone • Total Testosterone • Estradiol • TSH for thyroid function • Vitamin D (25-hydroxyvitamin D) • Hemoglobin A1c	\$400	\$199
<input type="radio"/> <b>MALE ELITE PANEL* (LC100016)</b> <b>CBC/Chemistry Profile</b> • Free and Total Testosterone Total Estrogens • Estradiol • DHEA-S • Progesterone • Pregnenolone DHT • FSH • LH • TSH • Free T3 • Free T4 • Reverse T3 • Free and Total PSA IGF-1 • SHBG • Vitamin D 25-OH • hs-CRP, ferritin • Homocysteine Insulin • Hemoglobin A1c • ApoB	\$766.66	\$431.25
<input type="radio"/> <b>MALE COMPREHENSIVE HORMONE PANEL* (LC100010)</b> <b>CBC/Chemistry Profile</b> • DHEA-S, Estradiol • DHT • PSA Pregnenolone • Total and Free Testosterone • SHBG • TSH • Free T3	\$398.66	\$224.25
<input type="radio"/> <b>MALE BASIC HORMONE PANEL (LC100012)</b> DHEA-S • Estradiol • Total and Free Testosterone • PSA	\$100	\$56.25
<input type="radio"/> <b>INSULIN FASTING (LC004333)</b> Helpful to assess insulin resistance.	\$39.87	\$24.42
<input type="radio"/> <b>NMR LIPOPROFILE® (LC123810)</b> The NMR Lipoprofile® directly measures LDL particle size and number as well as HDL particle number, total cholesterol, and triglycerides. It also provides a calculation of one's risk of insulin resistance by assessing abnormalities in lipoprotein markers.	\$132	\$74.25
<input type="radio"/> <b>ADVANCED OXIDIZED LDL PANEL* (LC100035)</b> This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic and cardiovascular disease as well as the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanates, Myeloperoxidase and Oxidized LDL.	\$380	\$213.75
<input type="radio"/> <b>FEMALE LIFE EXTENSION PANEL ENHANCED (LC322535)</b> <b>CBC/Chemistry Profile</b> • DHEA-S • Estradiol • Homocysteine ApoB • C-Reactive Protein (high-sensitivity) • Progesterone Free Testosterone • Total Testosterone • TSH for thyroid function Vitamin D (25-hydroxyvitamin D) • Hemoglobin A1c	\$400	\$199
<input type="radio"/> <b>FEMALE ELITE PANEL* (LC100017)</b> <b>CBC/Chemistry Profile</b> • Free and total Testosterone Total Estrogens • Estradiol • Estrone • DHEA-S • Progesterone Pregnenolone • DHT • FSH • LH • TSH • Free T3 • Free T4 • Reverse T3 IGF-1 • SHBG • Vitamin D 25-OH • hs-CRP • Ferritin • Homocysteine Insulin • Hemoglobin A1c • ApoB	\$766.66	\$431.25
<input type="radio"/> <b>FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011)</b> <b>CBC/Chemistry Profile</b> • DHEA-S, Estradiol • Total Estrogens TSH • Free T3 • Progesterone • Pregnenolone • Total and Free Testosterone • SHBG	\$398.66	\$224.25
<input type="radio"/> <b>FEMALE BASIC HORMONE PANEL (LC100013)</b> DHEA-S • Estradiol • Total and Free Testosterone • Progesterone	\$100	\$56.25

This is NOT a complete listing of LE blood test services.  
Call 1-800-208-3444 for additional information.

**Blood tests available in the continental United States only.**  
**Restrictions apply in NY, NJ, RI, and MA. Not available in Maryland. Kits not available in Pennsylvania.**

RETAIL PRICE  
SUPER SALE PRICE

	RETAIL PRICE	SUPER SALE PRICE
<input type="radio"/> <b>WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028)</b> <b>CBC/Chemistry Profile</b> • 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) • Ferritin	\$366.66	\$206.25
<input type="radio"/> <b>HEALTHY AGING PANEL-COMPREHENSIVE* (LC100026)</b> <b>CBC/Chemistry Profile</b> • C-reactive protein (high sensitivity) Vitamin B12 • Folate • Homocysteine • Vitamin D 25-hydroxy • Hemoglobin A1c TSH • Free T3 • Free T4 • Ferritin • Urinalysis • Fibrinogen • Insulin	\$332	\$186.75

### WHAT'S INCLUDED IN THE CBC/CHEMISTRY PROFILE

Many of these panels include a **CBC/CHEMISTRY PROFILE** that evaluates:

#### CARDIOVASCULAR RISK

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

#### LIVER FUNCTION

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

#### KIDNEY FUNCTION

BUN • Creatinine • BUN/Creatinine Ratio • Uric Acid

#### BLOOD PROTEINS

Total Protein • Albumin • Globulin • Albumin/Globulin Ratio

#### BLOOD COUNTS

Red Blood Cell Count • White Blood Cell Count • Eosinophils  
Neutrophils (Absolute) • Lymphs (Absolute) • Eos (Absolute) • Baso (Absolute)  
RDW • Monocytes (Absolute) • Monocytes • Lymphocytes • Platelet Count  
Hemoglobin • Hematocrit • MCV • MCH • MCHC • Neutrophils

#### BLOOD MINERALS

Calcium • Potassium • Sodium • Chloride • Iron

The retail price for the **CBC/Chemistry Profile** alone is **\$46**,  
but drops to **\$26** during the **Blood Test Super Sale. (LC381822)**

These **CBC/Chemistry** tests are included in the popular **Male** and **Female Panels**, so you don't have to order them separately.

### ALLERGY TESTS

	RETAIL PRICE	SUPER SALE PRICE
<input type="radio"/> <b>FOOD SAFE ALLERGY TEST – BASIC** (LCM73001)</b> This test measures delayed (IgG) food allergies for 95 common foods.	\$264	\$148.50
<input type="radio"/> <b>FOOD SAFE ALLERGY TEST – EXTENDED** (LCM73002)</b> This test measures delayed (IgG) food allergies to an additional 95 foods.	\$264	\$148.50
<input type="radio"/> <b>FOOD SAFE ALLERGY TEST – COMBO** (LCM73003)</b> This test measures delayed (IgG) food allergies to all 190 foods found in our Basic and Extended panels.	\$500	\$281.25



With **Your Healthy Rewards**, you earn  
**LE Dollars** back on every purchase you make —  
including blood tests! For details, see  
[www.LifeExtension.com/Rewards](http://www.LifeExtension.com/Rewards)

\* 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.

**Amino Acids**

Arginine/L-Ornithine Capsules  
Arginine Ornithine Powder  
Branched Chain Amino Acids  
D,L-Phenylalanine Capsules  
L-Arginine Caps  
L-Carnitine  
L-Glutamine  
L-Glutamine Powder  
L-Lysine  
L-Taurine Powder  
L-Tyrosine Powder  
Super Carnosine  
Taurine

**Blood Pressure & Vascular Support**

Advanced Olive Leaf Vascular Support with Celery Seed Extract  
Arterial Protect  
Blood Pressure Monitor Arm Cuff  
Dual Action Blood Pressure  
Endothelial Defense™ with Pomegranate Complete and CORDIART™  
Endothelial Defense™ with GliSODin®  
Optimal BP Management  
NitroVase with CORDIART™  
Pomegranate Complete  
Pomegranate Fruit Extract  
Triple Action Blood Pressure AM/PM  
VenoFlow™

**Bone Health**

Bone Restore  
Bone Restore-Sugar Free  
Bone Restore with Vitamin K2  
Bone Strength Formula with KoAct®  
Bone-Up™  
Calcium Citrate with Vitamin D  
Dr. Strum's Intensive Bone Formula  
Strontium Caps

**Brain Health**

Acetyl-L-Carnitine  
Acetyl-L-Carnitine Arginate  
Blast™  
Brain Shield® Gastrodin  
CocoaMind™  
Cognitex® Basics  
Cognitex® with Brain Shield®  
Cognitex® with Pregnenolone & Brain Shield®  
Cognizin® CDP-Choline Caps  
DMAE Bitartrate (dimethylaminoethanol)  
Dopa-Mind™  
Ginkgo Biloba Certified Extract™  
Huperzine A  
Lecithin Granules  
Memory Protect  
Migra-Eeze™  
Neuro-Mag® Magnesium L-Threonate  
Optimized Ashwagandha Extract  
PS (Phosphatidylserine) Caps  
Vinpocetine

**Cholesterol Management**

Advanced Lipid Control  
Cho-Less™  
CHOL-Support™  
Red Yeast Rice  
Theaflavins Standardized Extract  
Vitamin B3 Niacin Capsules

**Digestion Support**

Artichoke Leaf Extract  
Digest RC®  
Effervescent Vitamin C - Magnesium Crystals  
Enhanced Super Digestive Enzymes  
Enhanced Super Digestive Enzymes w/Probiotics  
EsophagoCool™  
Esophageal Guardian

**Extraordinary Enzymes**

Gastro-Ease™  
Ginger Force®  
Pancreatin  
Regimint  
Tranquil Tract™  
TruFiber™  
WellBetX PGX plus Mulberry

**Energy Management**

Adrenal Energy Formula  
Asian Energy Boost  
D-Ribose Powder  
D-Ribose Tablets  
Forskolin  
Mitochondrial Basics with PQQ  
Mitochondrial Energy Optimizer with PQQ  
NAD+ Cell Regenerator™  
Optimized NAD+ Cell Regenerator™ with Resveratrol  
PQQ Caps  
Rhodiola Extract  
RiboGen™ French Oak Wood Extract  
Triple Action Thyroid

**Eye Health**

Astaxanthin with Phospholipids  
Brite Eyes III  
Certified European Bilberry Extract  
Eye Pressure Support with Mirtogenol®  
MacuGuard® Ocular Support  
MacuGuard® Ocular Support with Astaxanthin  
Tear Support with MaquiBright®

**Fish Oil & Omegas**

OMEGA FOUNDATIONS® Clearly EPA/DHA  
OMEGA FOUNDATIONS® Mega GLA with Sesame Lignans  
OMEGA FOUNDATIONS® Omega-3 (EPA/DHA)  
OMEGA FOUNDATIONS® Super Omega-3 EPA/DHA with Sesame Lignans & Olive Extract  
OMEGA FOUNDATIONS® Super Omega-3 Plus EPA/DHA with Sesame Lignans, Olive Extract, Krill & Astaxanthin  
OMEGA FOUNDATIONS® Provinal® Purified Omega-7  
OMEGA FOUNDATIONS® Vegetarian DHA Organic Golden Flax Seed

**Food**

California Estate Extra Virgin Olive Oil  
Kenyan Green Tea Crystal  
Kenyan Purple Tea Crystal  
Rainforest Blend Decaf Ground Coffee  
Rainforest Blend Ground Coffee  
Rainforest Blend Ground Natural Mocha Flavor  
Rainforest Blend Natural Vanilla Flavor  
Rainforest Blend Whole Bean Coffee  
Stevia Sweetener

**Glucose Management**

CinSulin® with InSea® and Crominex® 3+ Glycemic Guard™  
Mega Benfotiamine  
Tri Sugar Shield®

**Heart Health**

Aspirin (Enteric Coated)  
BioActive Folate & Vitamin B12 Caps  
Cardio Peak™ with Standardized Hawthorn and Arjuna  
Homocysteine Resist  
Optimized Carnitine  
Super Ubiquinol CoQ10  
Super Ubiquinol CoQ10 with PQQ  
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™  
Super-Absorbable CoQ10 Ubiquinone with d-Limonene  
TMG Powder  
TMG Liquid Capsules

**Hormone Balance**

DHEA (Dehydroepiandrosterone)  
Pregnenolone  
Triple Action Cruciferous Vegetable Extract with Resveratrol  
Triple Action Cruciferous Vegetable Extract

**Immune Support**

AHCC®  
Enhanced Zinc Lozenges  
Immune Modulator with Tinofend®  
Immune Protect with PARACTIN®  
Immune Senescence Protection Formula™  
Kinoko® Gold AHCC  
Kinoko® Platinum AHCC  
Kyolic® Garlic Formula 102  
Kyolic® Reserve  
Lactoferrin (apolactoferrin) Caps  
NK Cell Activator™  
Optimized Garlic  
Optimized Quercetin  
Peony Immune  
ProBoost Thymic Protein A  
Reishi Extract Mushroom Complex  
Standardized Cistanche  
Ten Mushroom Formula®  
Zinc Lozenges

**Inflammation Management**

5-LOX Inhibitor with AprésFlex®  
Advanced Bio-Curcumin® with Ginger & Turmerones  
Black Cumin Seed Oil  
Black Cumin Seed Oil with Bio-Curcumin®  
Boswellia  
Comfort Max™  
Cytokine Suppress™ with EGCG  
Serraflazyme  
Specially-Coated Bromelain  
Super Bio-Curcumin®  
Zyflamend™ Whole Body

**Joint Support**

Arthro-Immune Joint Support  
ArthroMax® Advanced with UC-II® & AprésFlex®  
ArthroMax® with Theaflavins & AprésFlex®  
ArthroMax® Elite  
Bio-Collagen with Patented UC-II®  
Fast-Acting Joint Formula  
Glucosamine/Chondroitin Capsules  
Krill Healthy Joint Formula  
MSM (Methylsulfonylmethane)

**Kidney & Bladder Support**

Cran-Max® Cranberry Whole Fruit Concentrate  
Optimized Cran-Max® with Ellirose™  
Uric Acid Control  
Water-Soluble Pumpkin Seed Extract

**Liver Health & Detoxification**

Anti-Alcohol with HepatoProtection Complex  
Calcium D-Glucarate  
Chlorella  
Chlorophyllin  
European Milk Thistle  
Glutathione, Cysteine & C  
HepatoPro  
Liver Efficiency Formula  
N-Acetyl-L-Cysteine  
PectaSol-C®  
Silymarin  
SODzyme® with GliSODin® & Wolfberry

**Longevity & Wellness**

Alpha-Lipoic Acid  
AppleWise Polyphenol Extract  
Berry Complete  
Blueberry Extract  
Blueberry Extract with Pomegranate  
DNA Protection Formula  
Enhanced Berry Complete with Acai

GEROPROTECT® Ageless Cell®  
 GEROPROTECT® Longevity A.I.®  
 Grapeseed Extract with  
 Resveratrol & Pterostilbene  
 Mediterranean Whole Food Blend  
 Mega Green Tea Extract (decaffeinated)  
 Mega Green Tea Extract (lightly caffeinated)  
 Optimized Fucoidan with Maritech® 926  
 Optimized Resveratrol  
 pTeroPure®  
 Pycnogenol® French Maritime  
 Pine Bark Extract  
 Resveratrol with Pterostilbene  
 RNA (Ribonucleic Acid)  
 Super R-Lipoic Acid  
 X-R Shield

### Men's Health

Male Vascular Sexual Support  
 Mega Lycopene Extract  
 PalmettoGuard® Saw Palmetto with  
 Beta-Sitosterol  
 PalmettoGuard® Saw Palmetto/Nettle Root  
 Formula with Beta-Sitosterol  
 Pomi-T®  
 Prelox® Enhanced Sex for Men  
 Super MiraForte with Standardized Lignans  
 Triple Strength ProstaPollen™  
 Ultra Prostate Formula

### Minerals

Boron  
 Extend-Release Magnesium  
 Ionic Selenium  
 Iron Protein Plus  
 Magnesium (Citrate)  
 Magnesium Caps  
 Only Trace Minerals  
 Optimized Chromium with Crominex® 3+  
 Sea-Iodine™  
 Se-Methyl L-Selenocysteine  
 Vanadyl Sulfate  
 Zinc Caps

### Miscellaneous

Potassium Iodide  
 Solarshield® Sunglasses

### Mood & Stress Management

Advanced Cortisol Balance  
 Enhanced Stress Relief  
 5 HTP  
 L-Theanine  
 SAMe (S-Adenosyl-Methionine)

### Multivitamins

Children's Formula Life Extension Mix™  
 Comprehensive Nutrient Packs ADVANCED  
 Life Extension Mix™ Capsules without Copper  
 Life Extension Mix™ Capsules  
 Life Extension Mix™ Powder without Copper  
 Life Extension Mix™ Powder  
 Life Extension Mix™ Tablets with Extra Niacin  
 Life Extension Mix™ Tablets without Copper  
 Life Extension Mix™ Tablets  
 Once-Daily Health Booster  
 One-Per-Day Tablets  
 Two-Per-Day Capsules  
 Two-Per-Day Tablets

### Personal Care

Anti-Aging Rejuvenating Scalp Serum  
 Biosil  
 Dr. Proctor's Advanced Hair Formula  
 Dr. Proctor's Shampoo  
 European Leg Solution Featuring Certified  
 Diosmin 95  
 Hair, Skin & Nail Rejuvenation Formula  
 w/VERISOL®  
 Hair Suppress Formula  
 Life Extension Toothpaste  
 Venotone  
 Xylitol Mouthwash

### Pet Care

Cat Mix  
 Dog Mix

### Probiotics

Bifido GI Balance  
 FLORASSIST® Balance  
 FLORASSIST® GI with Phage Technology  
 FLORASSIST® Heart Health  
 FLORASSIST® Immune Health  
 FLORASSIST® Mood  
 FLORASSIST® Nasal  
 FLORASSIST® Oral Hygiene  
 FLORASSIST® Prebiotic  
 FLORASSIST® Throat Health  
 Jarro-Dophilus® for Women  
 Theralac® Probiotics  
 TruFlora® Probiotics

### Skin Care

Advanced Anti-Glycation Peptide Serum  
 Advanced Growth Factor Serum  
 Advanced Lightening Cream  
 Advanced Peptide Hand Therapy  
 Advanced Triple Peptide Serum  
 Advanced Under Eye Serum with Stem Cells  
 Amber Self MicroDermAbrasion  
 Anti-Aging Face Oil  
 Anti-Aging Mask  
 Anti-Aging Rejuvenating Face Cream  
 Anti-Aging Rejuvenating Scalp Serum  
 Anti-Glycation Serum with  
 Blueberry & Pomegranate Extracts  
 Antioxidant Facial Mist Hydrator  
 Anti-Redness & Adult Blemish Lotion  
 Collagen Boosting Peptide Serum  
 Cucumber Hydra Peptide Eye Cream  
 DNA Repair Cream  
 Environmental Support Serum  
 Essential Plant Lipids Reparative Serum  
 Eye Lift Cream  
 Face Rejuvenating Anti-Oxidant Cream  
 Healing Formula  
 Healing Vitamin K Cream  
 Hyaluronic Facial Moisturizer  
 Hyaluronic Oil-Free Facial Moisturizer  
 Hydrating Anti-Oxidant Facial Mist  
 Hydroderm  
 Lifting & Tightening Complex  
 Melatonin Advanced Peptide Cream  
 Melatonin Cream  
 Mild Facial Cleanser  
 Multi Stem Cell Skin Tightening Complex  
 Neck Rejuvenating Anti-Oxidant Cream  
 Rejuvenex® Body Lotion  
 Rejuvenex® Factor Firming Serum  
 Resveratrol Anti-Oxidant Serum  
 Shade Factor™  
 Shade Factor™ Sunscreen Lotion  
 Shade Factor™ Sunscreen Spray  
 Skin Care Collection Anti-Aging Serum  
 Skin Care Collection Body Lotion  
 Skin Care Collection Day Cream  
 Skin Care Collection Night Cream  
 Skin Firming Complex  
 Skin Lightening Serum  
 Skin Restoring Phytochemicals with Lipowheat®  
 Skin Stem Cell Serum  
 Skin Tone Equalizer  
 Stem Cell Cream with Alpine Rose  
 Tightening & Firming Neck Cream  
 Triple-Action Vitamin C Cream  
 Ultimate MicroDermabrasion  
 Ultra Eyelash Booster  
 Ultra Lip Plumper  
 Ultra Rejuvenex®  
 Ultra RejuveNight®  
 Ultra Wrinkle Relaxer  
 Under Eye Refining Serum  
 Under Eye Rescue Cream  
 Vitamin C Serum  
 Vitamin D Lotion  
 Vitamin E-ssential Cream

### Youth Serum

### Sleep

Bioactive Milk Peptides  
 Enhanced Sleep with Melatonin  
 Enhanced Sleep without Melatonin  
 Fast-Acting Liquid Melatonin  
 Glycine  
 L-Tryptophan  
 Melatonin  
 Optimized Tryptophan Plus  
 Quiet Sleep Melatonin

### Sports Performance

Creatine Capsules  
 Creatine Whey Glutamine Powder  
 (Vanilla Flavor)  
 New Zealand Whey Protein Concentrate  
 (Natural Chocolate and Vanilla Flavor)  
 Tart Cherry with CherryPure®  
 Plant Protein Complete & Amino Acid Complex  
 Whey Protein Isolate  
 (Chocolate and Vanilla Flavor)

### Vitamins

Ascorbyl Palmitate  
 Benfotiamine with Thiamine  
 Beta-Carotene  
 BioActive Complete B-Complex  
 Biotin  
 Buffered Vitamin C Powder  
 Fast-C® with Dihydroquercetin  
 Gamma E Mixed Tocopherol Enhanced  
 with Sesame Lignans  
 Gamma E Mixed Tocopherol/Tocotrienols  
 High Potency Optimized Folate  
 Inositol Caps  
 Liquid Emulsified Vitamin D3  
 Liquid Vitamin D3  
 Low-Dose Vitamin K2  
 Methylcobalamin  
 MK-7  
 No Flush Niacin  
 Optimized Folate (L-Methylfolate)  
 Pantothenic Acid (Vitamin B-5)  
 Pyridoxal 5'-Phosphate Caps  
 Super Absorbable Tocotrienols  
 Super K with Advanced K2 Complex  
 Super Vitamin E  
 Vitamin B12  
 Vitamin B6  
 Vitamin C with Dihydroquercetin  
 Vitamin D3 with Sea-Iodine™  
 Vitamin D3  
 Vitamins D and K with Sea-Iodine™

### Weight Management

7-Keto® DHEA Metabolite  
 Advanced Anti-Adipocyte Formula  
 Advanced Appetite Suppress  
 AMPK Metabolic Activator  
 CalReduce Selective Fat Binder  
 DHEA Complete  
 Garcinia HCA  
 HCActive™ Garcinia Cambogia Extract  
 Integra-Lean®  
 Mediterranean Trim with Sinetrol™-XPur  
 Optimized Irvingia with Phase 3™ Calorie  
 Control Complex  
 Optimized Saffron with Satiereal®  
 Super CLA Blend with Sesame Lignans  
 Waist-Line Control™

### Women's Health

Enhanced Sex for Women 50+  
 Breast Health Formula  
 Femmenessence MacaPause®  
 Estrogen for Women  
 Progesta-Care®  
 Super-Absorbable Soy Isoflavones  
 Ultra Soy Extract

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each	
<b>A</b>						
01524	ACETYL-L-CARNITINE • 500 mg, 100 veg. caps	34.00	25.50	22.50		
01974	ACETYL-L-CARNITINE ARGINATE • 90 veg. caps	38.00	28.50	26.00		
01628	ADRENAL ENERGY FORMULA • 60 veg. caps	24.00	18.00	16.50		
01630	ADRENAL ENERGY FORMULA • 120 veg. caps	46.00	34.50	31.50		
01807	ADVANCED APPETITE SUPPRESS • 60 veg. caps	38.00	28.50	25.50		
02012	ADVANCED CORTISOL BALANCE • 30 veg. caps	45.00	33.75	30.00		
01828	ADVANCED LIPID CONTROL • 60 veg. caps	30.00	22.50	20.25		
00681	AHCC® • 500 mg, 30 caps	59.98	44.99			
24404	AHCC® (KINOKO® PLATINUM) • 750 mg, 60 veg. caps	84.95	63.71			
29727	AHCC® (KINOKO® GOLD) • 500 mg, 60 veg. caps	74.95	52.47			
00457	ALPHA-LIPOIC ACID W/BIOTIN • 250 mg, 60 caps	37.00	27.75	24.00		
02207	AMPK METABOLIC ACTIVATOR • 30 veg. tabs	38.00	28.50	24.00		
01509	ANTI-ADIPOCYTE FORMULA W/MERATRIM® & INTEGRA LEAN® (Advanced) • 60 veg. caps	39.00	29.25	27.00		
02140	ANTI-ALCOHOL w/HEPATOPRO COMPLEX • 60 caps	22.00	16.50	15.00		
01625	APPLEWISE 600 mg, 30 veg. caps	21.00	15.75	14.25		
01039	ARGININE/ORNITHINE • 500/250, 100 caps	17.99	13.49			
00038	ARGININE/ORNITHINE POWDER • 150 grams	22.95	17.21	14.25		
01624	(L)-ARGININE CAPS • 700 mg, 200 veg. caps	26.50	19.88	17.44		
02004	ARTERIAL PROTECT • 30 veg. caps	44.00	33.00	29.00		
01617	ARTHROMAX® W/THEAFLAVINS & APRÈS FLEX® 120 veg. caps	44.00	33.00	30.00		
01618	ARTHROMAX® ADVANCED W/UC-II® & APRÈS FLEX® 60 caps	36.00	27.00	24.00		
02138	ARTHROMAX® ELITE • 30 veg. tablets	30.00	22.50	20.00		
01404	ARTHRO-IMMUNE JOINT SUPPORT • 60 veg. caps	32.00	24.00	21.00		
00919	ARTICHOKE LEAF EXTRACT • 500 mg, 180 veg. caps	30.00	22.50	21.00		
01533	ASCORBYL PALMITATE • 500 mg, 100 veg. caps	22.50	16.88	15.00		
00888	ASHWAGANDHA EXTRACT (Optimized) • 60 veg. caps	10.00	7.50	6.75		
01805	ASIAN ENERGY BOOST • 90 veg. caps	24.00	18.00	16.50		
01066	ASPIRIN • 81 mg, 300 enteric coated tablets	6.00	4.50	4.00		
01923	ASTAXANTHIN WITH PHOSPHOLIPIDS • 4 mg, 30 softgels	16.00	12.00	10.50		
<b>B</b>						
01945	B-COMPLEX (Bio-Active Complete) • 60 veg. caps	12.00	9.00	8.00		
00920	BENFOTIAMINE W/ THIAMINE • 100 mg, 120 veg. caps	19.95	14.96	13.95		
00925	BENFOTIAMINE (Mega) • 250 mg, 120 veg. caps	30.00	22.50	20.25		
01206	BERRY COMPLETE • 30 veg. caps	21.00	15.75	14.00		
01496	BERRY COMPLETE (Enhanced) • 60 veg. caps	29.00	21.75	19.50		
00664	BETA-CAROTENE • 25,000 IU, 100 softgels	11.50	8.63			
01622	BIFIDO GI BALANCE • 60 veg. caps	20.00	15.00	13.50		
01873	BILBERRY EXTRACT • 100 mg, 90 veg. caps	36.00	27.00	24.00		
01512	BIOACTIVE MILK PEPTIDES • 30 caps	18.00	13.50	12.00		
01631	BIO-COLLAGEN W/PATENTED UC-II® • 40 mg, 60 small caps	36.00	27.00	24.00		
01006	BIOSIL™ • 5 mg, 30 veg. caps	19.99	15.99			
01007	BIOSIL™ • 1 fl oz	31.99	25.59			

**SUBTOTAL OF COLUMN 1**

JUNE 2018

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each	
00102	BIOTIN • 600 mcg, 100 caps	7.50	5.63	4.88		
01709	BLACK CUMIN SEED OIL • 60 softgels	16.00	12.00	10.50		
01710	BLACK CUMIN SEED OIL W/BIO-CURCUMIN® • 60 softgels	32.00	24.00	22.50		
01008	BLAST™ • 600 grams of powder	26.97	20.23			
02025	BLOOD PRESSURE (Dual Action) • 60 veg. tabs	44.00	33.00	28.00		
70000	BLOOD PRESSURE MONITOR (ACCUFIT™) • med/lg cuff	79.99	49.99			
70004	BLOOD PRESSURE MONITOR • Digital wrist cuff	69.95	52.46			
02024	BLOOD PRESSURE (Triple Action AM/PM) • 60 veg. tabs	44.00	33.00	28.00		
01214	BLUEBERRY EXTRACT • 60 veg. caps	22.50	16.88	15.00		
01438	BLUEBERRY EXTRACT W/ POMEGRANATE • 60 veg. caps	30.00	22.50	20.25		
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) • 300 caps	56.00	42.00	37.50		
01726	BONE RESTORE • 120 caps	22.00	16.50	14.25		
02123	BONE RESTORE • Chocolate, Sugar-Free • 60 chewable tabs	22.00	16.50	14.25		
01727	BONE RESTORE W/VITAMIN K2 • 120 caps	24.00	18.00	16.50		
01725	BONE STRENGTH FORMULA W/KOACT® • 120 caps	45.00	33.75	30.00		
00313	BONE-UP® • 240 caps	28.95	21.71	20.41		
01661	BORON • 3 mg, 100 veg. caps	5.95	4.46	3.94		
00202	BOSWELLA • 100 caps	38.00	28.50	22.50		
00984	BP MANAGEMENT (Optimal) • 60 tablets	44.00	33.00	30.00		
01802	BRAIN SHIELD® GASTRODIN • 300 mg, 60 veg. caps	33.00	24.75	22.50		
01253	BRANCHED CHAIN AMINO ACIDS • 90 caps	19.50	14.63	12.75		
01942	BREAST HEALTH FORMULA • 60 caps	34.00	25.50	22.50		
00893	BRITE EYES III • 2 vials, 5 ml each	34.00	25.50	24.00		
01203	BROMELAIN (Specially-coated) 500 mg, 60 enteric coated tablets	21.00	15.75	14.25		
<b>C</b>						
01963	CALCIUM CITRATE W/VITAMIN D • 200 veg. caps	18.00	13.50	12.50		
01651	CALCIUM D-GLUCARATE • 200 mg, 60 veg. caps	18.00	13.50	11.25		
01823	CALREDUCE SELECTIVE FAT BINDER 120 mint chewable tablets	45.00	33.75	28.50		
01700	CARDIO PEAK™ w/STANDARDIZED HAWTHORN & ARJUNA 120 veg. caps	36.00	27.00	24.00		
02018	CARNITINE (Optimized) • 60 veg. caps	30.00	22.50	20.00		
01532	L-CARNITINE • 500 mg, 30 veg. caps	15.00	11.25	9.90		
01829	CARNOSINE • 500 mg, 60 veg. caps	36.00	27.00	24.00		
02020	CARNOSINE (Super) • 500 mg, 60 veg. caps	40.00	30.00	27.00		
01932	CAT MIX • 100 grams powder	14.00	10.50	8.25		
02199	CHILDREN'S FORMULA LIFE EXTENSION MIX™ 120 chewable tablets	25.00	18.75	17.00		
00550	CHLORELLA • 500 mg, 200 tablets	23.98	17.99			
01571	CHLOROPHYLLIN • 100 mg, 100 veg. caps	24.00	18.00	15.00		
01359	CHO-LESS™• 90 capsules	37.50	37.50			
01910	CHOL-SUPPORT™ • 60 liquid veg. caps	48.00	36.00	32.00		
01504	CHROMIUM W/CROMINEX® 3+ (Optimized) 500 mcg, 60 veg. caps	9.00	6.75	6.00		
01503	CINSULIN® W/INSEAZ® AND CROMINEX® 3+ • 90 veg. caps	38.00	28.50	25.50		
01906	CISTANCHE (Standardized) • 30 veg. caps	20.00	15.00	12.00		

**SUBTOTAL OF COLUMN 2**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

YOUR PRICE										
ITEM No.	PRODUCT	Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total			
00818	CLA BLEND W/SESAME LIGNANS (Super) • 120 softgels	36.00	27.00	24.75	19.75					
02103	COCOAMIND™ • 14 packets	24.00	18.00	16.00						
01896	COGNITEX® W/BRAIN SHIELD® • 90 softgels	60.00	45.00	39.00	36.00					
01897	COGNITEX® W/PREGNENOLONE & BRAIN SHIELD® 90 softgels	62.00	46.50	39.75	37.50					
01421	COGNITEX® BASICS • 60 softgels	38.00	28.50	26.25	24.00					
01659	COGNIZIN® CDP-CHOLINE CAPS • 250 mg, 60 veg. caps	36.00	27.00	25.50						
02202	COMFORTMAX™ • 30 day supply	44.00	33.00	29.00						
01945	COMPLETE B-COMPLEX (BioActive) • 60 veg. caps	12.00	9.00	8.00						
02298	COMPREHENSIVE NUTRIENT PACKS ADVANCED • 30 packs	90.00	67.50	61.50						
01949	COQ10 w/d-LIMONENE (Super-Absorbable) • 50 mg, 60 softgels	25.00	18.75	16.50	15.00					
01948	COQ10 w/d-LIMONENE (Super-Absorbable) 100 mg, 100 softgels	46.00	34.50	28.00	26.25					
01951	COQ10 w/d-LIMONENE (Super-Absorbable) 100 mg, 60 softgels	30.00	22.50	20.00						
01929	COQ10 (Super Ubiquinol) • 100 mg, 60 softgels	56.00	42.00	36.00	33.00					
01733	COQ10 w/PQQ (Super Ubiquinol) • 100 mg, 30 softgels	50.00	37.50	30.00	27.00					
01437	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 100 mg, 30 softgels	33.00	24.75	22.00						
01426	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 100 mg, 60 softgels	62.00	46.50	39.00	36.00					
01425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 50 mg, 100 softgels	58.00	43.50	34.50	31.50					
01427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 50 mg, 30 softgels	20.00	15.00	12.00						
01431	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super Ubiquinol) • 200 mg, 30 softgels	62.00	46.50	39.00	36.00					
00862	CRAN-MAX® • 500 mg, 60 veg. caps	17.50	13.13	11.25						
01424	CRAN-MAX® WITH ELLIROSE™ (Optimized) • 60 veg. caps	18.00	13.50	12.00						
01529	CREATINE CAPSULES • 120 veg. caps	10.95	8.21	6.94						
01746	CREATINE WHEY GLUTAMINE POWDER • 454 grams (vanilla)	30.00	22.50	19.50						
00467	CURCUMIN® (Super Bio) • 400 mg, 30 veg. caps	20.00	15.00	14.00						
00407	CURCUMIN® (Super Bio) • 400 mg, 60 veg. caps	38.00	28.50	26.25						
01924	CURCUMIN® W/GINGER & TURMERONES (Advanced Bio) 30 softgels	30.00	22.50	20.25						
01804	CYTOKINE SUPPRESS™ W/EGCG • 30 veg. caps	30.00	22.50	20.25						
COSMESIS										
80157	ADVANCED ANTI-GLYCATION PEPTIDE SERUM • 1 fl. oz	53.00	39.75	34.50						
80165	ADVANCED GROWTH FACTOR SERUM • 1 fl. oz	65.00	48.75	42.75						
80154	ADVANCED LIGHTENING CREAM • 1 oz	65.00	48.75	42.75						
80155	ADVANCED PEPTIDE HAND THERAPY • 4 oz	46.00	34.50	29.25						
80152	ADVANCED TRIPLE PEPTIDE SERUM • 1 fl. oz	65.00	48.75	42.75						
80140	ADVANCED UNDER EYE SERUM W/STEM CELLS • .33 fl. oz	49.00	36.75	31.50						
80139	AMBER SELF MICRODERMABRASION • 2 oz	49.00	36.75	31.50						
80158	ANTI-AGING FACE OIL • 1 fl. oz	59.00	44.25	39.00						
80118	ANTI-AGING MASK • 2 oz	72.00	54.00	47.52						
80151	ANTI-AGING REJUVENATING FACE CREAM • 2 oz	65.00	48.75	42.75						
80153	ANTI-AGING REJUVENATING SCALP SERUM • 2 fl. oz	46.00	34.50	29.25						

SUBTOTAL OF COLUMN 3

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

YOUR PRICE										
ITEM No.	PRODUCT	Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total			
80134	ANTI-GLYCATION SERUM W/BLUEBERRY & POMEGRANATE EXTRACTS • 1 fl. oz	33.00	24.75	23.51						
80133	ANTIOXIDANT FACIAL MIST HYDRATOR • 2 fl. oz	32.00	24.00	22.80						
80105	ANTI-REDNESS & ADULT BLEMISH LOTION • 1 oz	74.50	55.88	49.17						
80156	COLLAGEN BOOSTING PEPTIDE SERUM • 1 fl. oz	59.00	44.25	39.00						
80169	CUCUMBER HYDRA PEPTIDE EYE CREAM • .5 oz	38.00	28.50	26.00						
80141	DNA REPAIR CREAM • 1 oz	49.00	36.75	31.50						
80167	ENVIRONMENTAL SUPPORT SERUM • 1 fl. oz	59.00	44.25	39.00						
80108	ESSENTIAL PLANT LIPIDS REPARATIVE SERUM • 1 fl. oz	74.95	56.21	49.46						
80163	EYE LIFT CREAM • 0.5 fl. oz	59.00	44.25	39.00						
80123	FACE REJUVENATING ANTIOXIDANT CREAM • 2 oz	69.50	52.13	45.87						
80137	HEALING FORMULA ALL-IN-ONE CREAM • 1 oz	53.00	39.75	34.07						
80102	HEALING VITAMIN K CREAM • 1 oz	79.50	59.63	52.47						
80109	HYALURONIC FACIAL MOISTURIZER • 1 oz	58.00	43.50	38.28						
80110	HYALURONIC OIL-FREE FACIAL MOISTURIZER • 1 oz	58.00	43.50	38.28						
80138	HYDRATING ANTIOXIDANT FACE MIST • 4 fl. oz	39.95	29.96	28.50						
80103	LIFTING & TIGHTENING COMPLEX • 1 oz	74.50	55.88	49.17						
80168	MELATONIN ADVANCED PEPTIDE CREAM • 1 oz	38.00	28.50	26.00						
80114	MILD FACIAL CLEANSER • 8 fl. oz	59.00	44.25	38.94						
80159	MULTI STEM CELL SKIN TIGHTENING COMPLEX • 1 fl. oz	59.00	44.25	39.00						
80122	NECK REJUVENATING ANTIOXIDANT CREAM • 2 oz	64.00	48.00	42.24						
80150	RENEWING EYE CREAM • 1/2 oz	65.00	48.75	42.75						
80142	RESVERATROL ANTI-OXIDANT SERUM • 1 fl. oz	46.00	34.50	29.25						
80166	SKIN FIRMING COMPLEX • 1 fl. oz (2 units \$34.50)	53.00	39.75							
80112	SKIN LIGHTENING SERUM • 1/2 fl. oz	85.00	63.75	56.10						
80130	SKIN STEM CELL SERUM • 1 fl. oz	74.00	55.50	51.75						
80164	SKIN TONE EQUALIZER • 0.4 fl oz	59.00	44.25	39.00						
80143	STEM CELL CREAM W/ALPINE ROSE • 1 oz	66.00	49.50	43.50						
80148	TIGHTENING & FIRMING NECK CREAM • 2 oz	39.00	29.25	26.25						
80161	TRIPLE ACTION VITAMIN C CREAM • 1 oz jar	59.00	44.25	39.00						
80162	ULTIMATE MICRODERMABRASION • 8 fl. oz	39.00	29.25	26.25						
80160	ULTRA EYELASH BOOSTER • 0.25 oz (2 units each \$39)	59.00	44.25							
80116	ULTRA LIP PLUMPER • 1/3 oz	64.00	48.00	42.24						
80101	ULTRA WRINKLE RELAXER • 1 oz	89.95	67.46	59.82						
80113	UNDER EYE REFINING SERUM • 1/2 fl. oz	74.50	55.88	49.17						
80104	UNDER EYE RESCUE CREAM • 1/2 oz	74.50	55.88	49.17						
80129	VITAMIN C SERUM • 1 fl. oz	85.00	63.75	56.10						
80136	VITAMIN D LOTION • 4 oz	36.00	27.00	25.25						
80145	VITAMIN E-ESSENTIAL CREAM • 1 oz	28.00	21.00	19.50						
80149	YOUTH SERUM • 1 oz	65.00	48.75	42.75						
D										
00658	7-KETO® DHEA METABOLITE • 25 mg, 100 caps	28.00	21.00	18.00						
01479	7-KETO® DHEA METABOLITE • 100 mg, 60 veg. caps	40.00	30.00	27.00						
01640	DHA (Vegetarian) • 30 veg. softgels	20.00	15.00	13.50						
00607	DHEA • 25 mg, 100 tablets (Dissolve in mouth)	14.00	10.50	8.81						
01478	DHEA COMPLETE • 60 veg. caps	48.00	36.00	32.40						

SUBTOTAL OF COLUMN 4

JUNE 2018

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			
			1 Unit Each	4 Unit Each	10 Unit Each	I QTY Total
00335	DHEA • 25 mg, 100 caps	16.00	12.00	11.00		
00454	DHEA • 15 mg, 100 caps	14.00	10.50	9.00		
00882	DHEA • 50 mg, 60 caps	19.00	14.25	12.75		
01689	DHEA • 100 mg, 60 veg. caps	24.00	18.00	16.50		
30747	DIGEST RC® • 30 caps	19.95	14.96			
02021	DIGESTIVE ENZYMEs (Enhanced Super) • 60 veg. caps	22.00	16.50	15.00		
02022	DIGESTIVE ENZYMEs w/PROBIOTICS (Enhanced Super)•60 veg. caps	28.00	21.00	18.00		
01671	D, L-PHENYLALANINE • 500 mg, 100 veg. caps	18.75	14.06	12.00		
01540	DMAE BITARTRATE • 150 mg, 200 veg. caps	18.00	13.50	11.25		
02270	DNA PROTECTION FORMULA • 30 veg. caps	20.00	15.00	13.50		
01931	DOG MIX • 100 grams powder	18.00	13.50	11.25		
02006	DOPA-MIND™ • 60 veg. tabs	44.00	33.00	28.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA • 2 oz	39.95	29.96	24.00		
00320	DR. PROCTOR'S HAIR SHAMPOO • 8 oz	24.95	18.71	16.50		
<b>E</b>						
01997	ENDOTHELIAL DEFENSE™ w/POMEGRANATE COMPLETE AND CORDIART™ • 60 softgels	68.00	51.00	46.50		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® • 60 veg. caps	54.00	40.50	36.00		
02200	EPA/DHA (Clearly) • 120 softgels	30.00	22.50	20.00		
02033	ESOPHACOOL™ • 60 chewable tablets	12.00	9.00	8.00		
01737	ESOPHAGEAL GUARDIAN (Berry flavor) • 60 chewable tablets	36.00	27.00	24.00		
01894	ESTROGEN FOR WOMEN • 30 veg. tabs	30.00	22.50	20.00		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 600 mg, 30 veg. tabs	20.00	15.00	13.50		
01706	EXTRAORDINARY ENZYMEs • 60 caps	26.00	19.50	18.00		
02008	(CALIFORNIA ESTATE) EXTRA VIRGIN OLIVE OIL•500 ml (16.9 fl. oz)	33.00	24.75	22.50		
01514	EYE PRESSURE SUPPORT W/MIRTOGENOL® • 30 veg. caps	38.00	28.50	25.50		
<b>F</b>						
00965	FAST-ACTING JOINT FORMULA • 30 caps	39.00	29.25	27.00		
01717	FAST-C® W/DIHYDROQUERCETIN • 120 veg. tabs	26.00	19.50	18.00		
01064	FEMMENESSENCE MACAPAUSE® • 120 veg. caps	34.99	26.24			
02125	FLORASSIST® GI w/PHAGE TECHNOLOGY•30 liquid veg. caps	33.00	24.75	22.50		
01821	FLORASSIST® HEART HEALTH • 60 veg. caps	32.00	24.00	21.00		
02124	FLORASSIST® IMMUNE HEALTH • 30 veg. caps	26.00	19.50	18.00		
02120	FLORASSIST® ORAL HYGIENE • 30 lozenges	20.00	15.00	13.00		
01825	FLORASSIST® BALANCE • 30 liquid veg. caps	32.00	24.00	21.00		
02000	FLORASSIST® MOOD • 60 caps	33.00	24.75	22.50		
02208	FLORASSIST® NASAL • 30 veg. caps	36.00	27.00	24.00		
02203	FLORASSIST® PREBIOTIC•Natural Strawberry, 60 chewable tabs	20.00	15.00	13.00		
01920	FLORASSIST® THROAT HEALTH • 30 lozenges	20.00	15.00	13.50		
01913	FOLATE HIGH POTENCY (Optimized) • 5,000 mcg, 30 veg. tablets	18.00	13.50	12.00		
01939	FOLATE (Optimized) • 1,000 mcg, 100 veg. tablets	15.00	11.25	10.00		
01842	FOLATE + VITAMIN B12 (BioActive) • 90 veg. caps	12.00	9.00	8.00		
01544	FORSKOLIN • 10 mg, 60 veg. caps	16.00	12.00	10.50		
01513	FUCOIDAN W/MARITECH® 926 (Optimized) • 60 veg. caps	36.00	27.00	24.75		

**SUBTOTAL OF COLUMN 5**

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE		
			1 Unit Each	4 Unit Each	10 Unit Each
<b>G</b>					
02070	GAMMA E MIXED TOCOPHEROL/TOCOTRIENOLS • 60 softgels	40.00	30.00	27.00	
02075	GAMMA E MIXED TOCOPHEROL w/ENHANCED SESAME LIGNANS • 60 softgels	32.00	24.00	21.75	
01394	GARLIC (Optimized) • 200 veg. caps	24.95	18.71	15.75	
02100	GASTRO-EASE™ • 60 veg. caps	44.00	33.00	30.00	
02119	GEROPROTECT® AGELESS CELL® • 30 softgels	40.00	30.00	27.00	
02133	GEROPROTECT® LONGEVITY A.I.® • 30 softgels	56.00	42.00	38.00	
01122	GINGER FORCE® • 60 liquid caps	34.95	26.21		
01658	GINKGO BILOBA CERTIFIED EXTRACT™ 120 mg, 365 veg. caps	50.00	37.50	33.00	
00756	GLA WITH SESAME LIGNANS (Mega) • 60 softgels	19.50	14.63	13.50	
00345	(L-) GLUTAMINE CAPSULES • 500 mg, 100 veg. caps	14.95	11.21	10.13	
00141	(L-) GLUTAMINE POWDER • 100 grams	22.00	16.50	15.00	
00522	GLUCOSAMINE/CHONDROITIN CAPSULES • 100 caps	38.00	28.50	24.00	
01541	GLUTATHIONE, CYSTEINE & C • 100 veg. caps	22.00	16.50	15.00	
02122	GLYCEMIC GUARD™ • 30 veg. caps	42.00	31.50	28.00	
01669	GLYCINE • 1,000 mg, 100 veg. caps	12.00	9.00	8.10	
01411	GRAPE SEED EXTRACT W/RESVERATROL & PTEROSTILBENE 100 mg, 60 veg. caps	36.00	27.00	25.50	
01620	GREEN COFFEE EXTRACT COFFEEGENIC® 400 mg, 90 veg. caps	32.00	24.00	21.00	
00953	GREEN TEA EXTRACT (Mega)•lightly caffeinated,100 veg. caps	30.00	22.50	18.00	
00954	GREEN TEA EXTRACT (Mega)•decaffeinated, 100 veg. caps	30.00	22.50	18.00	
<b>H</b>					
01074	5 HTP • 100 mg, 60 caps	27.95	20.96		
02002	HAIR, SKIN & NAIL REJUVENATION FORM W/VERISOL® 90 tabs	32.00	24.00	22.00	
01738	HCA (Garcinia) • 90 veg. caps	17.00	12.75	11.25	
29754	HCACTIVE™ GARCINIA CAMBOGIA EXTRACT • 90 caps	30.00	22.50		
01393	HEPATOPRO • 900 mg, 60 softgels	50.00	37.50	34.50	
02121	HOMOCYSTEINE RESIST • 60 veg. caps	26.00	19.50	17.50	
01527	HUPERZINE A • 200 mcg, 60 veg. caps	40.00	30.00	27.00	
00661	HYDRODERM® • 1 oz	79.95	59.96	49.00	
<b>I</b>					
01704	IMMUNE MODULATOR W/TINOFEND® • 60 veg. caps	17.00	12.75	11.25	
00955	IMMUNE PROTECT W/PARACTIN® • 30 veg. caps	29.50	22.13	19.91	
02005	IMMUNE SENESCENCE PROTECTION FORMULA™•60 veg. tabs	40.00	30.00	27.00	
01674	INOSITOL CAPSULES • 1,000 mg, 360 veg. caps	62.00	46.50	43.50	
01292	INTEGRA-LEAN® AFRICAN MANGO IRVINGIA 150 mg, 60 veg. caps	28.00	21.00	18.00	
30731	IONIC SELENIUM • 300 mg, 2 fl. oz	13.69	10.27		
01677	IRON PROTEIN PLUS • 300 mg, 100 caps	28.00	21.00	19.50	
01492	IRVINGIA W/PHASE 3™ CALORIE CONTROL COMPLEX (Optimized African Mango)• 120 veg. caps	56.00	42.00	36.00	
<b>J, K, L</b>					
52142	JARRO-DOPHILUS® PROBIOTIC FOR WOMEN 30 enteric-coated veg. caps	27.95	20.96		
00056	JARRO-DOPHILUS EPS® • 60 veg. caps	23.95	17.96		
02034	K W/ADVANCED K2 COMPLEX (Super) • 90 softgels	30.00	22.50	20.25	

**SUBTOTAL OF COLUMN 6**

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE				QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each			
01600	KRILL HEALTHY JOINT FORMULA • 30 softgels	32.00	24.00	21.75				
01050	KRILL OIL (Jarrow) • 60 softgels	33.95	25.46					
00316	KYOLIC® GARLIC FORMULA 102 • 200 veg. caps	27.45	20.59					
00789	KYOLIC® RESERVE • 600 mg, 120 caps	28.95	21.71					
01681	LACTOFERRIN • 60 caps	44.00	33.00	30.00				
00020	LECITHIN • 16 oz granules	18.00	13.50	12.00				
02255	LIFE EXTENSION MIX™ • 240 tablets	74.00	55.50	48.00	42.00			
02257	LIFE EXTENSION MIX™ W/EXTRA NIACIN • 240 tablets	74.00	55.50	48.00	42.00			
02254	LIFE EXTENSION MIX™ • 360 caps	78.00	58.50	50.00	44.00			
02256	LIFE EXTENSION MIX™ POWDER • 12.70 oz	72.00	54.00	46.00	40.00			
02265	LIFE EXTENSION MIX™ • 240 tablets w/o copper	74.00	55.50	48.00	42.00			
02264	LIFE EXTENSION MIX™ • 360 caps w/o copper	78.00	58.50	50.00	44.00			
01608	LIVER EFFICIENCY FORMULA • 30 veg. caps	18.00	13.50	12.00				
01639	5-LOX INHIBITOR W/APRÈS FLEX® • 100 mg, 60 veg. caps	22.00	16.50	15.00				
01678	L-LYSINE • 620 mg, 100 veg. caps	9.00	6.75	6.00				
00455	LYCOPENE (Mega) • 15 mg, 90 softgels	35.00	26.25	22.50				
<b>M</b>								
01992	MACUGUARD® OCULAR SUPPORT w/SAFFRON• 60 softgels	25.00	18.75	17.50				
01993	MACUGUARD® OCULAR SUPPORT w/SAFFRON & ASTAXANTHIN• 60 softgels	44.00	33.00	30.00				
01459	MAGNESIUM CAPS • 500 mg, 100 veg. caps	12.00	9.00	7.50				
01682	MAGNESIUM (CITRATE) • 160 mg, 100 veg. caps	13.00	9.75	8.50				
02107	(EXTEND-RELEASE) MAGNESIUM • 60 veg. caps	13.00	9.75	8.75				
02209	MALE VASCULAR SEXUAL SUPPORT • 30 veg. caps	24.00	18.00	16.00				
01908	MEDITERRANEAN TRIM WITH SINETROL™-XPUR 60 veg. caps	18.00	13.50	12.00				
02109	MEDITERRANEAN WHOLE FOOD BLEND • 90 veg. caps	44.00	33.00	30.00				
01668	MELATONIN • 300 mcg, 100 veg. caps	7.00	5.25	4.50				
01083	MELATONIN • 500 mcg, 200 veg. caps	18.00	13.50	12.00				
00329	MELATONIN • 1 mg, 60 caps	5.00	3.75	3.47				
00330	MELATONIN • 3 mg, 60 veg. caps	8.00	6.00	5.16				
00331	MELATONIN • 10 mg, 60 veg. caps	28.00	21.00	18.00				
00332	MELATONIN • 3 mg, 60 veg. lozenges	8.00	6.00	5.16				
01734	MELATONIN (Fast-Acting Liquid) • 2 fl. oz (Citrus-Vanilla)	12.00	9.00	8.25				
01787	MELATONIN TIMED RELEASE • 300 mcg, 100 veg. tabs	12.00	9.00	8.25				
01788	MELATONIN TIMED RELEASE • 750 mcg, 60 veg. tablets	8.00	6.00	5.25				
01786	MELATONIN TIMED RELEASE • 3 mg, 60 veg. tabs	12.00	9.00	8.25				
02101	MEMORY PROTECT • 36 day supply	24.00	18.00	16.00				
01536	METHYLCOBALAMIN • 1 mg, 60 veg. lozenges (vanilla)	9.95	7.46	6.00				
01537	METHYLCOBALAMIN • 5 mg, 60 veg. lozenges (vanilla)	32.00	24.00	18.75	17.25			
00709	MIGRA-EEZE™ (Butterbur) • 60 softgels	33.00	24.75	22.00				
01522	MILK THISTLE (European) • 60 veg. caps	34.00	25.50	22.50				
01922	MILK THISTLE (European) • 60 softgels	28.00	21.00	18.75				
01925	MILK THISTLE (European) • 120 softgels	44.00	33.00	30.00				
01940	MIRAFORTE w/STANDARDIZED LIGNANS (Super) • 120 veg caps	62.00	46.50	42.00				
01869	MITOCHONDRIAL BASICS w/PQQ • 30 caps	40.00	30.00	27.00				

**SUBTOTAL OF COLUMN 7**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE				QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each			
01868	MITOCHONDRIAL ENERGY OPTIMIZER w/PQQ • 120 caps	68.00	51.00	45.00				
00065	MK-7 • 90 mcg, 60 softgels	28.00	21.00	18.75				
00451	MSM (Methylsulfonylmethane) • 1,000 mg, 100 caps	14.00	10.50	8.96				
<b>N</b>								
01534	N-ACETYL-L-CYSTEINE • 600 mg, 60 veg. caps	14.00	10.50	9.25				
01904	NAD+ CELL REGENERATOR™ • 100 mg, 30 veg. caps	22.00	call for pricing					
02144	NAD+ CELL REGENERATOR™ NICOTINAMIDE RIBOSIDE 250 mg, 30 veg. caps	42.00	call for pricing					
02148	NAD+ CELL REGENERATOR™ W/RESVERATROL (Optimized) 30 veg. caps	48.00	call for pricing					
01603	NEURO-MAG® MAGNESIUM L-THREONATE • 90 veg. caps	40.00	30.00	27.00				
02032	NEURO-MAG® MAGNESIUM L-THREONATE 93.35 grams • Tropical Punch Flavor	38.00	28.50	26.00				
01990	NITROVASC w/CORDIART™ • 30 veg. caps	18.00	13.50	12.00				
01903	NK CELL ACTIVATOR™ • 30 veg. tablets	45.00	33.75	31.50				
00373	NO FLUSH NIACIN • 800 mg, 100 caps	19.00	14.25	12.75				
<b>O</b>								
01824	OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRACT (Advanced) • 60 veg. caps	36.00	27.00	24.00				
01937	OMEGA-3 (EPA/DHA) • 120 softgels	20.00	15.00	13.50				
01988	OMEGA-3 PLUS EPA/DHA w/SESAME LIGNANS, OLIVE EXTRACT, KRILL & ASTAXANTHIN (SUPER) • 120 softgels	45.00	33.75	31.50	24.75			
01983	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 60 softgels	18.00	13.50	12.00	9.38			
01982	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 120 softgels	32.00	24.00	21.00	17.05			
01984	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 120 enteric coated softgels	34.00	25.50	23.25	18.00			
01985	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 60 enteric coated softgels	20.00	15.00	13.50	10.50			
01986	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 240 small softgels	32.00	24.00	21.00	17.25			
02092	ONCE-DAILY HEALTH BOOSTER • 30 softgels	30.00	22.50	20.00				
02091	ONCE-DAILY HEALTH BOOSTER • 60 softgels	54.00	40.50	38.00				
02213	ONE-PER-DAY • 60 tablets	23.00	17.25	16.00				
01328	ONLY TRACE MINERALS • 90 veg. caps	15.00	11.25	9.38				
<b>P</b>								
01789	PALMETTOGUARD® SAW PALMETTO W/BETA-SITOSTEROL 30 softgels	15.00	11.25	10.50	9.00			
01790	PALMETTOGUARD® SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL • 60 softgels	28.00	21.00	19.50	18.00			
*00342	PECTA SOL-C® MODIFIED CITRUS PECTIN • 454 grams powder	113.95	96.86					
*01080	PECTA SOL-C® MODIFIED CITRUS PECTIN • 270 veg. caps	82.95	70.51					
01811	PEONY IMMUNE • 60 veg. caps	36.00	27.00	24.00				
**00673	PGX® PLUS MULBERRY (WellBetX®) • 180 veg. caps	34.95	26.21					
01953	POMEGRANATE COMPLETE • 30 softgels	24.00	18.00	15.75				
00956	POMEGRANATE FRUIT EXTRACT • 30 veg. caps	19.50	14.63	13.16				
-01837	POMI-T® • 60 veg. caps	38.00	28.50	26.00				
00577	POTASSIUM IODIDE • 130 mg, 14 tabs	6.95	5.21	3.94				
01500	PQQ CAPS • 10 mg, 30 veg. caps	18.00	13.50	11.00	10.00			
01647	PQQ CAPS • 20 mg, 30 veg. caps	32.00	24.00	18.00	17.00			

**SUBTOTAL OF COLUMN 8**

JUNE 2018

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
00302	PREGNENOLONE • 50 mg, 100 caps	26.00	19.50	16.50			
00700	PREGNENOLONE • 100 mg, 100 caps	30.00	22.50	20.25			
*01373	PRELOX® ENHANCED SEX FOR MEN • 60 tablets	52.00	39.00	36.00			
00525	PROBOOST™ THYMIC PROTEIN A • 30 packets	66.60	49.95				
01441	PROGESTA-CARE® • 4 oz cream	36.39	27.29	25.72			
02029	PROSTATE FORMULA (Ultra) • 60 softgels	38.00	28.50	26.25	24.00		
01909	PROSTAPOLLEN™ (Triple strength) • 30 softgels	28.00	21.00	18.75			
01742	PROTEIN-ISOLATE (Whey) Vanilla • 403 grams	30.00	22.50	19.50			
01743	PROTEIN-ISOLATE (Whey) Chocolate • 437 grams	30.00	22.50	19.50			
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla 500 grams	30.00	22.50	19.95			
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate 640 grams	30.00	22.50	19.95			
02127	PROTEIN (PLANT) COMPLETE & AMINO ACID COMPLEX 15.87 oz	34.00	25.50	23.00			
01812	PROVINAL® PURIFIED OMEGA-7 • 30 softgels	27.00	20.25	18.00			
01676	PS CAPS (Phosphatidylserine) • 100 mg, 100 veg. caps	54.00	40.50	36.00			
01508	PTEROPURE® Pterostilbene • 50 mg, 60 veg. caps	32.00	24.00	22.50			
01209	PUMPKIN SEED EXTRACT (Water-soluble) • 60 veg. caps	20.00	15.00	13.50			
01637	PYCNOPROGENOL® FRENCH MARITIME PINE BARK EXTRACT 100 mg, 60 veg. caps	64.00	48.00	45.00			
01217	PYRIDOXAL 5'-PHOSPHATE • 100 mg, 60 veg. caps	22.00	16.50	14.85			
<b>Q, R</b>							
01309	QUERCETIN (Optimized) • 250 mg, 60 veg. caps	22.00	16.50	15.00			
02169	RAINFOREST BLEND GROUND COFFEE • 12 oz. bag	13.00	9.75				
02173	RAINFOREST BLEND GROUND COFFEE Natural Mocha • 12 oz. bag	15.00	11.25				
02172	RAINFOREST BLEND GROUND COFFEE Natural Vanilla • 12 oz. bag	15.00	11.25				
02171	RAINFOREST BLEND WHOLE BEAN COFFEE 12 oz. bag	13.00	9.75				
02170	RAINFOREST BLEND DECAFFEINATED ROAST GROUND COFFEE 12 oz. bag	14.00	10.50				
01030	RED YEAST RICE (Bluebonnet) • 600 mg, 60 veg. caps	18.08	13.56				
00605	REGIMENT • 60 enteric-coated caps	19.95	14.96	14.00			
01708	REISHI EXTRACT MUSHROOM COMPLEX • 60 veg. caps	30.00	22.50	20.25			
01448	REJUVENEX® BODY LOTION • 6 fl. oz	24.00	18.00	14.85	12.75		
01621	REJUVENEX® FACTOR FIRMING SERUM • 1.7 oz	65.00	48.75	37.50			
01220	REJUVENEX® (ULTRA) • 2 oz	52.00	39.00	33.00	29.25		
00676	REJUVENIGHT® (ULTRA) • 2 oz	39.95	29.96	27.00			
01410	RESVERATROL W/PTEROSTILBENE • 100 mg, 60 veg. caps	36.00	27.00	24.00			
02230	RESVERATROL (Optimized) • 60 veg. caps	45.00	33.75	30.00			
00889	RHODIOLA EXTRACT • 250 mg, 60 veg. caps	14.00	10.50	9.00			
01900	RIBOGEN™ FRENCH OAK WOOD EXTRACT 200 mg, 30 veg. caps	36.00	27.00	24.75			
00972	(D) RIBOSE POWDER • 150 grams	27.50	20.63	18.56			
01473	(D) RIBOSE TABLETS • 100 veg. tabs	32.00	24.00	21.00			
01208	R-LIPOIC ACID (Super) • 240 mg, 60 veg. caps	49.00	36.75	33.75			
00070	RNA CAPSULES • 500 mg, 100 caps	17.95	13.46	12.12			

**SUBTOTAL OF COLUMN 9**

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
	<b>S</b>						
01432	SAFFRON W/SATIEREAL® (Optimized) • 60 veg. caps	36.00	27.00	24.00			
02175	SAME (S-ADENOSYL-METHIONINE) 200 mg, 30 enteric coated tablets	25.00	18.75	16.50			
01933	SAME (S-ADENOSYL-METHIONINE) 400 mg, 30 enteric coated tablets	36.00	27.00	24.00			
01934	SAME (S-ADENOSYL-METHIONINE) 400 mg, 60 enteric coated tablets	66.00	49.50	45.00			
01740	SEA-IODINE™ • 1,000 mcg, 60 veg. caps	8.00	6.00	5.40			
01879	SE-METHYL L-SELENOCYSTEINE • 200 mcg, 90 veg. caps	11.00	8.25	7.50			
00318	SERRAFLAZYME • 100 tablets	18.00	13.50	12.00			
01626	SEX FOR WOMEN 50+ (Enhanced) • 90 veg. caps	59.00	44.25	34.00			
01938	SHADE FACTOR™ • 120 veg. caps	44.00	33.00	30.00			
02110	SHADE FACTOR™ SUNSCREEN LOTION • 4 fl. oz	20.00	15.00	13.00			
02118	SHADE FACTOR™ SUNSCREEN SPRAY • 6 fl. oz	22.00	16.50	14.25			
01884	SILYMARIN • 100 mg, 90 veg. caps	14.00	10.50	9.50			
02129	SKIN CARE COLLECTION ANTI-AGING SERUM • 1.75 fl. oz	60.00	45.00	37.50			
02132	SKIN CARE COLLECTION BODY LOTION • 6 oz	28.00	21.00	18.00			
02130	SKIN CARE COLLECTION DAY CREAM • 1.65 oz	50.00	37.50	33.00			
02131	SKIN CARE COLLECTION NIGHT CREAM • 1.65 oz	39.00	29.25	27.00			
01596	SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT® 30 liquid veg. caps	25.00	18.75	17.25			
01444	SLEEP (Quiet) • 60 veg. caps	13.00	9.75	7.50			
01445	SLEEP MELATONIN (Quiet) • 5 mg, 60 veg. caps	18.00	13.50	12.00			
01551	SLEEP w/ MELATONIN (Enhanced) • 30 caps	22.00	16.50	15.00			
01511	SLEEP W/O MELATONIN (Enhanced) • 30 caps	22.00	16.50	15.00			
00961	SODZYME® w/GLISODIN® & WOLFBERRY • 90 veg. caps	28.00	21.00	18.00			
00657	SOLARSHIELD® SUNGLASSES • Smoke color	12.99	9.74	8.63			
01097	SOY EXTRACT (ULTRA) • 150 veg. caps	76.00	57.00	50.00			
01649	SOY ISOFLAVONES (SUPER ABSORBABLE) • 60 veg. caps	28.00	21.00	18.75			
00432	STEVIA™ (Better) • 100 packets, 1 gram each	9.95	7.46				
00438	STEVIA™ ORGANIC LIQUID SWEETENER (Better) • 2 oz	11.00	8.25				
00987	STRESS RELIEF (Enhanced) • 30 veg. caps	28.00	21.00	18.00			
01476	STRONTIUM • 750 mg, 90 veg. caps	20.00	15.00	13.50			
01778	SUPER SELENIUM COMPLEX • 200 mcg, 100 veg. caps	14.00	10.50	9.00	8.25		
	<b>T</b>						
02023	TART CHERRY W/CHERRYPURE® 60 veg. caps	20.00	15.00	14.00			
01827	TAURINE • 1,000 mg, 90 veg. caps	13.00	9.75	9.00			
02205	TEA CRYSTALS (Kenyan Green) • 14 stick packs	12.00	9.00	8.00			
02206	TEA CRYSTALS (Kenyan Purple) • 14 stick packs	18.00	13.50	12.00			
01918	TEAR SUPPORT w/MAQUIBRIGHT® • 60 mg, 30 veg. caps	18.00	13.50	12.00			
00133	L-TAURINE POWDER • 300 grams	20.00	15.00	12.66			
*13685	TEN MUSHROOM FORMULA® • 120 veg. caps	41.95	35.66				
01304	THEAFLAVIN STANDARDIZED EXTRACT • 30 veg. caps	18.00	13.50	12.00			
01683	(L) THEANINE • 100 mg, 60 veg. caps	24.00	18.00	15.38			
**01038	ATHERALAC® PROBIOTICS • 30 caps	47.95	35.96				
00668	THYROID FORMULA (Metabolic Advantage™) • 100 caps	21.95	16.46				

**SUBTOTAL OF COLUMN 10**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
00349	TMG POWDER • 50 grams	14.00	10.50	8.25			
01859	TMG • 500 mg, 60 liquid veg. caps	13.00	9.75	9.00			
01400	TOCOTRIENOLS (Super-absorbable) • 60 softgels	30.00	22.50	21.00			
01278	TOOTHPASTE • 4 oz (Mint) tube	9.50	7.13	6.50			
01917	TRANQUIL TRACT™ • 60 veg. caps	52.00	39.00	34.50			
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT 60 veg. caps	24.00	18.00	16.50			
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT w/RESVERATROL • 60 veg. caps	32.00	24.00	22.20			
02003	TRIPLE ACTION THYROID • 60 veg. caps	36.00	27.00	24.00			
01803	TRI SUGAR SHIELD® • 60 veg. caps	36.00	27.00	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	22.50			
01721	TRYPTOPHAN PLUS (Optimized) • 90 veg. caps	32.00	24.00	21.75			
02216	TWO-PER-DAY • 60 tablets	12.00	9.00	7.50			
02215	TWO-PER-DAY • 120 tablets	23.00	17.25	15.50			
02217	TWO-PER-DAY • 60 caps	13.00	9.75	8.50			
02214	TWO-PER-DAY • 120 caps	24.00	18.00	16.00			
00326	L-TYROSINE • 500 mg, 100 tablets	13.50	10.13				
<b>U, V</b>							
01921	URIC ACID CONTROL • 60 veg. caps	24.00	18.00	16.50			
00213	VANADYL SULFATE • 7.5 mg, 100 veg. tablets	15.00	11.25	9.38			
02102	VENOFLOW™ • 30 veg. caps	52.00	39.00	36.00			
00408	VENOTONE • 60 caps	18.95	14.21	12.00			
01327	VINPOCETINE • 10 mg, 100 veg. tablets	18.00	13.50	10.50			
00372	VITAMIN B3 NIACIN • 500 mg, 100 caps	7.65	5.74	4.99			
02028	VITAMIN B5 • 500 mg, 100 veg. caps (Pantothenic Acid)	14.00	10.50	9.50			
01535	VITAMIN B6 • 250 mg, 100 veg. caps	12.50	9.38	8.25			
00361	VITAMIN B12 • 500 mcg, 100 lozenges	8.75	6.56	5.44			
01634	VITAMIN C w/DIHYDROQUERCETIN 1,000 mg, 60 veg. tablets	10.00	7.50	6.75			
00927	VITAMIN C w/DIHYDROQUERCETIN 1,000 mg, 250 veg. tablets	30.00	22.50	20.00			
00084	VITAMIN C POWDER (BUFFERED) • 454 grams	28.00	21.00	19.00			
01736	VITAMIN C-MAGNESIUM CRYSTALS (EFFERVESCENT) 180 grams	20.00	15.00	13.50			
01732	VITAMIN D3 • 2,000 IU, 1 fl. oz, Mint flavor	28.00	21.00	18.75			
01753	VITAMIN D3 • 1,000 IU, 90 softgels	7.00	5.25	4.50			
01751	VITAMIN D3 • 1,000 IU, 250 softgels	12.50	9.38	8.44			
01713	VITAMIN D3 • 5,000 IU, 60 softgels	10.00	7.50	6.50			
01718	VITAMIN D3 • 7,000 IU, 60 softgels	14.00	10.50	9.45			
01758	VITAMIN D3 W/SEA-IODINE™ • 5,000 IU, 60 caps	14.00	10.50	9.38			
00864	VITAMIN D3 LIQUID • 2,000 IU, 1 fl. oz	28.00	21.00	18.75			
02040	VITAMINS D AND K W/SEA-IODINE™ • 60 caps	24.00	18.00	16.50			
01863	VITAMIN E (Super) • 400 IU, 90 softgels	28.00	21.00	19.50	18.00		
01936	VITAMIN K2 (Low dose) • 45 mcg, 90 softgels	18.00	13.50	12.00			

**SUBTOTAL OF COLUMN 11**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

ITEM No.	PRODUCT	Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
<b>W</b>							
01902	WAIST-LINE CONTROL™ • 120 veg. caps	42.00	31.50	28.50			
<b>X, Y</b>							
01919	X-R SHIELD • 90 veg. caps	15.00	11.25	9.75			
00409	XYLIWHITE™ MOUTHWASH • 16 oz	10.00	7.50				
<b>Z</b>							
01813	ZINC HIGH POTENCY • 50 mg, 90 veg. caps	9.00	6.75	6.00			
01561	ZINC LOZENGES • 60 veg. lozenges	9.00	6.75	6.00			
01961	ZINC LOZENGES (Enhanced) • 30 veg. lozenges	12.00	9.00	6.00			
*01254	ZYFLAMEND™ WHOLE BODY • 120 liquid veg. caps	72.95	54.71				
<b>BOOKS</b>							
33998	THE RIGHT TO TRY by Darcy Olsen • 2016	26.99	20.24				
33875	DOCTORED: THE DISILLUSIONMENT OF AN AMERICAN PHYSICIAN • by Sandeep Jauhar • 2015	26.00	19.50				
33874	MISSING MICROBES • by Martin J. Blaser, MD • 2014	28.00	21.00				
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