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February 2019

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Delaying Aging**

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or Stop it Altogether**

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<p><b>Super K with Advanced K2 Complex</b>  <b>90 softgels • Item #02034</b>                      Two forms of vitamin K2 (<b>1,000 mcg</b> of MK-4 and <b>100 mcg</b> of all-trans MK-7), along with <b>1,500 mcg</b> of K1. (Three-month supply)</p>	\$30	<b>\$18.23</b> <i>(four-bottle purchase)</i>
<p><b>BioActive Complete B-Complex</b>  <b>60 vegetarian capsules • Item #01945</b>                      Provides enzymatically active forms of meaningful potencies of each B vitamin.</p>	\$12	<b>\$7.20</b> <i>(four-bottle purchase)</i>
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<p><b>Two-Per-Day Multinutrient Formula</b>  <b>120 capsules • Item #02314</b>                      High-potency bioactive vitamins, minerals, and plant extracts provide convenient doses in two daily capsules.</p>	\$24	<b>\$14.40</b> <i>(four-bottle purchase)</i>
<p><b>Super Omega-3 EPA/DHA with Sesame Lignans &amp; Olive Extract</b>  <b>120 softgels • Item #01982</b>                      Highly purified <b>EPA (1,400 mg)</b> and <b>DHA (1,000 mg)</b> from Alaska Pollock, <b>sesame lignans</b> plus potent <b>olive extract</b> provides essential components of the Mediterranean diet.</p>	\$32	<b>\$18.90</b> <i>(four-bottle purchase)</i>
<p><b>Optimized NAD+ Cell Regenerator™ with Resveratrol</b>  <b>30 vegetarian capsules • Item #02148</b>                      NIAGEN® nicotinamide riboside, trans-resveratrol, quercetin, fisetin, and more to support healthy cellular metabolism.</p>	\$54	<b>\$18.00</b> <i>(four-bottle purchase)</i>

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### REPORTS



#### 38 STOP UNHEALTHY FOOD CRAVINGS

Impulse snacking leads to unwanted weight gain. Swedish scientists have discovered a novel **spinach extract** that in a clinical study *decreased* cravings for snacks and sweets by **36%**. Study subjects also experienced a **21% decrease** in hunger.



#### 48 JAMA REPORTS ON SENESCENT CELL REMOVAL

The *Journal of the American Medical Association* reports that "**Targeting senescent cells may arrest or reverse Alzheimer's and related neurodegenerative diseases.**" They further state, "If senolytics are shown to be safe and effective in humans, they could transform care of older adults and patients with multiple chronic diseases." Two plant-based extracts with **senolytic** action, taken once a week, can remove **senescent cells** from the body.



#### 62 PREVENT VIRUSES FROM TAKING HOLD AND REDUCE RECOVERY TIME

During **post-flu recovery** older adults are at *increased risk* for pneumonia, bacterial infections, and death. **French oak wood extract** has been shown to markedly speed post-flu recovery, reduce fatigue, and improve sleep patterns.



#### 73 LOWER BLOOD PRESSURE SLASHES DEMENTIA RISK

New data confirm that elevated blood pressure damages not only the heart but also the **brain**. These findings make it imperative to achieve optimal blood pressure control to reduce cognitive decline and dementia risk.



#### 82 WHY PEOPLE SUPPLEMENT WITH B VITAMINS

**B vitamins** help guard against cardiovascular disease, neurodegenerative disorders, and vision loss. Because **B vitamins** are water-soluble and poorly absorbed by aging adults, daily supplementation is often critical.



24 ON THE COVER

#### POWER A LONGER LIFE via NAD<sup>+</sup> RESTORATION

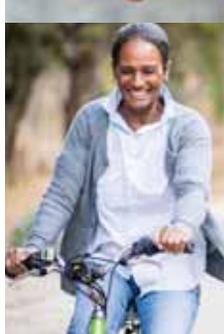
A coenzyme called **NAD<sup>+</sup>** supports **DNA repair** and other **youthful** processes. Restoring **NAD<sup>+</sup>** may *halt* certain degenerative factors, boost brain function, and reduce risk for age-related disorders.

### DEPARTMENTS



#### 7 AMERICANS ARE AGING MORE SLOWLY

A landmark study reveals that Americans are winning the war against **biological aging**. Beginning in year **1988** and extending to **2010**, women enjoyed a **3.63 year** improvement and men a **4.29 year** improvement in their rate of biological age. Most impressive is the **degree of age delay** had a lot to do with **modifiable health behaviors**, which is what readers of *Life Extension Magazine*<sup>®</sup> practice every day.



#### 17 IN THE NEWS

Selenium and CoQ10 slash mortality risk; GLA and omega-3 inhibit autism; adequate blood vitamin D lowers colon cancer risk; sufficient nicotinamide riboside blood levels inhibit Parkinson's-related neuron loss.

#### 93 SUPER FOODS: GARBANZO BEANS

Long a staple of the Mediterranean diet, **garbanzo beans** contain an indigestible resistant starch that helps restore the gut microbiome and provides a feeling of fullness.



#### 95 WELLNESS PROFILE: ANTI-AGING EXERCISE TAKES GRIT

Alex Osuna's GRIT Miami gym is focused on helping its clients achieve their optimal best. With custom workouts and expert trainers, Osuna trains all ages from children to seniors to ensure that they stay healthy and fit for a longer life.



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Item # 01988 • 120 softgels		



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BY WILLIAM FALOON

# Americans are Aging Slower

A landmark study published in **2018** reveals that certain Americans are **delaying** their rate of **aging**.

This study reviewed **biological age** measures in large U.S. population groups during years **1988-1994** and then compared them to years **2007-2010**.

The results showed that age-matched participants were biologically **younger** in years **2007-2010** compared to people of similar age in **1988-1994**.<sup>1</sup>

**Females** aged 60-79 had a beneficial **3.63-year decrease** in **biological age** measures. **Men** in this age group had a **4.29-year decrease** in biological age.

When discussing **biological age**, a decrease is **beneficial** as it indicates more youthful **functionality** and implies greater longevity potential.

This 2018 study found that the **degree of age delay** has a lot to do with **modifiable health behaviors**.

For example, **obese** individuals often aged faster, but their **biological age** was still lower in **2007-2010** compared to the **1988-1994** period. Reasons include greater use of **interventions** to treat pathologies related to excess body weight.

In the concluding remarks from the study paper, the authors wrote,

***“We showed that the biological age of the population has improved over the past 20 years in the United States and that the largest improvements have been for males and older adults.”<sup>1</sup>***

## Is 60 the New 50? Examining Changes in Biological Age over the Past Two Decades

### Reference:

Levine ME, Crimmins EM. Is 60 the New 50? Examining Changes in Biological Age Over the Past Two Decades. *Demography*. 2018 Apr;55(2):387-402.

What impressed me about these data emanating from prestigious medical centers was recognition that **biological aging** can be measured and delayed utilizing existing approaches.

For the past four decades, **Life Extension**® has argued that **research** aimed at gaining control over human **aging** should be this nation's top priority. Until recently, our views were met with skepticism and persecution.

Our many supporters should feel **vindicated** that many **interventions** they practice today are proving to **delay** pathological **aging** as measured by conventional standards.

This issue of **Life Extension Magazine**® describes methods to help decelerate **biological aging**, including reducing **cravings** for high-fat and high-sugar foods that contribute to accelerated senescence.



Life expectancy in the United States has increased rapidly over the past 60 years.

Longer lifespans, however, are not necessarily a reliable indicator of population-wide rates of **biological aging**.

For instance, many elderly are kept alive by aggressive medical interventions aimed only at treating their degenerative disorders, as opposed to slowing their **biological aging** rate.

If people in poor health are being kept alive longer, this places a severe financial strain on entitlement programs such as **Medicare**, and does little to alleviate chronic suffering.

A number of measures have been developed to quantify an individual's **biological age** status. These include comprehensive **blood tests** that readers of this magazine do annually.

In a national sampling of Americans published in **2018**, clinical measures used to assess health status included **blood pressure, lung capacity, and blood tests** such as:<sup>1</sup>

- C-reactive protein
- Hemoglobin A1c
- Lipids
- Kidney/liver function
- Albumin

When combining these tests using an **algorithm** developed to estimate **biological age**, these markers predicted all-cause, cardiovascular, and cancer mortality.

The findings reveal that today's **longer** lifespans may be partially due to a slowing of **aging processes**, rather than merely keeping ailing people alive.

## Obesity Can Accelerate Aging

When comparing the periods of **1988-1994** with **2007-2010**, there was a marked decline in **tobacco** use. This had a favorable impact on **biological age** measures.<sup>1</sup>

The benefits of reduced tobacco use, however, were partially offset by **surging** rates of **overweight** and **obese** Americans in most age groups.

In younger adults (aged 20-39), if **BMI** (body mass index) had not increased between the periods of **1988-1994** and **2007-2010**, biological measures of **aging** would have beneficially decreased.

These disparities were less pronounced in older age groups, with little or no effect of BMI on biological age measures seen in men aged 60-79 years.

## Favorable Impact of Medical Interventions

**Blood pressure** and **cholesterol** were some of the **biological aging** markers used in the 2018 study.

In all age groups, those who used medications to control blood pressure and lipids had decreased rates of **biological aging**.<sup>1</sup>

In people aged 60-79, medication use for high blood pressure and high cholesterol was associated with about **72%** of the **biological age decrease**.

This makes sense because the impact of elevated **blood pressure** and **lipids** is most pronounced in older individuals.

Use of these medical interventions may have helped offset the adverse impact of higher **BMI** in older men.

## What Was Unaccounted For?

In this **2018** study showing a **delay** of **biological aging** measures, behavioral factors such as smoking,

obesity, and preventive medication use helped explain who was benefiting from these improvements.

The authors of the study made it clear, however, that *“a significant proportion of the decreases [in biological aging] over time were unaccounted for.”*<sup>1</sup>

The authors stated there may be *“other explanations”* for the **improvements** in the general public health that were not tested for in their study.

Long time readers of this magazine may realize what these *“other explanations”* might be.

Shortly after years **1988-1994**, there was a substantial increase in the number of Americans who practiced healthier lifestyle choices. These include avoiding known toxins, eating healthier foods, and increased use of **dietary supplements** whose mechanisms have been shown to help thwart pathological aging processes.

### Government Data Reveal Increased Supplement Use

The **National Health and Nutrition Examination Survey (NHANES)** is a government-funded program that assesses the health and nutritional status of people in the United States, and tracks changes over time. The survey combines interviews, physical examinations, and laboratory tests.<sup>2</sup>

The researchers who conducted the **2018** study showing **delayed** biological aging utilized **NHANES** statistical data.<sup>1</sup>

Omitted from this **2018** study, however, was data from the same **NHANES** registry showing **surging** use of **dietary supplements** among Americans after 1988-1994.<sup>3</sup>

This happens to be the same period when **biological age measures** began to improve.

For example, **NHANES** data indicated that **vitamin D** and **fish oil** supplementation substantially increased from **1999** to **2012**.<sup>4</sup>

**Vitamin D**<sup>5,6</sup> and **fish oil**<sup>7,8</sup> have been shown to favorably modulate **genes** associated with **biological aging**.

### Comparing Supplement Use in Earlier Periods

The **NHANES** database provides an abundance of knowledge that has been used to identify longevity factors affecting public health.

In the **1971** to **1975** period, **NHANES** began monitoring **dietary supplement** use amongst Americans.<sup>9</sup>

Back in those early days only **28%** of adult men and **38%** of adult women took a supplement.

It was not until after passage of the **Dietary Supplement Health and Education Act** in late **1994** that Americans were allowed to learn about scientific evidence supporting the health effects of supplements.

The increased use of supplements after 1994 coincides with the **delay** of **biological aging** that was measured using **NHANES** data comparing the period of **1988-1994** to **2007-2010**.

A **2016** survey published by the **Council for Responsible Nutrition** found supplement use grew to over **70%** in American adults. This is approximately double the number of Americans using supplements compared in earlier periods when people were **aging faster!**<sup>10</sup>

### Vitamin D Blood Levels From 1988 to 2010

A separate study published in **2016** looked at **vitamin D** blood levels using **NHANES** data over a 22-year period (from **1988-2010**).<sup>11</sup>





During the **1988-2006** period there was no measurable difference.

This changed after **2006** as more Americans started supplementing with **higher doses** of vitamin D. This increased use was in response to published studies indicating most people require higher doses of **vitamin D** for optimal health.

In this separate study published in 2016, there was a modest increase in **25-hydroxyvitamin D** blood levels in **2007-2010** that coincides with **higher** vitamin D supplement doses.<sup>11</sup>

These higher **vitamin D** levels, across a broad-spectrum of the American population, match the same period (**2007-2010**) where measures of **biological aging** improved.

### Readers of This Magazine Are Not “Average”

Everything you’ve read so far pertains to the health status and lifestyle practices of “typical” people.

It categorizes a person who takes one dietary supplement a day as a “supplement user.”

As most of you know, it is not possible to fit needed **nutrients** into a single daily pill.

The **NHANES** data used in the **2018** age-delay study covers the entire spectrum of American lifestyles, from obese smokers to health-conscious fanatics and everything in between.

The fact that the average American has enjoyed about a **4-year** biological age **delay** may mean that those engaging in more aggressive **interventions** are aging even more slowly.

The landmark **2018** **age-delay** study is compelling because it represents the first large-scale evidence that **humans** are succeeding in what was previously thought impossible.

When **Life Extension** published its first newsletter (in **1980**) degenerative aging was thought inevitable. We knew back then that individuals exert a degree of control over their **rate** of biological decay.

Our concept has been **validated** with the **2018** landmark study showing that most Americans are postponing aging and most don’t even know it yet.

The delayed **biological aging** shown in years **2007-2010** (compared with the **1988-1994** period) correlates with surging **dietary supplement** use after year **1994**.

This intriguing association with increased population-wide supplement use may indicate a **degree of efficacy** never before accounted for.

### New Method to Reduce Calorie Cravings

The American public is increasingly addicted to excess calories, especially foods that spike **glucose/insulin** and contribute to unwanted **weight gain**.

A novel **spinach extract** has been shown in several clinical trials to reduce unhealthy food cravings, while supporting early satiety.<sup>12-17</sup>

One of these **human** studies found that eating this **spinach extract** had the following effects:<sup>14</sup>

- **36% decrease** in wanting fat and sweet foods
- **38% decrease** in wanting sweet snacks
- **36% decrease** in wanting all snacks

I am pleased to announce this unique **spinach extract** has been incorporated into a nice-tasting **nutritional bar** designed to enable people to reduce their over-consumption of unhealthy **high-fat, high-sugar** foods.

A full description of this new nutrient bar can be found on page 45 of this month’s issue.

## Lowest Prices of The Year!

Just once a year, we **discount** prices on **all** of the **nutrients** used by our supporters.

These discounts apply to updated versions of popular formulas that are designed to **delay** many underlying mechanisms of **biological aging**.

Of greater interest is data indicating that certain **interventions** (such as boosting cellular **NAD<sup>+</sup>**) might help turn back the clock of certain aging processes.

The first article in this month's edition describes the essential role of **NAD<sup>+</sup>** in nourishing cell proteins expressed in response to **resveratrol**.

The article on page 48 provides more data on the need to purge our aging body of **senescent cells**. Succinctly stated, if we **fail** to remove these destructive (senescent) cells, then our ability to delay pathological aging will be limited.

To order your supplement staples at low **Super Sale** prices, please call **1-800-544-4440** (24 hours) by January 31, 2019.

For longer life,



William Faloon, Co-Founder  
Life Extension Buyers Club

**"This is the first evidence we have of delayed "aging" among a national sample of Americans"<sup>18</sup>**

Eileen M. Crimmins, University Professor  
and AARP Professor of Gerontology,  
University of Southern California  
Leonard Davis School of Gerontology



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# TO YOUR GUT BE KIND, KEEP HEALTH IN MIND



FLORASSIST® GI is a blend of potent probiotics and TetraPhage technology. TetraPhage affects only undesirable bacteria, leaving "good" digestive bacteria alone.

The dual-encapsulated probiotic bypasses the harsh stomach environment to go where you need it most.

## FLORASSIST® GI

Item #02125 • 30 liquid vegetarian capsules • Retail Price is \$33

Super Sale Price is \$22.28 • 4 bottles are only \$20.25 each



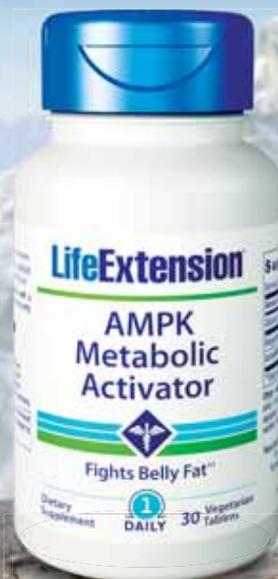
For full product description and to order **FLORASSIST® GI with Phage Technology**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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# CONQUER BELLY FAT — WITH — AMPK

There's an enzyme called AMPK in every cell of your body. Studies show that *increasing* AMPK activity encourages cells to stop *storing* fat and start *burning* it for energy. So we've created AMPK Metabolic Activator to help trigger AMPK, causing your body to burn unwanted fat — particularly around your abdomen.

ITEM # 02207 • 30 vegetarian tablets  
Retail price \$38 • **Super Sale price is \$25.65**  
4 bottles \$21.60 each



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ActivAMP® is a registered trademark of Gencor.

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Individual results may vary and are not guaranteed.



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*Super Health.  
Super Libido.  
Super Miraforte.*

# Top Off Your TESTOSTERONE

Maintaining healthy **testosterone** levels helps men regain health and improve performance.

By the time a man is 70 years old, he may produce **60% less** testosterone than he did at age 40.\*

The time is now to add **Super Miraforte with Standardized Lignans** to your supplement regimen.



## Low Testosterone Levels May Lead to:

- Reduced Sex Drive
- Less Energy
- Cloudy Thinking
- Weight Gain
- Cardiovascular Factors

\* J Clin Endocrinol Metab. 2002 Feb;87(2):589-98.

Item #01940 • 120 vegetarian capsules

Retail Price is \$62 • **Super Sale Price is \$41.85**

4 bottles are only \$37.80 each

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

**Caution:** If you are taking any medication, use only under physician supervision. Men with existing prostate cancer may not be able to use this product. Elevations in free testosterone can unmask an occult (hidden) prostate cancer. Anyone with this concern should have a baseline PSA prior to using this product and a follow-up PSA test 60 days later. If a significant elevation of PSA is found, discontinue this product and advise physician. Do not take more than 15 mg per day of Bioperine®.

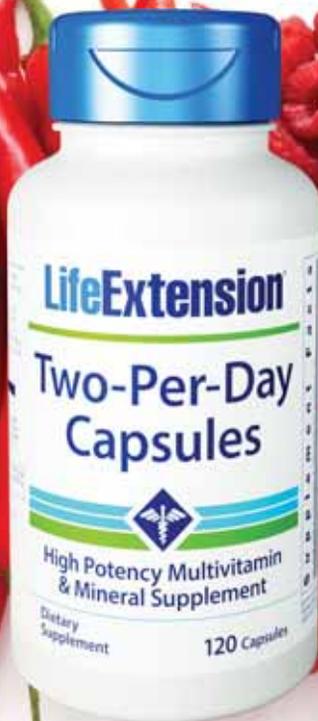
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50 times the VITAMIN B1  
25 times the VITAMIN B6  
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10 times the SELENIUM  
8 times the VITAMIN C  
2.5 times the VITAMIN B3  
2 times the VITAMIN D  
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2 times the ZINC



**#1 Rated**  
Multi-vitamin  
6X Winner!\*

## Why settle for **subpar** supplements?

### Two-Per-Day Tablets

Item #02315 • 120 tablets (two-month supply)  
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4 bottles are only \$13.95 each

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**Super Sale Price is \$16.20**

4 bottles are only \$14.40 each

Each bottle provides a two-month supply.

For full product description and to order **Two-Per-Day**, call **1-800-544-4440** or visit **Life Extension.com**

\* Rated based on results of the 2018 ConsumerLab.com Survey of Supplements Users. More information at [www.consumerlab.com/survey2018](http://www.consumerlab.com/survey2018)

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# Boost “Functional” Natural Killer Cell Activity

**Natural killer cell activity** declines with normal aging which can affect immune function. **NK Cell Activator™** supports healthy natural killer cell activity to promote a robust immune response.<sup>1-3</sup>

Functional NK cells also recognize and eliminate **senescent cells** that accumulate in aged tissues.

The standardized plant extract in **NK Cell Activator™** supports the activity of **natural killer** (NK) cells.

## Clinical Studies

In one clinical study, scientists documented a **3-fold** increase of **natural killer** cell activity in healthy individuals within three to four weeks of receiving **500 mg** daily of the rice bran compound found in **NK Cell Activator™**.

In another double-blind, randomized, placebo-controlled study, researchers noted that subjects taking the rice-bran compound found in **NK Cell Activator™** experienced a boost in *myeloid dendritic cells*—cells that act as key messengers between the innate and the adaptive immune systems.<sup>4</sup>

The suggested single serving of one vegetarian tablet of **NK Cell Activator™** provides:

---

<b>Proprietary Enzymatically Modified Rice Bran</b>	<b>500 mg</b>
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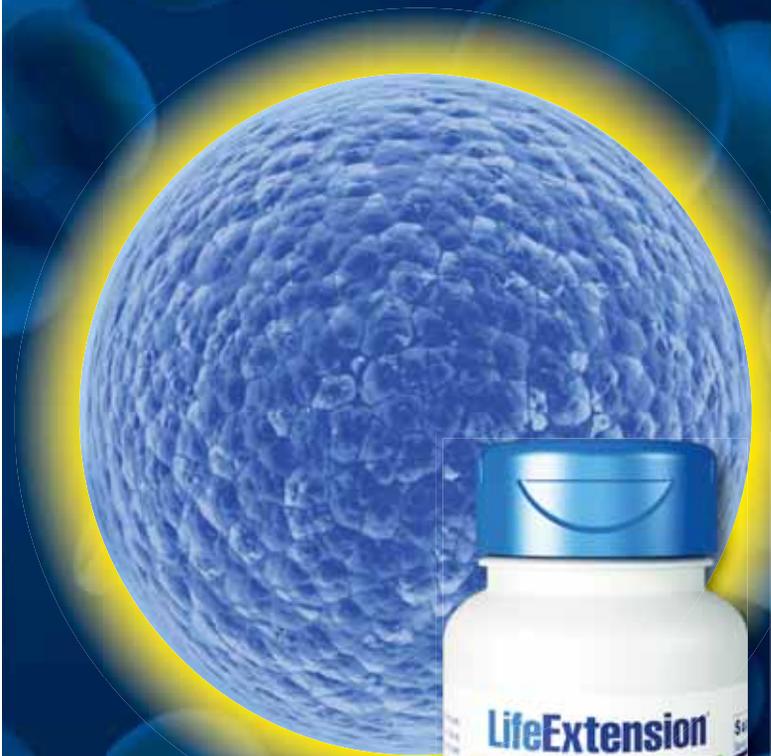
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A strategy to derive the unique functional effects of **NK Cell Activator™** is to take one tablet daily for four months during the winter season.

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

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	<b>Retail Price</b>	<b>Super Sale Price</b>
1 bottle	\$45	<b>\$30.38</b>
4 bottles		<b>\$28.35 each</b>

---

**Item #01903 • 30 vegetarian tablets**

## CoQ10 and Selenium Linked to Lower Mortality Risk

A report in *PLOS One* provides an update to a trial initiated in 2003 that evaluated the effects of four years of supplementation with **selenium** and **coenzyme Q10** (CoQ10).\*

In the original study, 443 men and women, average age 78 upon enrollment, received a placebo or CoQ10 plus selenium daily for 48 months.

During an average of 5.2 years, participants who received CoQ10 and selenium had less than half the risk of cardiovascular mortality of those who received a placebo.

A subsequent study documented a similarly reduced risk of cardiovascular mortality among those who received CoQ10 and selenium during a total of **10 years** after the introduction of the supplements.

The current investigation found that after **12 years**, the risk of dying from cardiovascular disease was still lower among those who received CoQ10 and selenium in the original four-year study.

At the end of the 12 year follow-up period, **28.1%** of those who received CoQ10 and selenium died from cardiovascular disease compared to **45%** of the placebo group.

\**PLOS One*. 2018 Apr 11.

## Omega-3 and GLA Fatty Acids May Protect Against Autism

Researchers from Nationwide Children's Hospital have found a potential protective effect for **omega-3 fatty acid supplementation** against the development of autism spectrum disorder (ASD) symptoms among children born preterm, who are at increased risk of ASD.\*

The trial included 31 children who were born more than 11 weeks early. Fifteen children received a supplement that contained **338 mg** of EPA, **225 mg** of DHA, and **83 mg** of GLA, while the remainder received a canola oil placebo for 90 days.

Questionnaires completed by a parent at the beginning and end of the trial assessed ASD symptoms.

Children who received EPA, DHA, and GLA had a greater reduction in ASD symptoms than those who received the placebo. The researchers suggest decreased neuroinflammation as a potential mechanism for these omega-3 fatty acids.

**Editor's Note:** "Currently, no medications are available to help children born prematurely with the developmental delays and behavior problems they often experience," lead author Sarah Keim, PhD, observed. "For very young children, the medications that physicians sometimes try tend to have many side effects. And we don't know what effect those medications have on brains that are still developing. If omega-3 fatty acid supplementation helps, it would have a really huge impact for these kids."

\* *J Nutr.* 2018 Feb 1;148(2):227-235.

## Higher Vitamin D May Offer Colorectal Cancer Protection

A large study has found a significant association between *higher* vitamin D levels and a lower risk of colorectal cancer.\*

Scientists compared more than 5,700 individuals diagnosed with colorectal cancer cases and 7,100 control subjects from the United States, Europe, and Asia.

Individuals with vitamin D levels categorized as deficient had a **31%** greater risk of colorectal cancer during a 5.5-year average follow-up period compared to those whose levels were considered sufficient for bone health.

Having vitamin D blood levels between **30-40 ng/mL** was associated with a **22%** lower risk.

**Editor's Note:** First author Marji L. McCullough, ScD, concluded, "This study adds new information that agencies can use when reviewing evidence for vitamin D guidance and suggests that the concentrations recommended for bone health may be lower than would be optimal for colorectal cancer prevention."

\* *J Natl Cancer Inst.* 2018 Jun 14.

A hand is shown in silhouette, holding a glowing, wireframe brain. The background is a warm sunset with a sun low on the horizon. Overlaid on the scene are several network-like graphics consisting of white dots connected by thin lines, suggesting neural connections or data networks.

## Nicotinamide Riboside Shows Promise for Parkinson's Disease

The journal *Cell Reports* documented findings of a potential benefit for **nicotinamide riboside** in Parkinson's disease.\*

Parkinson's disease is characterized by the death of nerve cells in the substantia nigra region of the brain. Mitochondria contained in these cells are significantly damaged.

To determine whether boosting mitochondrial biogenesis and function with an NAD<sup>+</sup> precursor reduces Parkinson's disease pathology, researchers tested nicotinamide riboside's effects in neuronal stem cells derived from Parkinson's disease patients who had the most common Parkinson's genetic defect and in fruit flies that also had the defective gene.

They found that increasing NAD<sup>+</sup> by administering nicotinamide riboside ameliorated the mitochondrial dysfunction that is evident in the diseased cells.

In the Parkinson's disease flies, nicotinamide riboside prevented age-related loss of neurons that produce dopamine and protected against a decline in mobility.

**Editor's Note:** Nicotinamide riboside is a precursor of nicotinamide adenine dinucleotide (NAD<sup>+</sup>), an enzyme that plays an important role in the maintenance of healthy cellular metabolism, including support of the mitochondria (the energy-producing plants within our cells).

\* *Cell Rep.* 2018 Jun 5;23(10):2976-2988.

# YOUR BONE HEALTH ... NOW BOOSTED

Bone Restore with Vitamin K2 combines skeletal-strengthening nutrients in one highly absorbable formula.



	Retail Price	Super Sale Price
1 bottle	\$24	\$16.20
4 bottles		\$14.85 each

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For full product description and to order **Bone Restore with Vitamin K2**, call **1-800-544-4440** or visit **LifeExtension.com**

Note: Those taking the anticoagulant drug Coumadin® (warfarin) should use Bone Restore without vitamin K2. Fruitex B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. patent #5,962,049. DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. patent 6,706,904 and patents pending.



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Each **725 mg** capsule of **Mega Green Tea Extract** is standardized to **98% polyphenols** that provide **326 mg** of **EGCG** to:

- Protect against DNA damage and oxidative stress<sup>1</sup>
- Support healthy blood sugar levels<sup>2</sup>
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- Boost brain function<sup>4</sup>
- Support strong bones<sup>5</sup>
- Maintain healthy cholesterol levels already within normal range<sup>6</sup>

Each cost-effective bottle lasts over three months!

#### References

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#### Mega Green Tea Extract Decaffeinated

	Retail Price	Super Sale Price
1 bottle	\$30	<b>\$20.25</b>
4 bottles		<b>\$16.20 each</b>

Item #00954 • 100 vegetarian capsules

#### Mega Green Tea Extract Lightly Caffeinated

	Retail Price	Super Sale Price
1 bottle	\$30	<b>\$20.25</b>
4 bottles		<b>\$16.20 each</b>

Item #00953 • 100 vegetarian capsules

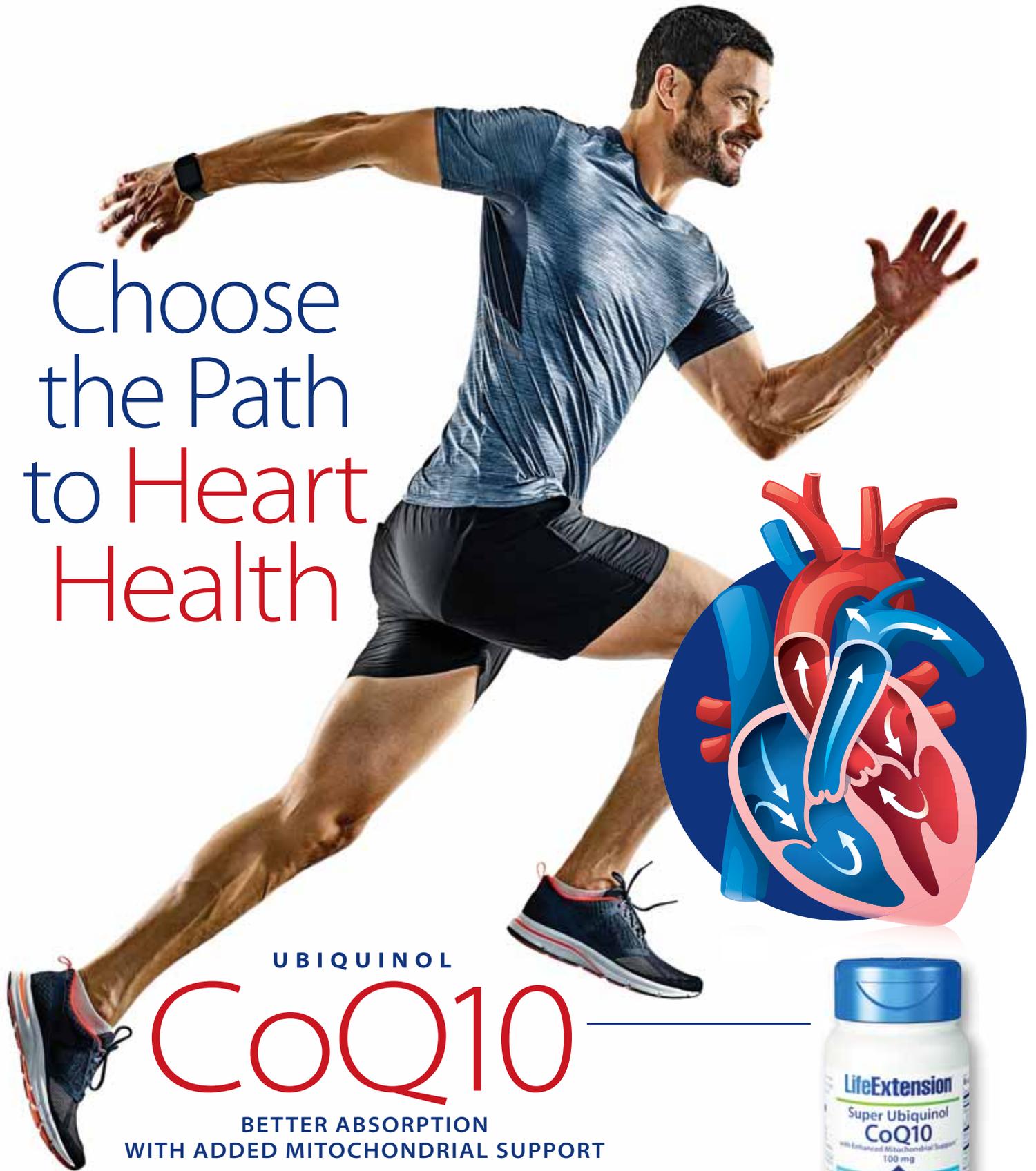
Note: **EGCG** is the acronym for **epigallocatechin gallate**, which is the polyphenol in green tea that has demonstrated the most robust health benefits.



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

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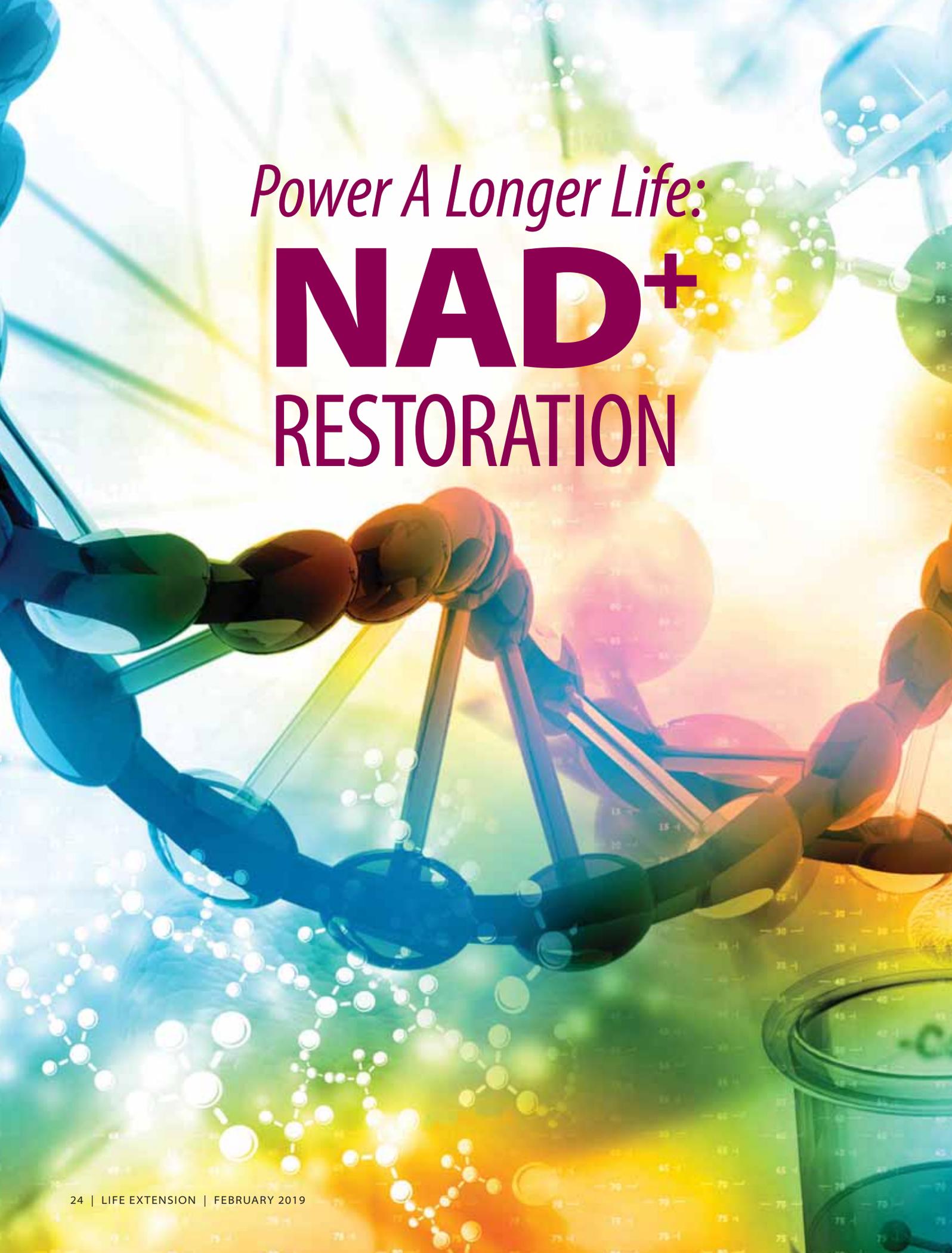
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# **NAD<sup>+</sup>** **RESTORATION**



GENE RICHMOND

In year **2001**, Life Extension® researchers actively sought a method to boost levels of a **coenzyme** in aging people.

We knew this was critical to achieving healthy longevity.

Consumers had to wait until **2014** for a validated method to become available.

This coenzyme is called **NAD<sup>+</sup>** and is vital for energizing cells and supporting **youthful** cellular processes.<sup>1-4</sup>

For **resveratrol** users, **NAD<sup>+</sup>** is especially important.

That's because **resveratrol** promotes expression of cell proteins called **sirtuins** that protect against age-related decline.<sup>3-7</sup>

But **sirtuins** need **NAD<sup>+</sup>** to **function**.

And as we age, **NAD<sup>+</sup> levels** drastically plummet.<sup>6-8</sup>

The result is loss of cellular functions and potential accelerated aging.

A patented supplement called **nicotinamide riboside** replenishes cellular **NAD<sup>+</sup>**.

Studies reveal how restoring **NAD<sup>+</sup>** may slow or *halt* certain aging processes, boost brain function, and reduce risk for age-related disorders.<sup>3,7,9</sup>

## Impact of Severe NAD<sup>+</sup> Deficit



- Tremors
- Depression
- Arterial Stiffness
- Circadian Rhythm Imbalance
- Pro-youth Genes Turned Off
- Restless Leg Syndrome
- Cellular Senescence
- Sarcopenia
- Death

### NAD<sup>+</sup> and Brain Function

Longer life means little without an enhanced *healthspan* as well. Fortunately, boosting levels of NAD<sup>+</sup> in later life maximizes healthy function and can prevent degenerative disorders.

A major cause of diminishing life quality in older age is loss of cognitive function and dementia.

Research has found that supporting healthy levels of NAD<sup>+</sup> has **neuroprotective** effects, guarding against age-related loss of brain function including traumatic injury and stroke.<sup>10-23</sup>

Two recent studies utilized experimental mouse models of Alzheimer's disease, the most common cause of dementia in older adults.<sup>10,12</sup> These mice display changes in the brain similar to those observed in elderly humans, and could be expected to result in significant deficits in cognition.

In both studies, giving the mice **nicotinamide riboside** supplements stopped the decline of NAD<sup>+</sup> levels in the brains—and greatly **reduced cognitive deterioration**.

The studies also showed reduced evidence of DNA damage in brain cells, reduced inflammation, and signs that *synaptic plasticity* was restored. Synaptic plasticity (the ability of the brain to adapt and maintain healthy connections) is typically impaired in older age and in cognitive disorders like dementia.

Another remarkable two-pronged study showed that **nicotinamide riboside** helps protect against the effects of **Parkinson's disease**.<sup>17</sup>

In the first part of the study, using a fly model of Parkinson's, nicotinamide riboside **prevented the death of nerve cells** in the brain and preserved motor function. In the second part, using human brain cells harvested from Parkinson's disease patients, the supplement raised levels of NAD<sup>+</sup> and caused improvements in mitochondrial function.<sup>17</sup>

The study researchers concluded that nicotinamide riboside is a promising approach to protecting against Parkinson's disease and likely other degenerative diseases of the nervous system.

### Obesity, Metabolism, and Cardiovascular Function

Obesity, diabetes, and metabolic syndrome are common age-related issues. Along with other factors, these conditions put people at risk for cardiovascular disease, cancer, and kidney failure.

**NAD<sup>+</sup>** is crucial to basic metabolic functions and cellular integrity. Several studies confirm that raising levels of NAD<sup>+</sup> increases metabolism and may help **prevent** and **treat** obesity, fatty liver disease, diabetes, and metabolic syndrome.<sup>24-28</sup>

That's where **nicotinamide riboside** comes in. By stimulating levels of NAD<sup>+</sup>, nicotinamide riboside enhances metabolism. In mice, it increases metabolic rate, raising body temperature slightly and reducing deposits of abdominal fat, which is tied to high risk for cardiovascular disease.<sup>29</sup>



Even in rats fed a high-fat diet, nicotinamide riboside boosts metabolism and **prevents obesity**.<sup>25,30</sup>

In mice suffering from prediabetes and diabetes, it improves control of blood sugar and reduces weight while protecting against tissue injury such as liver damage and nerve disease.<sup>27</sup>

The potential benefits for humans are extraordinary. Both by improving metabolic health and by its direct effects on the heart muscle and blood vessels, nicotinamide riboside shows promise in **preventing** cardiovascular disease.<sup>31</sup>

That's remarkable enough. But **nicotinamide riboside** supplements have also shown promise as a *treatment* for heart disease by raising levels of NAD<sup>+</sup>, known to be vital for normal heart function and recovery following an injury.<sup>32-34</sup>

In one study, mice with cardiac disease and heart failure were protected by nicotinamide riboside.<sup>32</sup> While untreated animals rapidly developed dilation of the heart, thinning of the heart muscle, and decreased cardiac output—often seen in human heart disease—animals given supplements of nicotinamide riboside maintained cardiac muscle integrity and function.

### NAD<sup>+</sup> and Longevity

There are a number of known behaviors one can make to extend a healthy lifespan.

These include a wholesome diet, avoidance of toxins, intake of inflammation-suppressing nutrients, and regular exercise.

## Boost NAD<sup>+</sup> Levels with Nicotinamide Riboside

- Every cell in the body relies on NAD<sup>+</sup> both to maintain normal energy supply and to protect the cell.
- Sirtuins, proteins critical for maintaining optimal health and longevity, are completely dependent on adequate levels of NAD<sup>+</sup> to function optimally.
- As we age, our NAD<sup>+</sup> levels and sirtuin activity decline.
- Interventions to boost NAD<sup>+</sup> levels in cells have demonstrated promise in extending life and preventing loss of function.
- Nicotinamide riboside is an NAD<sup>+</sup> precursor that is readily absorbed from the gut and is effective at boosting levels of NAD<sup>+</sup> in cells throughout the body.

What You Need to Know



## NAD<sup>+</sup> May Improve Heart Function

“Stabilizing the intracellular NAD<sup>+</sup> level represents a promising therapeutic strategy to improve myocardial bioenergetics and cardiac function.”

“In this issue of *Circulation*, Diguett, et al report exciting data suggesting that supplementation with NAD<sup>+</sup> precursor, nicotinamide riboside, reduces cardiac dysfunction in preclinical models of heart failure.”

— May 22, 2018

<http://circ.ahajournals.org/content/137/21/2274>

Recent studies show promise for a more targeted approach to increasing longevity.

**Sirtuin activity** is a crucial component to living a longer life.

As **NAD<sup>+</sup>** levels fall and **sirtuin** activity wanes, aging becomes more evident as follows:

- **Diminished brain function**,<sup>35,36</sup> leading to cognitive decline and risk for dementia.
- **Inflammation in blood vessels** that contributes to atherosclerosis and cardiovascular disease.<sup>37,38</sup>
- **Fatty changes in the liver** that leads to non-alcoholic fatty liver disease (NAFLD).<sup>39-41</sup>
- **Increased fat storage**,<sup>42,43</sup> that leads to overweight and obesity. When fat is stored around the liver and other organs, it increases systemic inflammation and contributes to metabolic and cardiovascular disease.
- **Insulin resistance**, impairing the metabolism of glucose and leading to metabolic syndrome and diabetes.<sup>38,44,45</sup>
- **Muscle changes**, including loss of muscle strength, fat deposits in muscles, and fatigue.<sup>46</sup>

Studies show that enhancing **sirtuin** activity promotes longevity.<sup>5-7,9,38,47,48</sup> Sirtuin activity is vitally dependent on **NAD<sup>+</sup>**, so boosting the body's **NAD<sup>+</sup>** levels as we age may help prolong life.

This has been demonstrated in a wide variety of living organisms.<sup>49,50</sup>

Yeast grown with nicotinamide riboside have an increase in lifespan.<sup>51</sup> In one study, worms given nicotinamide riboside lived **16%** longer.<sup>52</sup>

Even in already elderly mice, a study by an international team of scientists published in *Science* showed that nicotinamide riboside extends lifespan by nearly **5%**.<sup>53</sup> This is at an age where other treatments attempting to prolong life fail. Scientists also observed several biochemical changes in these animals, indicating rejuvenation of cell function.

### NAD<sup>+</sup> and DNA Repair

The **DNA** in our cells suffers considerable damage every day. The only reason this does not kill us is that cells are very efficient at repairing this damage, which comes in the form of single- and double-strand **DNA breaks**.

As **NAD<sup>+</sup>** levels decline with age, we are less able to repair cellular DNA.

For example, sirtuins protect DNA from damage that can lead to potentially harmful mutations. Threats to DNA increase significantly with age. Protective sirtuin proteins must operate at full strength in order to properly safeguard DNA, shielding against age-related loss of function and risk for cancer.

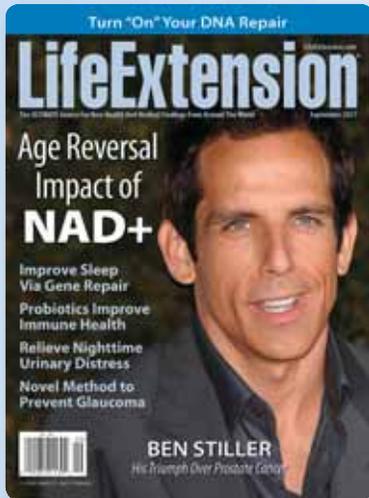
## NAD<sup>+</sup> Needed for DNA Repair

- Each cell in your body suffers **10 DNA breaks every day.\***
- **Unrepaired DNA damage is a major degenerative aging factor.**
- **NAD<sup>+</sup> depletion with aging turns off DNA repair enzymes.**

\* Lieber, MR. The mechanism of double-strand DNA break repair by the nonhomologous DNA end-joining pathway. *Annu Rev Biochem.* 2010;79:1281-211.



## NAD<sup>+</sup> Restores Cellular DNA Repair



Life Extension Magazine,  
September 2017

## NAD<sup>+</sup> Sharply Plummet with Age

- At age 50, we have 40% less NAD<sup>+</sup> than at age 20.
- By age 80, NAD<sup>+</sup> levels drop as much as 98%.



\* The Plasma NAD<sup>+</sup> Metabolome is Dysregulated in "Normal" Aging. *Rejuvenation Research*. 2018 Oct 23, and unpublished clinical observations.

### What Are Sirtuins and Why Are They So Powerful as an Anti-Aging Target?

**Sirtuins** are regulatory proteins in all cells that play a critical role in the response to stress and injuries that cause damage, particularly **DNA damage**.<sup>6,7</sup>

Over a lifetime, cells accumulate damage, which can lead to loss of function and risk for disease.

Without mechanisms to defend against and repair this damage, cells rapidly age and become dysfunctional. That is where sirtuins come in.

Activated sirtuins help initiate repair of DNA, preventing the development of dysfunctional genes and mutations.

Sirtuins are also involved in the body's internal clock, the **circadian rhythm**, which is crucial to maintaining a healthy metabolism. Defects in this clock have been associated with premature aging and disease.

Therefore, maintaining optimal sirtuin activity is one of the body's best defenses against the ailments and illnesses associated with aging. But sirtuins *require* NAD<sup>+</sup> to function normally.

Advancing age leads to accumulating DNA damage. As sirtuins use NAD<sup>+</sup> to fight this damage, the body's supply of NAD<sup>+</sup> is depleted. The resulting low NAD<sup>+</sup> levels then impair the ability of sirtuins to continue functioning normally, leading to *further* DNA damage.

A powerful way to break this cycle is to replenish the body's levels of NAD<sup>+</sup>.

In fact, research has demonstrated that dwindling sirtuin activity is associated with more **rapid aging**—and that boosting sirtuin activity is protective, **prolonging lifespan** and guarding against disease.<sup>9</sup>

But sirtuins *require* NAD<sup>+</sup> to function. An ample and continuously renewing supply of NAD<sup>+</sup> is needed by the cell to keep operating normally.

Since NAD<sup>+</sup> levels diminish with advancing age, replenishing our NAD<sup>+</sup> supply is essential to any plan to forestall aging and degenerative disease.<sup>9</sup>

### Nicotinamide Riboside Boosts NAD<sup>+</sup>

A proven method of boosting NAD<sup>+</sup> levels in the body is to supply cells with *precursor* compounds that naturally convert to NAD<sup>+</sup>.

One way to do this is with **nicotinamide riboside**. This naturally occurring form of vitamin B3 is only found in trace amounts in the diet. Therefore, the only way to significantly raise its intake is through supplementation.

Research shows that when taken by mouth, nicotinamide riboside is *highly bioavailable*, and has been shown to boost NAD<sup>+</sup> levels in the body.<sup>54</sup>

One study showed that compared to baseline, daily supplementation with **250 mg** or **500 mg** of **nicotinamide riboside** for 4 weeks increased NAD<sup>+</sup> blood levels by approximate **40%** and **90%** respectively.<sup>55</sup>

### Summary

**NAD+** is a vital cofactor for energy metabolism and hundreds of longevity-promoting processes in every cell of the body.

Aging is associated with reduced NAD+ levels. This decline is a major contributor to the aging process and puts cells and tissues at risk for age-related injury and loss of function.

**Nicotinamide riboside** is a readily absorbed compound that helps cells maximize their supply of NAD+ to help maintain **DNA repair**.

Human studies show that nicotinamide riboside is highly bioavailable and rapidly increases NAD+ in cells.

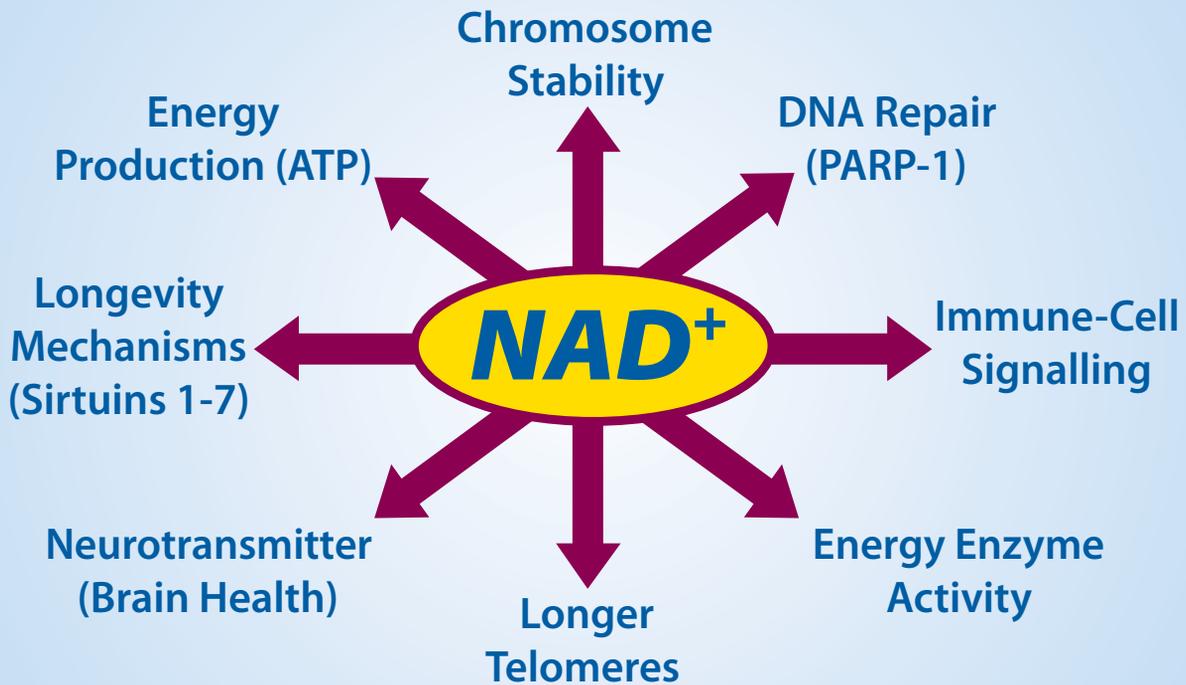
Boosting NAD+ to more youthful levels with **nicotinamide riboside** has been demonstrated to prolong life and reverse loss of function in animal models. ●

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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## Life Sustaining Benefits of NAD+



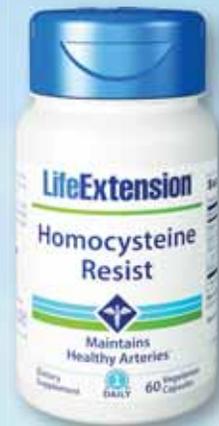
With advanced age, cell NAD+ levels plummet to near **zero**. Normal aging may one day be classified as "**NAD+ deficiency syndrome**." Fortunately, there are proven ways to boost NAD+ levels.

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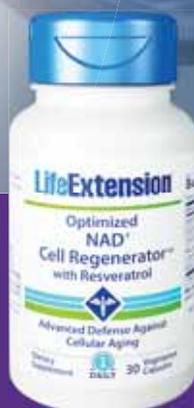
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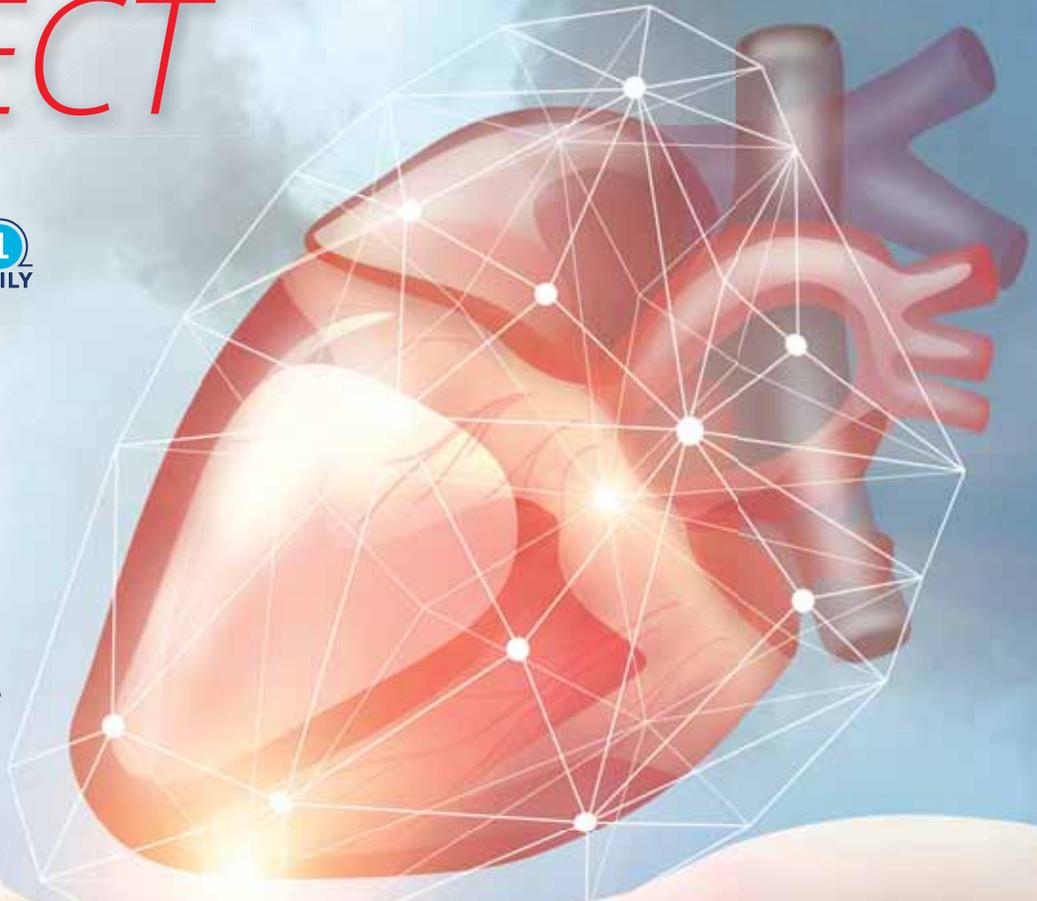
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**Reference**

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

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<b>Bone Restore with Vitamin K2</b> • 120 capsules, Item #01727 Helps bone health with skeletal-strengthening nutrients in one highly absorbable formula.	<b>\$24</b>	<b>\$14.85</b> (four-bottle purchase)
<b>DHEA (Dehydroepiandrosterone)</b> • 25 mg, 100 capsules, Item #00335 A hormone that protects against age-related decline, benefits overall health.	<b>\$16</b>	<b>\$9.90</b> (four-bottle purchase)
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<b>Optimized NAD<sup>+</sup> Cell Regenerator™ with Resveratrol</b> • 30 vegetarian capsules, Item #02148 NIAGEN® <b>nicotinamide riboside (250 mg)</b> , <i>trans</i> -resveratrol, quercetin, fisetin, and more to support healthy cellular metabolism.	<b>\$54</b>	For pricing available to readers of this magazine call <b>1-800-544-4440</b> or visit <a href="http://LifeExtension.com/NAD">LifeExtension.com/NAD</a>
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# STOP *UNHEALTHY* Food Cravings





MICHAEL DOWNEY

One of America's most dangerous pastimes is **impulse snacking**.

Research suggests that junk food can be as addictive as drugs like cocaine, which explains why people can't control their urges to snack.<sup>1</sup>

Americans have become addicted to **high-calorie** junk foods rich in fat, sugar, and salt.

In addition to contributing to unwanted weight gain, these foods spike blood glucose and insulin levels, increase cardiovascular risk, and threaten longevity.

Two Swedish scientists have discovered a novel **spinach extract** that decreases **cravings** for junk food, reduces hunger, and helps one feel full for up to **eight hours**.<sup>2</sup>

The secret to this spinach extract's ability to curb hunger is that it encourages the release of the **satiety enhancing hormone, GLP-1**, which increases feelings of fullness.<sup>3</sup>

In a clinical study, this extract from **spinach** decreased cravings for snacks and sweets during the rest of the day by **36%**. Study subjects also experienced a **21% decrease** in hunger.<sup>2</sup>

This spinach extract has been incorporated into a great-tasting nutritional bar. Consuming one bar a day with breakfast or as an afternoon snack is a tasty way to help stick to a healthy diet and control food cravings.

Perhaps more important, the number of excess calories most people ingest each day can be meaningfully reduced.

## How Cravings Sabotage a Healthy Diet

Cutting junk food out of your diet is easier said than done.

Some research suggests that junk food is like an addictive drug that stimulates dopamine release in brain cells.<sup>1</sup>

Foods high in fat and calories trigger pleasure centers in the brain and contribute to **emotional eating**.

This helps explain why we crave energy-dense foods that are rich in fat, sugar, and salt (like ice cream and potato chips), as opposed to nutrient-dense foods (like green vegetables).<sup>4</sup>

These unhealthy food cravings sabotage a healthy diet and contribute to unwanted weight gain and obesity.<sup>4,6</sup>

Willpower alone is often not enough to overcome these cravings.

Scientists have developed a **spinach extract** that has been shown to specifically *reduce cravings* for snacks that are rich in sugar, fat, and salt. This extract also helps reduce hunger and increase feelings of fullness, which can help you make healthier food choices.

## The Secret Locked Inside Spinach

This **spinach extract** provides novel compounds known as **thylakoids**.

Thylakoids are natural substances found in green leafy vegetables. The body normally can't utilize thylakoids because they are "locked" inside the non-digestible cell walls of the raw vegetable. And thylakoids are usually damaged by cooking.<sup>2,7</sup>

Two Swedish professors at Lund University developed a system to "unlock" thylakoids from spinach so they are available to the body.

This produced a powerful ally in the quest to kick cravings and eat healthy.

## Cut the Cravings

In one clinical study, scientists set out to investigate how just one dose of **thylakoid-rich spinach extract** affected hunger and cravings throughout the day.<sup>2</sup>

The study included 22 women averaging 54.5 years old who struggled with cravings for certain foods such as chocolates and salty snacks.<sup>2</sup>

With breakfast, the women were given either a drink that contained **5 grams** of the spinach extract or a placebo drink.

When compared to the **placebo**, women ingesting the **spinach extract** before breakfast experienced a **36% decrease** in cravings for all snacks and sweets during the rest of the day.<sup>2</sup>

Those taking the spinach extract also experienced a **21% decrease in hunger** and a **14% increase in satiety**.<sup>2</sup>

The researchers also found that decreases in cravings correlated to a reduction in snack food intake.

In other words, by reducing hunger and cravings for junk food, the spinach extract should make it much easier to forgo snacking between meals.<sup>2</sup>



## Turn On an Appetite-Suppressing Hormone

In another human study, scientists studied the effects of taking the thylakoid-rich spinach extract every day for 90 days.<sup>3</sup>

The research team enlisted 38 overweight women. Half were given **5 grams** of the thylakoid-rich spinach extract in a drink every morning before breakfast for 12 weeks. The other half received a placebo drink. All volunteers were asked to eat three meals a day.

Compared to controls, those receiving the extract found it easier to stick to three meals a day without snacking in between. They also reported decreased cravings for sweet and fatty foods.

And while the control group experienced increased cravings for junk food both before and after eating lunch, the group receiving the spinach extract reported just the opposite. They reported *decreases* in cravings before and after lunch (despite receiving no additional extract at lunch).

These effects were demonstrated on day one and continued after 12 weeks. This indicates that the decreases in cravings occur immediately and continue working over time as well.

Blood tests revealed that everyone taking the spinach extract experienced a greater after-meal release of the *satiety-enhancing* hormone **GLP-1**. Turning on “signals” (like **GLP-1**) that prompt cessation of eating can help people stick to a healthy diet.

In addition, within **30 minutes** of taking the spinach extract, glucose and insulin levels were significantly reduced. Plus, the women taking the spinach extract showed decreased levels of **LDL** and **total cholesterol** after 3, 6, 9, and 12 weeks.<sup>3</sup>

Even after 12 weeks, there were no adverse treatment effects.

### Additional Support

Additional controlled trials produced similar results compared to placebo, including:<sup>8-10</sup>

- **25%** reduced hunger,
- **35%** reduced thoughts of food,
- Increased fullness,
- Reduced cravings for salty or savory foods,
- Increased levels of the appetite-suppressing hormone **CCK**, and
- Reduced **TNF-alpha** (tumor necrosis factor alpha), a signaling protein involved in systemic inflammation.



## Reduce Junk Food Cravings

- Strong cravings for junk food promote high-calorie food choices that result in weight gain and threaten longevity.
- A spinach extract that is rich in potent **thylakoids** slashes cravings for these tastes for as long as eight hours, increases feelings of fullness, and reduces between-meal hunger.
- This patented extract is now available in a delicious bar that reduces cravings for junk food, helping you make healthy food choices and stick to a healthy diet.

What You Need to Know

## How It Works

Every time you eat, your stomach and your brain “talk” to one another.

The digestive system sends hormone signals to the brain to tell it when you’ve had enough to eat. The brain then **suppresses cravings** and hunger to prevent you from overeating.

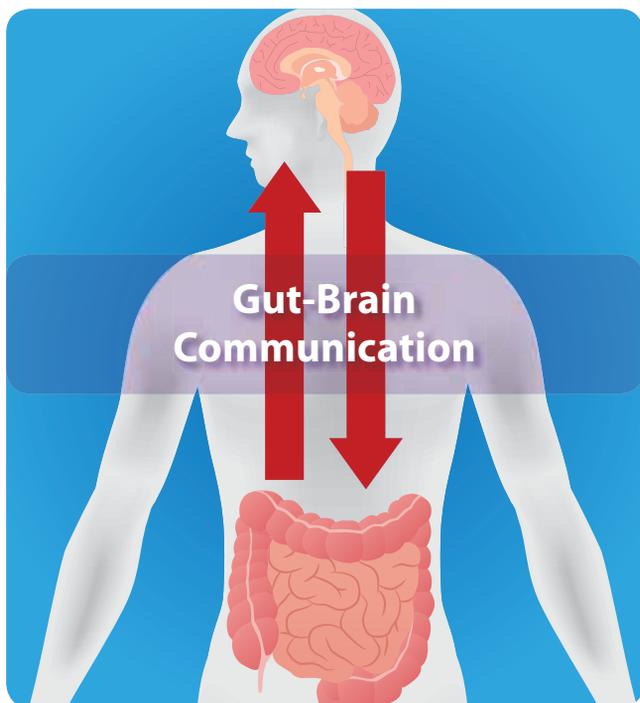
The trouble is that modern processed foods are broken down so quickly that the hormones in the intestines that would normally send “fullness” signals to the brain simply cannot keep up.<sup>10</sup>

**Thylakoids** have been shown to slow the uptake of fats in the intestine, which allows the release of two important satiety signals into the bloodstream: one that **suppresses hunger** (called *cholecystikinin*, or CCK), and one that **enhances satiety** (called *glucagon-like peptide-1*, or **GLP-1**).<sup>2,3,10,11</sup>

What this means is that the thylakoid-rich spinach extract helps reduce hunger and cravings by giving the body’s own satiety signals time to work.

**GLP-1** also helps decrease blood glucose levels, which reduces after-meal blood sugar spikes. These spikes are dangerous for diabetics *and* non-diabetics because they cause damage that can harm every organ in the body and accelerate aging processes.

The overall effect of this **thylakoid-rich spinach extract** is to slash hunger pangs and cravings for high-calorie snacks. This helps individuals stick to a proper diet, with less temptation for unhealthy food choices, which is a common cause of excess weight and obesity.



## The Importance of a Comprehensive Approach to Optimal Body Weight

The current scientific evidence in favor of a proprietary **thylakoid-rich spinach extract** for helping individuals reduce snacking on unhealthy, sugar- and salt-rich foods is impressive.

However, sustained body weight management is far more complex than simply avoiding salt- and sugar-laden foods, although this is an important factor.

Most people want to lose weight very fast, but most scientific evidence suggests a gradual approach is best for sustained weight loss.

Further, even losing **5%** of current body weight can achieve impressive improvements in vascular health profiles including blood sugar, cholesterol, triglycerides, and other factors.

This can be achieved by improving eating behaviors and making healthier food choices such as lean proteins like skinless chicken, complex carbohydrates rich in fiber like yams, healthy fats found in fish like salmon, and monounsaturated fat sources like high quality olive oil.

Optimizing critical metabolic targets like cellular AMPK with supplements (e.g. gynostemma extract, hesperidin) and pharmaceutical options (e.g. metformin) can help with long-term weight management.

Exercise is important for maintaining weight loss over the long-term by supporting lean body mass. Successful maintenance of weight loss ideally includes 60 to 90 minutes of moderate intensity exercise (like walking at a brisk pace) several days per week.

## Summary

Junk food cravings can make eating healthy and losing weight difficult.

America's current addiction to high-calorie foods is driven not by hunger, but by strong cravings for tastes that are sweet, salty, or fatty.

The result is weight gain, cardiovascular risk, and reduced longevity.

Human studies show that a patented spinach extract, rich in compounds called **thylakoids**, decreases hunger and reduces cravings for junk food for as long as eight hours.

This extract has been incorporated into a tasty nutritional bar that naturally slashes cravings and the desire for between-meal snacks.

Consuming just one nutritional bar in the morning or in the afternoon can help reduce hunger and junk food cravings all day long. ●

**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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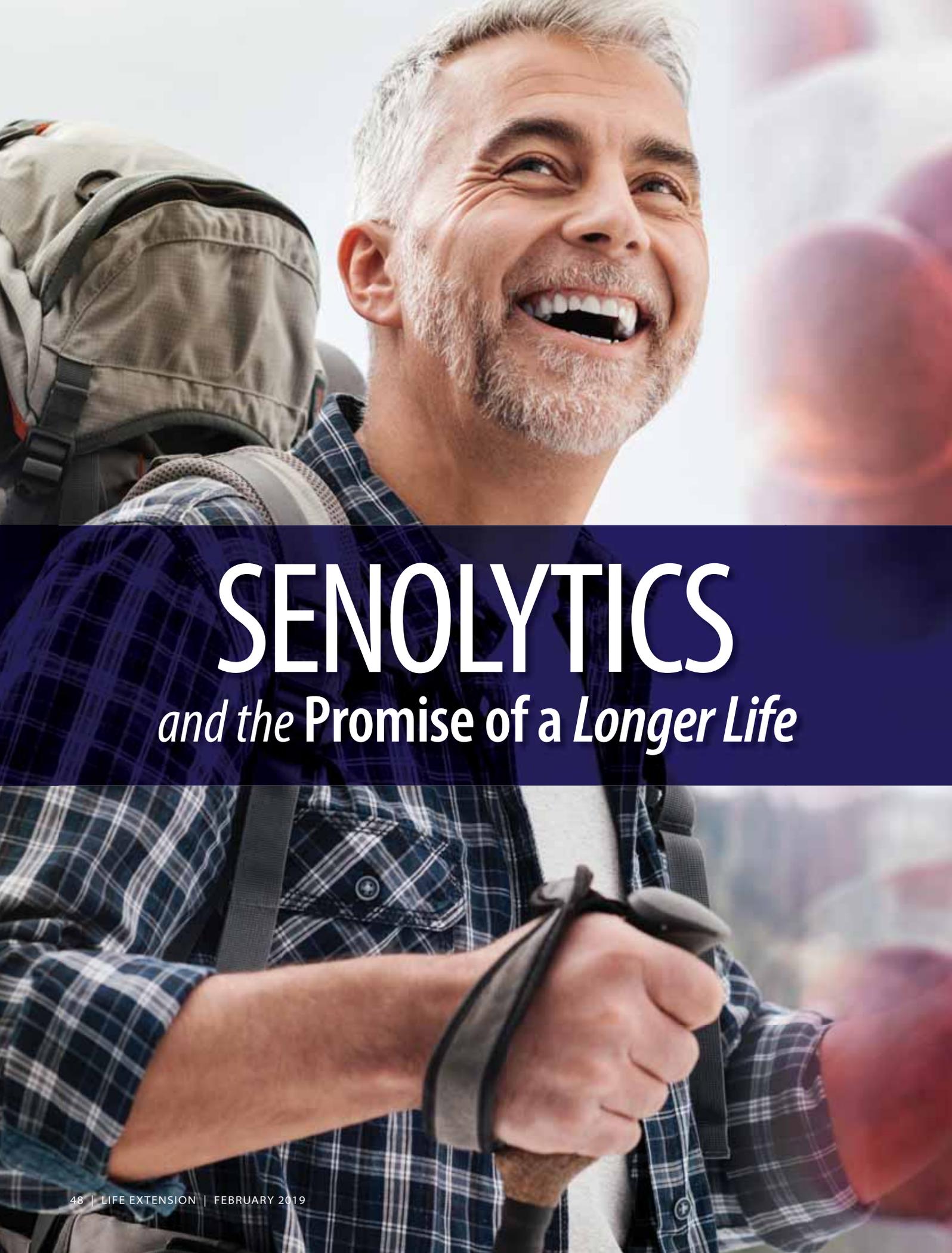
	Retail Price	Super Sale Price
1 bottle	\$54	<b>\$36.45</b>
4 bottles		<b>\$34.20 each</b>



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# SENOLYTICS

*and the Promise of a Longer Life*

A microscopic view of cells, showing several large, rounded cells with a reddish-pink hue and a textured, almost crystalline surface. The cells are arranged in a somewhat circular pattern, with some overlapping. The background is a soft, out-of-focus purple and pink, suggesting a cellular environment.

RICHARD BASILLICO

Researchers at the **Mayo Clinic** have identified a major cause of aging—and a way to reverse it.<sup>1</sup>

The scientists showed for the first time that harmful “zombie cells” lurk in all of our tissues.

Also known as **senescent cells**, they accumulate over time and clog up the efficient functioning of our bodies. They also emit proinflammatory factors that accelerate degenerative aging.<sup>2</sup>

The good news: Researchers have identified a class of compounds called **senolytics**, which can **selectively remove** senescent cells.

By getting rid of these harmful cells, **senolytics** increased lifespan of aged mice the rough equivalent of increasing human survival to about **108 years**.

These senolytic compounds also decreased age-related physical deterioration and prevented cognitive decline in rodent models.<sup>1,3</sup>

These findings have been hailed as potential breakthroughs by major scientific journals such as the **Journal of the American Medical Association (JAMA)** as well as research institutions for good reason: Doctors may soon prescribe drugs that safely remove this cause of systemic aging and restore youthful functionality. Numerous clinical trials of **senolytic** agents are underway.

But aging people can't wait for new **senolytic** drugs to be approved. They want to start purging their bodies of **senescent cells** today.

## Senescent Cells: A Root of Aging

**Senescent cells** have been found in virtually every human tissue. These cells have reached the end of their natural lifespans. But instead of dying off in the normal process called *apoptosis*, they accumulate within tissues, where they secrete protein-degrading *enzymes* that damage healthy cells.<sup>1,3,4</sup>

These secreted substances also produce chronic, low-grade inflammation associated with most age-related disorders.

As senescent cells accumulate, they damage cellular DNA and mitochondria, while causing *telomere* dysfunction. Telomeres are nucleotide sequences at the ends of chromosomes. Loss of **telomere structure** accelerates degenerative aging processes.<sup>1,3,4</sup>

Senescent cells also inflict damage to our body's pool of **stem cells**, limiting normal tissue's capacity for repair and replacement.<sup>5</sup>

Once researchers clearly identified senescent cells as an underlying cause of age-associated diseases, they wanted to answer an urgent question: Can these cells be **removed** from the body, and will doing so improve health and slow aging?

Thanks to **senolytics**, the answer is "yes."

## Senolytics: A Major Anti-Aging Advance

The term "seno" refers to **senescence cells**.

The term "lytic" refers to their **destruction**.

The new class of compounds called **senolytics** selectively **destroys senescent cells** in tissues.

Because they remove a root cause of aging, senolytics are expected to fight age-associated diseases and help people live longer. For the first time, scientists can target and remove old, damaged cells to make way for younger, thriving cells.

Researchers at the Mayo Clinic are at the forefront in uncovering the exciting potential of using senolytics to target senescent cells.

## Targeting Senescent Cells

In the first of two Mayo Clinic studies, researchers made a series of startling discoveries about the impact of senescent cells on normal, healthy tissue.<sup>1,3</sup>

They found that transplanting *just a small number* of senescent cells into young mice triggered the accelerated aging processes.

Young mice implanted with just a few senescent cells quickly developed physical ailments typically seen in older animals, such as slower walking, reduced endurance, and weaker grip strength. The greater the number of senescent cells, the greater the deterioration.<sup>1</sup>



More alarming, the presence of just a *few* senescent cells produced a snowball effect, triggering senescence in a larger number of previously healthy cells. Senescent cells acted with an almost brutal efficiency to speed aging—and lead to the problems that come with it.

As bad as these aging cells are by themselves, a **high-fat diet** appears to amplify their negative impact. When the mice were fed such a diet for the month prior to transplant, it took even *fewer* senescent cells to produce age-related ailments. This finding is unsurprising since both a high-fat diet and obesity are known to induce cellular senescence in animal models.

The most dramatic finding of all: the discovery that the mice with the **senescent** cells had a **5-fold higher risk of death** compared to control mice.<sup>1</sup>

## The Senolytic Effect

Mayo Clinic researchers weren't only interested in the negative impact senescent cells have on healthy tissue. They also wanted a solution to the problem.

For the trial, they chose two well-known compounds with excellent potential to serve as **senolytic compounds** to remove these aged cells and decrease their negative impact on the body.

The compounds came from an unlikely partnership: a natural substance known as **quercetin**—a flavonoid found in abundance in apples, onions, and other plants—and an anti-cancer drug called **dasatinib**.

This combination had a remarkable **senolytic effect** by:<sup>1</sup>

- **Reducing the number of senescent cells, and**
- **Decreasing their secretion of proinflammatory signaling factors.**

When the mice were given the **quercetin/dasatinib** combination immediately following senescent cell transplant, their tissues showed significantly fewer senescent cells.<sup>1</sup> This indicates that the senolytic combination “swept away” these dangerous, age-accelerating cells.

Even when the supplement wasn’t started until five weeks after senescent cell transplants—long after the negative impact of senescence was evident—the effects were comparable to those of immediate use.<sup>1</sup>

This is of vital importance to aging adults because it means that senolytic treatment doesn’t need to be started at a young age to produce beneficial effects.

Overall, removing the senescent cells with senolytics had three key benefits:<sup>1</sup>

- **It reduced the severity of age-related physical deterioration.** When elderly mice were given the senolytic combination for four months, it increased their walking speed, improved their endurance, and boosted grip strength. It also improved daily activity levels in these older animals.
- **It improved late-life survival.** Giving the senolytics to elderly mice increased their lifespan by **36%** and reduced their risk of dying by a stunning **65%**, compared with control animals. Since the age of these mice made them approximately as old as a 75- to 90-year-old human, a **36%** increase in lifespan can be seen as the rough equivalent of a person living to more than **108 years old**. The researchers flagged this result as “remarkable” for its implication that senolytics can **reduce the risk of dying in old age**.
- **It increased healthspan.** This means that in addition to living longer, the animals lived healthier.

Taken together, these findings show that senolytics can improve survival *and* reduce overall disability.<sup>1</sup>

## Senolytics Extend Lifespan

- Senescent cells are one of the root causes of aging and disease.
- Senolytic compounds can selectively remove senescent cells by reactivating cells’ normal ability to die off gracefully.
- Senolytic compounds have extended the lifespans of mice by as much as **36%** while also reducing their risk of dying by **65%**.
- Life Extension scientists have developed a combination of **quercetin** and **theaflavins**, two naturally derived, plant-based senolytics. Theaflavins have similar senolytic mechanisms as dasatinib.
- **By targeting a root cause of aging itself, senolytics have the potential to reverse aging and reduce the diseases of aging.**



What You Need to Know

## Senolytics and Dementia

The second Mayo Clinic study focused on one of the most-feared consequences of aging: dementia.<sup>3</sup>

The researchers used a strain of mice bred to produce **tau**, a protein that is believed to cause brain cell death in older adults. Tau protein buildup is a structural hallmark of Alzheimer’s disease.

The rodents bred from this strain also have high levels of **neurofibrillary tangles**, neurodegeneration, and loss of cognitive function by early middle-age.<sup>3</sup>

The researchers found that the presence of **senescent cells** in the brain tissue increases neurodegeneration.

Brain tissue with *large* numbers of **senescent cells** had high levels of **tau** and **neurofibrillary tangles**. In addition, the overall brain size was smaller, and there was marked brain cell degeneration in the memory center of the brain (called the **hippocampus**).

Amazingly, the researchers discovered that a **senolytic** agent can sweep these **senescent cells** out of



brain regions, including the hippocampus. Doing so reduced the deposits of neurofibrillary tangles and lessened tau aggregation.

Most importantly, removing the senescent cells lessened the short-term memory loss and prevented the neurodegeneration seen in untreated animals.<sup>3</sup>

## Widespread Acclaim Greet News of Senolytic Successes

Studies demonstrating the effectiveness of senolytic compounds in animal models have met with unprecedented favorable press in the world’s most prestigious journals, even from some of the most notorious skeptics of life extension:

**“In animal models, both health and longevity have been extended** by multiple genetic and dietary interventions...six candidate drugs have already been shown to extend life in at least one mouse sex.”<sup>25</sup>

–Journal of the American Medical Association

**“Targeting senescent cells may arrest or reverse Alzheimer’s** and related neurodegenerative diseases.”<sup>5</sup>

–Journal of the American Medical Association

**“Clearing even a small percentage of these cells improves healthspan and delays age-associated diseases.”**<sup>26</sup>

–Aging Cell

**“The time has come to recognize the achievement of life extension.** Efforts should be focused on achieving the goals of **extending and improving the healthspan.**”<sup>27</sup>

–Journal of the American Medical Association

## Systemic Reversal of Aging Pathologies

What generated a firestorm of interest in **senolytics** was a landmark study emanating from the **Mayo Clinic** in 2015.<sup>6</sup>

Researchers observed that combining the plant compound **quercetin** with the drug **dasatinib** targeted and eliminated senescent cells. The result of this study was systemic restoration of youthful function and improved survival in old mice given the **senolytic** combination.<sup>6</sup>

Fascinated by these findings, **Life Extension®** scientists have studied the mechanisms of dasatinib and identified intriguing natural compounds (**theaflavins**) that function in a similar **senolytic** fashion.

Their search also led them to a *highly absorbable* form of **quercetin**.

## Supercharged Quercetin

Aged cells are programmed to self-terminate through a natural process called apoptosis.

When cells suppress normal self-destruct mechanisms, they can turn into metabolically active senescent cells that inflict systemic damage.<sup>6</sup>

**Quercetin** helps induce *apoptosis* in senescent cells, triggering their ability to die off.<sup>4</sup>

Both human and basic lab studies have shown that quercetin reduces chemical markers of aging. And animal studies reveal that quercetin therapy can extend lifespan.<sup>4,7-13</sup>

More recently, as shown in the Mayo Clinic studies discussed here, quercetin has been shown to have specific *senolytic properties* that enable it to sweep away senescent cells.<sup>1,4,6,14-17</sup>

The problem is that quercetin is not well-absorbed in its natural state.<sup>18</sup>

By formulating the compound with a food-grade, plant-based carrier (a *phytosome*) quercetin's absorption from the bloodstream is sharply enhanced.<sup>19,20</sup>

Life Extension scientists selected **quercetin phytosome** for its improved bio-availability and its senolytic properties.

### Black Tea Theaflavins

In the **Mayo Clinic** study, the chemotherapy agent **dasatinib** was shown to complement quercetin's senolytic activities.<sup>1,6</sup> While the results of this combination are impressive, most people choose to use compounds without the side effect profile of dasatinib, even though the human equivalent dose of dasatinib for senolytic purposes is far lower than what leukemia patients take.

Life Extension scientists scoured hundreds of plant-based compounds to find those with mechanisms and effects similar to those of dasatinib, to pair with quercetin as an alternative to this anti-cancer drug.

Their search for a dasatinib alternative led to a group of natural **polyphenols** called *theaflavins* found in black tea.

Theaflavins have been shown to extend lifespan in animal studies and were recently confirmed to have specific *senolytic* properties.<sup>21-24</sup>

But unlike dasatinib, neither quercetin nor theaflavins have any known toxicity or harsh side effects.

That means that this dual plant-based combination can be used to target senescent cells.

### Summary

Senescent cells cause age-related dysfunction in every tissue. They are a fundamental cause of degenerative aging.

**Senolytics** selectively remove **senescent cells**.

Senolytic compounds have been shown to increase lifespan in older animals up to **36%** while reducing their risk of dying in that period by **65%**.

These compounds also increased the animals' ability to sustain healthy aging.

Plant-based **senolytics** such as **quercetin** and black tea **theaflavins** have an impressive safety record to back them up.

Senolytics have the potential to reverse aging and reduce the diseases of aging by targeting one of the root causes of *aging itself*.

Look forward to updates about rapidly emerging regenerative medicine technologies.

We believe an important first step, however, may be the removal of **senescent cells** that block the restorative potential of other steps we take to regain youthful vitality. ●



Black Tea

**VIEWPOINT**

**Scientific Discovery and the Future of Medicine**

**Aging as a Biological Target for Prevention and Therapy**

Nir Barzilai, MD; Ana Maria Cuervo, MD, PhD; Steve Austad, PhD

JAMA. Published online September 17, 2018. doi:10.1001/jama.2018.9562

**Scientific Discovery and the Future of Medicine**

**Aging, Cell Senescence, and Chronic Disease: Emerging Therapeutic Strategies**

Tamara Tchkonja, PhD; James L. Kirkland, MD, PhD

JAMA. Published online September 17, 2018. doi:10.1001/jama.2018.12440

**Scientific Discovery and the Future of Medicine**

**From Lifespan to Healthspan**

S. Jay Olshansky, PhD

JAMA. Published online September 17, 2018. doi:10.1001/jama.2018.12621

*As Reported in the Journal of the American Medical Association (JAMA)*

Recent findings from the **Mayo Clinic** studies and other prestigious institutions have ignited a firestorm of excitement and discussion about interventions to target the aging process.

**JAMA**, one of the most impactful medical journals, has published three different expert opinion pieces focused on the concept that aging itself is now a viable target for medical therapy.<sup>5,25,27</sup> **Senolytic** therapy features prominently in these discussions, along with **AMPK activation**.

The conventional approach to age-related disease has typically been to treat individual disorders separately. For example, prescribing drugs to lower cholesterol, glucose, triglycerides, and so on.

Increasingly, researchers are coming to the conclusion that this mode of medical intervention is doomed to failure and has many drawbacks, such as the increasing number of medications individuals are required to take in later life.

However, the identification of **biological hallmarks of the aging process** has caused a sea change. If we can target key aspects of the aging process itself, we can

extend healthy lifespan and prevent a wide range of degenerative diseases in one fell swoop.

A group of scientists studying aging explains:

***“The discovery of cellular and molecular pathways that modulate healthy aging in diverse species across great evolutionary distances offers an unprecedented opportunity for intervention.”**<sup>25</sup>*

Cellular senescence, and its treatment by senolytics, is a critical example. Researchers at the Mayo Clinic have said, “[Senolytics] could **transform care of older adults and patients with multiple chronic diseases** that now can only be managed and have not been amenable to disease-modifying interventions.”<sup>5</sup>

Researchers caution that simply extending lifespan should not be the only goal. Instead, medical interventions should shift to focus on “delaying and compressing the period of the lifespan when frailty and disability increase substantially.”<sup>27</sup> By extending the **healthspan**, these interventions promise to not only extend longevity, but to improve the quality of that extra life in the elderly.

**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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# COMBAT Senescent Cells and AGING

## New Science of *Senolytics!*

**Senescent cells** are old cells that no longer divide but they emit factors that *accelerate* aging.

**Senolytic** compounds selectively help target senescent cells in the body.

Laboratory studies show evidence of **systemic rejuvenation** when the **senescent cell** burden is reduced.

### Once-Weekly Senolytic Formula

A new formula called **Senolytic Activator** provides a highly **absorbable** form of **quercetin phytosome** and black tea **theaflavins** designed to enhance the body's ability to manage **senescent cells**.

The suggested dose is to take two capsules of **Senolytic Activator** just **once weekly**.

During **Super Sale**, the new **Senolytic Activator** can be obtained for as little as **\$4.80** a month.



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4 bottles are only \$23.40 each



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\* Supplier Internal Study. Data on File. 2017

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# OBTAINING THE **LOWEST PRICES** ON YOUR SUPPLEMENTS

Our 30<sup>th</sup> annual **SUPER SALE** extends through January 31, 2019.

During this special event, clients can obtain our most advanced formulas at **extra discounted** prices.

When consumers purchase products from **Life Extension**<sup>®</sup>, they can rest assured that the **quality** of the product is backed by our **commitment** to achieving indefinitely extended lifespans.

During Super Sale, **premium-quality** formulas are available at prices below those charged by commercial companies. This enables health enthusiasts to obtain nutrients they can **trust** at discounted prices.

While **Life Extension**<sup>®</sup> loyalists always receive a **25% discount** off the retail price, far **greater** savings occur when multiple bottles are purchased during **Super Sale**.

**Life Extension's Rewards** provide more **money-saving** benefits. This program allows customers to earn **reward dollars** on *every* order that can then be applied to future purchases.

Clients also have the choice of joining the **Premier Healthy Rewards** program for just \$49.95 a year, which doubles reward dollars, provides **free shipping**, and includes a **\$50 reward bonus** to use on any product or blood test.

## Super Savings on **TWO-PER-DAY**

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

**Two-Per-Day** also provides optimal forms of vital nutrients such as:

- **5-MTHF:** Active form of **folate**—up to 7 times more bioavailable.
- **Natural Vitamin E:** Twice as bioavailable as synthetic vitamin E
- **Selenium:** Three different forms that each have specific properties
- **B Vitamins:** Enzymatically active forms of B2 and B6
- **Added value:** Bio-Quercetin phytosome

The chart on the right side page compares **Two-Per-Day** to the most popular multivitamin commercial product (**Centrum**<sup>®</sup>).

THIS CHART COMPARES THE FORMULA OF CENTRUM SILVER® TO TWO-PER-DAY:

Sample Ingredient Comparison	Centrum Silver® Adults 50+	Life Extension® Two-Per-Day
Vitamin A	2,500 IU	<b>5,000 IU</b> (beta-carotene + preformed)
Vitamin C	60 mg	<b>470 mg</b>
Vitamin D3	1,000 IU	<b>2,000 IU</b>
Vitamin E	50 IU (synthetic)	<b>100 IU</b> (natural)
Thiamine (vitamin B1)	1.5 mg	<b>75 mg</b>
Riboflavin (vitamin B2)	1.7 mg	<b>50 mg</b> (with riboflavin-5-phosphate)
Niacin	20 mg	<b>50 mg</b>
Vitamin B6	3 mg	<b>75 mg</b> (with pyridoxal-5-phosphate)
Folate	400 mcg	<b>400 mcg</b> (5-MTHF)
Vitamin B12	25 mcg	<b>300 mcg</b> (methylcobalamin)
Biotin	30 mcg	<b>300 mcg</b>
Pantothenic acid	10 mg	<b>50 mg</b>
Iodine	150 mcg	<b>150 mcg</b>
Magnesium	50 mg	<b>100 mg</b>
Zinc	11 mg	<b>25 mg</b>
Selenium	19 mcg	<b>200 mcg</b> (three forms)
Manganese	2.3 mg	<b>2 mg</b>
Chromium	50 mcg	<b>200 mcg</b>
Molybdenum	45 mcg	<b>100 mcg</b>
Alpha lipoic acid	none	<b>25 mg</b>
Boron	none	<b>3 mg</b>
Inositol	none	<b>50 mg</b>
Lutein	250 mcg	<b>5,000 mcg</b> (from marigold extract)
Zeaxanthin	none	<b>155 mcg</b> (from marigold extract)
Lycopene	300 mcg	<b>1,000 mcg</b>
Apigenin	none	<b>5 mg</b>
Natural mixed tocopherols (providing gamma, delta, alpha, and beta tocopherols)	none	<b>20 mg</b>
Quercetin	none	<b>5 mg</b> (from Bio-Quercetin phytosome)

# How to Obtain **TWO-PER-DAY** at Substantial Savings:

The retail price of a **60 day** supply of the new **Two-Per-Day** tablets is **\$23. (Item # 02315)**

Your price during **Super Sale** is reduced to **\$15.53**. If you buy **four** bottles, the price is reduced to **\$13.95** per bottle (21 cents/day).

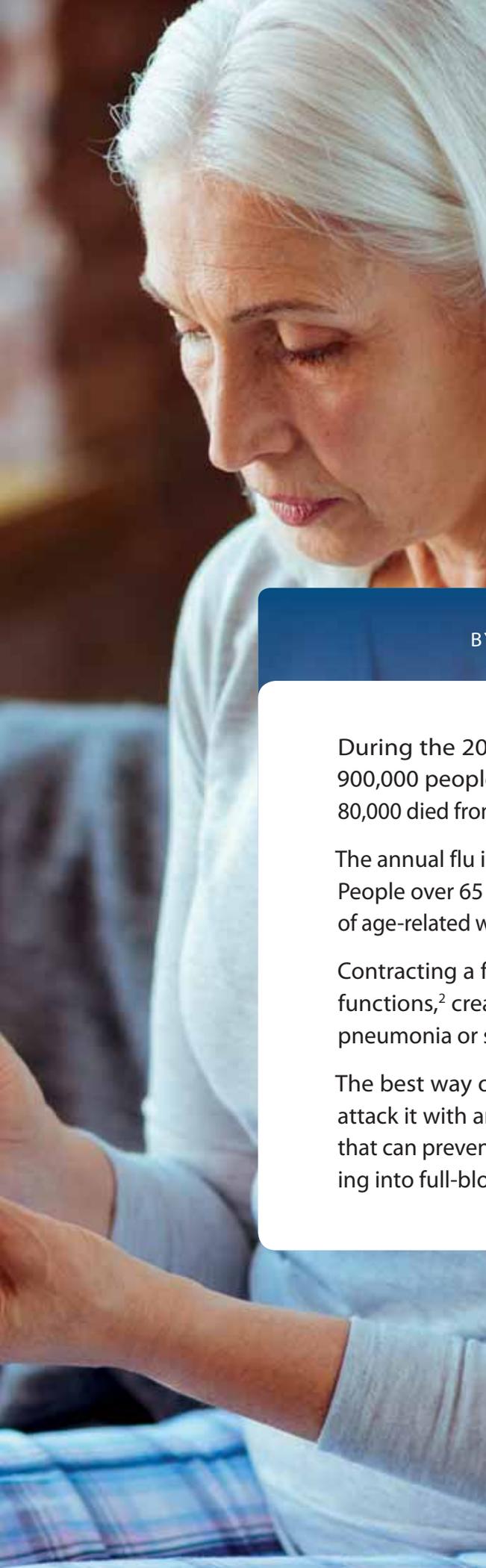
Two-Per-Day **capsules** are available at slightly higher price.

This page shows the incredible value of **Two-Per-Day** compared to a leading commercial formula.

For full product description and to order  
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A photograph of an elderly man with a grey beard lying in bed, looking unwell. He is wearing a blue t-shirt. A person's hands are visible in the foreground, holding a blue and white digital thermometer. The background shows a window with a white pillow and a bedside table with a water bottle. The overall scene is a bedroom with soft lighting.

Prevent  
**Flu Viruses**  
from Taking Hold  
and Reduce  
Recovery Time



BY STEPHANIE RISER

During the 2017-2018 flu season, more than 900,000 people were hospitalized and close to 80,000 died from influenza-related complications.<sup>1</sup>

The annual flu is a threat to the entire population. People over 65 are especially vulnerable because of age-related weakening of their immune systems.

Contracting a flu virus *further* weakens immune functions,<sup>2</sup> creating complications like bacterial pneumonia or sepsis.

The best way of protecting against the flu is to attack it with an arsenal of anti-viral compounds that can prevent initial symptoms from transforming into full-blown infection.

**Tamiflu®** is nearly a 20-year old drug that is effective if taken within 24-48 hours after onset of flu symptoms. Flu viruses, however, can mutate and become resistant to antiviral drugs like Tamiflu.

While this may not be an issue for this year's expected flu viruses, there is concern that over time flu viruses could develop resistance to Tamiflu, reducing its effectiveness.

A new antiviral drug called **Xofluza™** has been recently FDA-approved. Xofluza works via a different mechanism than Tamiflu.<sup>3</sup> What's critical with either drug is having it available as soon as flu symptoms manifest.

This is true for the arsenal of nutrients (like zinc lozenges and garlic) and drugs (like cimetidine) that Life Extension® has long urged readers to initiate as soon as a common cold or flu symptom manifests.

For those unable to prevent a full-blown flu infection, scientists have identified a **botanical extract** that can help **speed recovery** from the flu.

Faster recovery can allow one to avoid more serious complications that accompany the flu.



## Unleashing the Nuclear Bomb

If you develop flu symptoms, it is critical that you act quickly to halt the rapid replication of viruses occurring in your body. Go to the nearest health food store or pharmacy and purchase:

- 1. Zinc Lozenges:** Completely dissolve in mouth one lozenge containing **18.75 mg** of zinc acetate every two waking hours. Do not exceed 8 lozenges daily, and do not use for more than three consecutive days. (You can also keep zinc acetate lozenges on hand in case cold/flu symptoms manifest.)
- 2. Garlic:** Take **9,000-18,000 mg** of a high-allylic garlic supplement each day until symptoms subside. Take with food to minimize stomach irritation. Some people prefer using aged garlic extract (Kyolic®) in the high dose of around **3,600-7,200 mg** a day.
- 3. Tamiflu: 75 mg** twice daily. This is a prescription drug and is only effective for certain flu viruses. Generic name for Tamiflu is oseltamivir.
- 4. Vitamin D:** If you do not already maintain a blood level of **25-hydroxyvitamin D** over **50 ng/mL**, then take **50,000 IU** of vitamin D the first day and continue for 3 more days. Slowly reduce the dose to around **5,000 IU** vitamin D daily. If you already take around **5,000 IU** of vitamin D daily, then you probably do not need to increase your intake.
- 5. Cimetidine:** Take **800-1,200 mg** daily in divided doses. Cimetidine is a heartburn drug that has potent immune enhancing properties. (It is sold in pharmacies over-the-counter.)
- 6. Melatonin: 3 to 50 mg** at bedtime.

**Do not delay implementing the above regimen.** Once a flu virus infects too many cells, it replicates out of control and strategies like zinc lozenges will not be effective. Treatment must be initiated as soon as symptoms manifest!

## The Critical Post-Flu Period

If you've ever suffered from the flu, you know that the infection phase is only the first part of the process.

The typical symptoms are usually abrupt and include fever that can last **3-4 days**. Once the infection passes, the **recovery period** can take twice that long.<sup>4</sup>

The flu leaves your body in a *weakened* state that can impact your energy, sleep, concentration, and overall quality of life for **weeks**.

It's like the aftermath of a hurricane.

Besides producing symptoms such as weakness, fatigue, and cough, the recovery period leaves your immune system in a weakened, vulnerable state.

As researchers searched for a natural way to shorten the post-flu recovery period, they looked at one of the strongest, most resilient plants around: the **oak tree**.

### Hope from the Oak

Oak trees are prized for their strength and durability. They can live for centuries. Even after they are cut down for lumber, their wood remains solid and resistant to decay.

An oak tree's resilience is due in part to producing a wide array of protective plant compounds called **flavonoids**.

In particular, oak trees contain **roburins**. These unique tannins are found *only* in oak trees, where they provide powerful chemical stress-fighting properties.<sup>5</sup>

Roburins can offer protection for humans as well, especially when it comes to improving energy and fighting fatigue.

Previous studies have shown that French oak wood can help manage **chronic fatigue syndrome** and moderate **liver failure**.<sup>6-8</sup> With this in mind, researchers wanted to find out if French oak wood extract could exert similar fatigue-fighting, energy-boosting effects in older adults struggling to recover from **influenza**.<sup>9</sup>

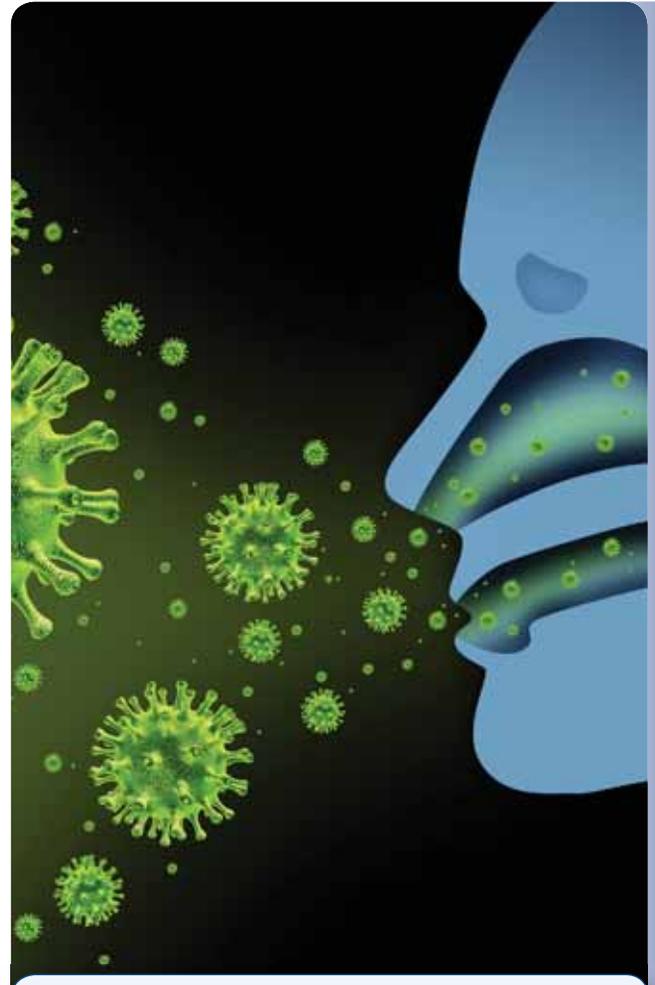
### Faster Recovery from the Flu

Researchers studied 38 people aged 65-75 who had the flu.<sup>9</sup>

After the acute flu ended, subjects either took **French oak wood extract (300 mg/day)** or continued with standard flu recovery care such as fluids and rest (they served as the control group).

After 10 days, subjects taking French oak wood extract showed greater improvements on all five recovery parameters. These included:<sup>9</sup>

- Weakness
- Alterations in attention
- Sleep patterns
- Recovery after effort
- Alterations in working/concentration



## Speed Flu Recovery

- Influenza can have a devastating impact on older adults.
- Adults over 65 are at an increased risk of suffering from flu complications such as pneumonia, sinus problems, organ failure, and even death.
- French oak wood extract has been shown to speed recovery from the flu.
- In addition to reducing fatigue, it more quickly improves recovery rates for weakness, sleep, concentration, and attention.
- Speeding recovery helps reduce the likelihood of suffering from potentially deadly complications.

## Xofluza™:

### A Newly Approved Flu Medication

Almost 20 years ago, the drug Tamiflu® (oseltamivir) was approved for use, helping to reduce the duration of symptoms of the flu.

Since the release of Tamiflu, no new antiviral medications with a novel mechanism of action had been approved.

In October of 2018, the U.S. Food & Drug Administration announced the approval of Xofluza™ (baloxavir marboxil) for the treatment of acute uncomplicated influenza in patients 12 years of age and older.<sup>11</sup>

Xofluza represents an entirely new type of antiviral medication. Tamiflu and others like it blocked the final step of virus reproduction, preventing already formed viruses from infecting more cells.<sup>12</sup>

In contrast, Xofluza works at an earlier step in the development of new viruses. It blocks the production of viral mRNA, which is necessary to begin to build the new virus particles in the first place.

Two randomized trials of Xofluza have already been completed demonstrating clinical benefit in the management of flu. When given within the first 48 hours of flu symptoms, a single dose of Xofluza reduced the duration of symptoms to a similar extent as Tamiflu.<sup>11</sup>

However, the new drug also reduced the duration of viral shedding, or release of virus from the body, which can infect other people, to a greater extent than Tamiflu. This means that Xofluza may help prevent the spread of the flu virus more effectively than previous antiviral medications.<sup>12</sup>

Xofluza is now a treatment option for individuals 12 years of age and older if started within 48 hours of symptom onset. However, the FDA has cautioned that Xofluza or any other antiviral treatment should not be considered a substitute for yearly flu vaccination, which is an established strategy to help control the spread of the flu virus.<sup>11</sup> Not everyone agrees on the FDA's position regarding flu vaccines.

The subjects taking **French oak wood extract** also demonstrated improvements in *objective* parameters, such as:<sup>9</sup>

- Higher **oxygen saturation levels** (a measure of how well oxygen gets from the lungs to the tissues via the blood),
- Higher **hematocrit** (which measures what percentage of your blood is made up of oxygen-carrying red blood cells), and
- Lower concentrations of **plasma free radicals** (a measure of chemical stress).

These effects may explain the improvements in fatigue, cognition/attention, and recovery experienced by the French oak wood extract group. The more red blood cells and the more oxygen they carry, the better the functioning of all tissues in the body.

The **French oak wood extract** group also sharply improved their edema (swelling) scores compared with control subjects. Reduced swelling is yet another important indicator of a *faster recovery*.



## Faster Functional Improvement

The “Karnofsky score” was included as part of the evaluation. This score assesses patients based on their *functional impairment*, which gives a better picture of the participants’ experience during recovery.<sup>10</sup>

At the beginning of the recovery period, both groups had almost identical impairment scores of about 67 (indicating impairment in normal activity). This makes sense, as the flu can leave a person in such a weakened state that simple tasks like fixing breakfast or walking to the mailbox can lead to serious weakening and energy loss.

Ten days later, the group taking French **oak wood** extract had a significantly greater improvement than the control group, reaching a Karnofsky score of **97.2**.

Even after three weeks, the control group did not score as high as the French oak wood extract group did *after just 10 days*.

Simply put, the individuals taking the French oak wood extract recovered much faster and were able to more quickly resume normal activities.

Ultimately, improving recovery from the flu is more than just a major step in comfort. It has critical implications in fending off more serious, potentially life-threatening ancillary infections.

## Summary

Recovery from the flu often lasts longer than the illness itself. For some, slow or incomplete recovery can mean worsening health, with the onset of pneumonia and other complications.

French oak wood extract speeds post-flu recovery. This allows older adults to get back to their favorite activities faster, while reducing the likelihood of suffering from potentially deadly complications.

Even more important is starting the antiviral protocol described at the beginning of this article as soon as any flu symptom manifests. ●

**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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Maintaining youthful DHEA levels can help support immune function, circulatory health, mood, libido, and more.

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

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Individual results may vary and are not guaranteed.

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**RiboGen™** can help alleviate the occasional “blahs” of general fatigue and poor concentration and get you up and running during the winter months.

**RiboGen™** contains **French oak wood extract** rich in **roburins**.

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Retail Price is \$36 • **Super Sale Price is \$24.30**  
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# WITH EVERY **BEAT...**

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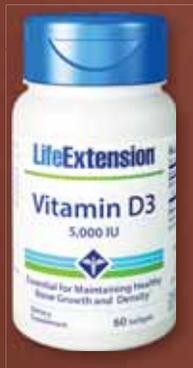


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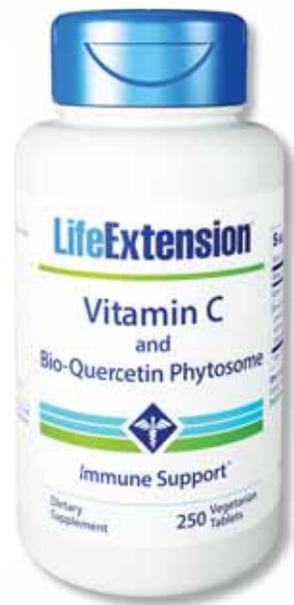
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**Vitamin C** is water soluble and needs to be constantly replenished.<sup>1</sup>

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**Reference:** 1. *PLoS Med.* 2005 Sep;2(9):e307;author reply e309.



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# Healthy Blood Pressure Control Reduces Dementia Risk

BY ABBY GONZALEZ

A new study has confirmed that poor blood pressure control not only increases risk of heart attack and stroke but can also hasten the onset of **dementia**.

This finding made the following headline news articles:

## Washington Post

*"A healthier heart may mean a healthier mind, new study shows"*

## NBC News

*"Tight blood pressure control can cut memory loss, study finds"*

## USA Today

*"Aggressively lowering blood pressure could reduce risk of developing dementia, study finds"*

**High blood pressure** is a well-known cardiac risk, but now researchers are discovering that elevated blood pressure damages the brain and can lead to **dementia** and **mild cognitive decline**.



### Blood Pressure Recommendations

For most aging individuals, **Life Extension** recommends an optimal blood pressure goal of **115/75 mmHg**. However, those aging individuals with long-standing hypertension and/or coronary artery disease, individuals with kidney disease, and those over 80 years of age should be aware that a rapid, overly aggressive reduction of blood pressure should be avoided. Signs of overly aggressive blood pressure reduction may include worsening cognitive function, dizziness and/or lightheadedness when standing quickly from a sitting position, and worsening biomarkers of kidney function.

Regrettably, some older, fragile patients may simply not tolerate a target blood pressure of **115/75 mmHg** due to long-standing damage to the vascular system, thus requiring a higher perfusion pressure to meet physiologic demands. In these fragile patients, maintaining the lowest blood pressure tolerated is reasonable.

**Life Extension** recommends frequent blood testing of kidney function biomarkers like BUN and creatinine when embarking on an aggressive blood pressure control program. Also, Life Extension strongly recommends that all people purchase a low-cost at-home blood pressure monitor so they can check themselves when trying new medications or nutrients.

Preliminary results of a subset of participants from a large clinical trial called **SPRINT** were presented at the Alzheimer's Association International Conference in July 2018. The findings showed that keeping tight control of blood pressure can reduce the risk of developing **mild cognitive impairment** by **19%**.<sup>1</sup>

Furthermore, maintaining a new lower systolic blood pressure target of less than **120 mmHg** can reduce risk of mild cognitive impairment plus probable dementia from any cause by **15%**.

These findings should come as no surprise to readers of *Life Extension Magazine*®.

Life Extension has long advocated for a **systolic** target of less than **120 mmHg**.<sup>2</sup>

**Systolic blood pressure** is the upper reading and is the most important to keep under control as it represents the force of **pressure** the arteries endure with each heartbeat.

Given the connections between **cardiovascular disease** and **mild cognitive impairment** and **dementia**, the new findings make the topic of blood pressure control even more compelling.<sup>3-6</sup>

This data makes it even more imperative that readers attempt to achieve optimal blood pressure control for the sake of their heart and their brain.

### Mainstream Medicine Wakes Up to Blood Pressure Risks

In 2015, a group of researchers published their findings on 9,361 older adults with systolic (top number) blood pressure of **130 mmHg** or higher, and who also had increased cardiovascular risk factors (but not diabetes).<sup>7</sup>

The name of this trial was **SPRINT** and it randomly assigned subjects to two protocols. The first was an intensive strategy aiming for a systolic goal of less than **120 mmHg**, versus the routine standard of care aiming for the then-standard goal of less than **140 mmHg**.<sup>7</sup>

Results from the **SPRINT** trial were so dramatic that the study was stopped early by a safety monitoring committee, which found it would be unethical to continue the random assignment because of the clear-cut benefits arising from adopting the goal of lower blood pressure (less than **120 mmHg**).<sup>8</sup>

Those benefits included a **25%** reduction in risk of first heart attack or other coronary artery problems, stroke, heart failure, or death from cardiovascular causes, and a significant **27%** reduction in risk of dying from any cause.<sup>8</sup>

Publication of **SPRINT's** findings led to a revision of the **American Heart Association's** guidelines for managing hypertension. Mainstream medicine was finally endorsing the blood pressure standards that **Life Extension**® had advocated for decades.<sup>2,9,10</sup>

## Impact of Blood Pressure on Cognition

The outcome measures in the original SPRINT trial purely focused on *cardiovascular* findings.

These are important but fail to capture the full scale of the destruction wrought by continuous pounding of vessels in hypertensive people, which have been known to increase the risk of dementia (e.g., Alzheimer's) and its precursor, mild cognitive impairment.<sup>11,12</sup>

Mild cognitive impairment increases the risk of progressing to Alzheimer's or other dementias, making it a finding that should concern anyone.<sup>13</sup>

For these reasons, researchers chose a subgroup of subjects from the SPRINT study to explore whether achieving the lower blood pressure target could also reduce the risk of mild cognitive impairment and/or dementia.

That subgroup study was called SPRINT MIND. It produced results as enlightening as the original SPRINT trial.



New cases of mild cognitive impairment were reduced by **19%** in the group with lower blood pressure.<sup>1</sup> And the *combined outcome* of **mild cognitive impairment** plus **probable dementia** from all causes was reduced by **15%** compared with those undergoing standard blood pressure management.

This is a tremendous validation of **Life Extension's** call for lower blood pressure targets and shows that stringent control can protect not only the heart but also the brain.

SPRINT MIND found other brain benefits for lower blood pressure.

## Lower Blood Pressure Slows Brain Lesions

The brains of people afflicted with dementia have impairments in the blood vessels that supply brain tissue. On an MRI scan, these impairments are visible as *white matter lesions* (or *white matter hyperintensities*, sometimes called *leukoaraiosis*).<sup>1,4</sup>

Studies have shown that white matter lesions predict stroke, dementia (both vascular dementia and Alzheimer's disease), and also increased risk of dying.<sup>1</sup> Hypertension is the main risk factor for developing white matter lesions.<sup>14</sup>

A portion of the SPRINT MIND participants had MRI scans of their brains to determine whether achieving the targeted lower blood pressure levels could also reduce these dangerous indicators of dementia and stroke risk.<sup>1</sup>

What this part of the study showed was that in the **standard treatment** group (less than **140 mmHg**), the total volume of white matter lesions increased by **0.92** cubic centimeters (cc), while in the intensive treatment group (less than

**120 mmHg**) that increase was held to just **0.28** cc. This means those in the **intensive treatment** (less than **120 mmHg**) group had a beneficial **3.25 times lower** volume of toxic **white matter lesions**.<sup>1</sup>

This research shows that the new, lower blood pressure target achieved by the intensive management group (under **120 mmHg**) in SPRINT MIND resulted in lower rates of **mild cognitive impairment** as well neurodegenerative factors like **white matter lesions** that can lead to **dementia** and **stroke**.<sup>1</sup>

## Summary

**Hypertension** has long been called the "silent killer." Despite strong evidence, mainstream medicine has only recently adopted a blood pressure target (less than **120 mmHg** systolic) similar to Life Extension's long-standing target recommendation of **115/75 mmHg**.

The change came after a giant study called SPRINT showed the cardiovascular risk reductions in those who target their blood pressure to the new lower standard.

More evidence now shows that most older adults should strive for an optimal target of less than **120 mmHg**. People who were able to attain this level were nearly **20%** less likely to develop mild cognitive impairment—which is a known risk factor for Alzheimer's and other dementias.

Cardiovascular disease and dementia are rampant in older populations. By aggressively managing blood pressure you can help prevent both. A combination of weight loss, prescription medications, and supplements is likely to produce the best results in those with higher than optimal blood pressure readings. ●

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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## Importance of At-Home Blood-Pressure Monitoring

Everyone who has been diagnosed with high blood pressure should have an **at-home monitor** in order to ensure that any intervention they are undertaking is working to help keep their blood-pressure readings around **115/75 mmHg** throughout the day.

Monitoring your blood pressure at home may help you better control it, possibly obviating the need to increase medication dosage.

In a randomized, controlled trial, 136 participants with uncontrolled high blood pressure were assigned to **at-home** blood-pressure monitoring or usual care. Their medication regimen was not modified.<sup>15</sup>

Those who regularly monitored their blood pressure **at home** saw significant reductions in systolic and diastolic blood pressure compared with those who did not self-monitor.

At the end of the two-month trial, **32.4%** of the self-monitoring (at-home) group had blood pressure of less than **130/80 mmHg**, while only **half** as many participants—**16.2%**—who did not self-monitor saw their blood pressure fall below this level.<sup>15</sup>

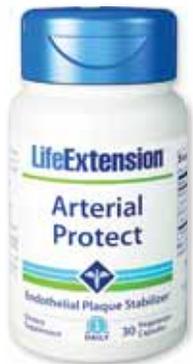
Several other studies have found similar benefits associated with at-home blood-pressure monitoring.<sup>16-19</sup>

Reliable blood pressure monitors are widely available in pharmacies without the need for a prescription.

You also have the option of ordering one from **Life Extension** by calling **1-800-544-4440** (24 hours). The price for an **AccuFit™ Plus Cuff Multi-User Blood Pressure Monitor** is only **\$49.99**. Item #70000.

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Its benefits are available in these three formulations:



**1**  
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**CAUTION:** Consult your healthcare provider before use of VenoFlow™ if taking medication (especially those affecting blood coagulation or blood pressure), being treated for a medical condition (especially bleeding disorders), under the age of 18, pregnant, or lactating.

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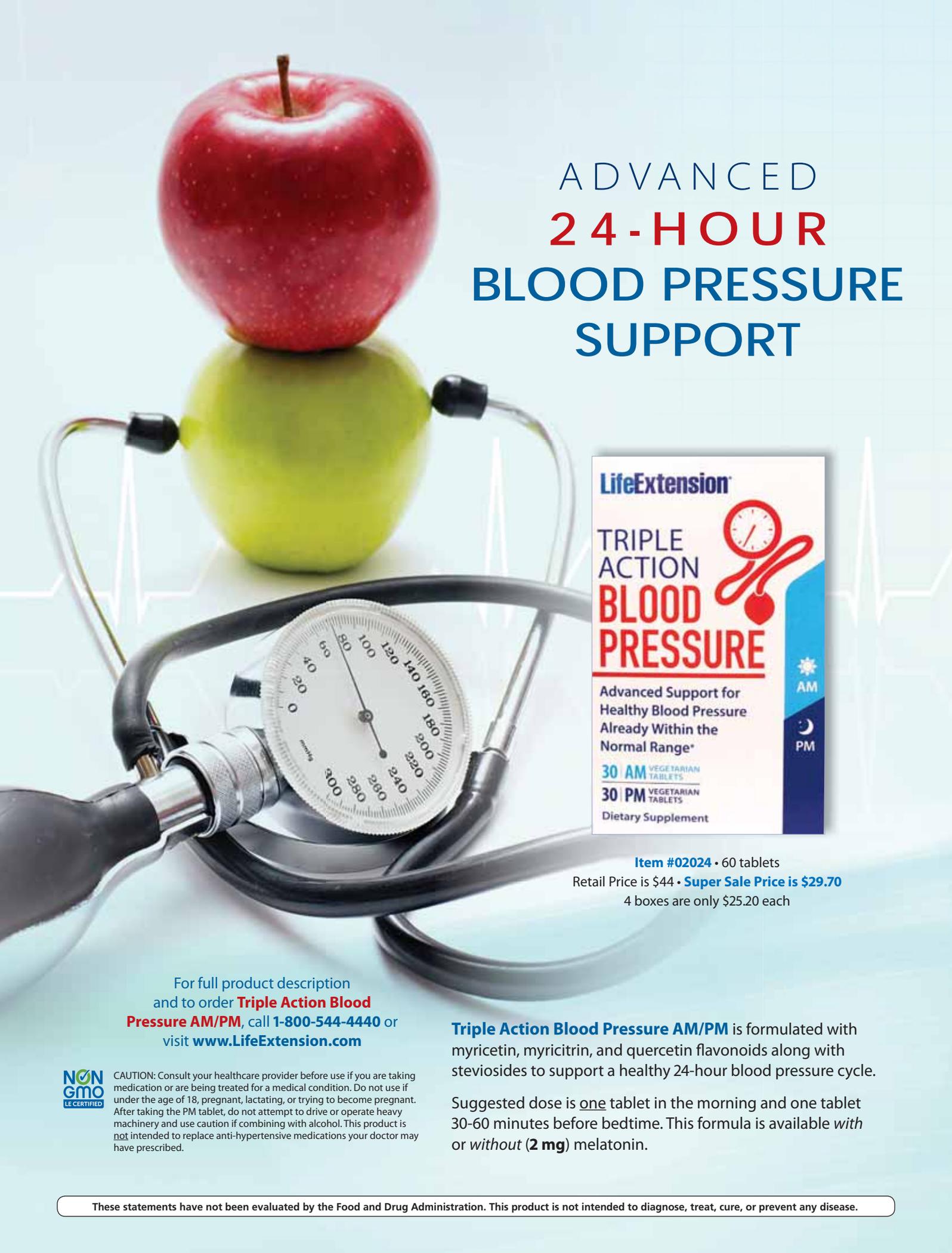
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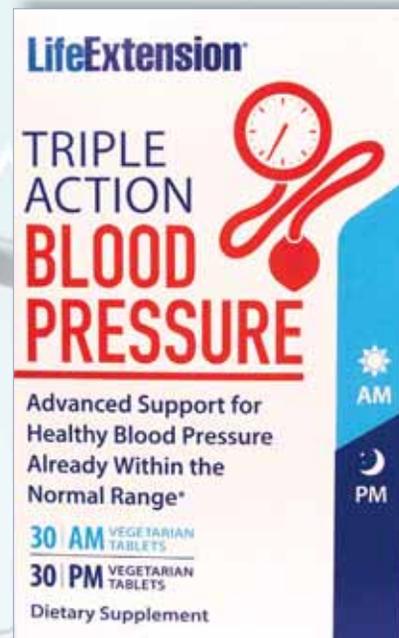
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CAUTION: Consult your healthcare provider before use if you are taking medication or are being treated for a medical condition. Do not use if under the age of 18, pregnant, lactating, or trying to become pregnant. After taking the PM tablet, do not attempt to drive or operate heavy machinery and use caution if combining with alcohol. This product is not intended to replace anti-hypertensive medications your doctor may have prescribed.

**Triple Action Blood Pressure AM/PM** is formulated with myricetin, myricitrin, and quercetin flavonoids along with steviosides to support a healthy 24-hour blood pressure cycle.

Suggested dose is one tablet in the morning and one tablet 30-60 minutes before bedtime. This formula is available *with* or *without* (**2 mg**) melatonin.

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

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**Milk thistle** extract—rich in *silymarin*—is a powerful weapon to support liver health. Scientific studies demonstrate silymarin's ability to provide potent protection for your liver.<sup>1,2</sup>

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### European Milk Thistle Item #01922 • 60 Softgels

	Retail Price	Super Sale Price
1 bottle	\$28	<b>\$18.90</b>
4 bottles		<b>\$16.88 each</b>



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For full product description and to order **European Milk Thistle**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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**Circadian Sleep** has been formulated to systemically **restore** the body's **circadian rhythm** and promote **healthy sleep**. It provides:

- **Nobiletin** (from young citrus fruit) to help support the circadian rhythms that reside inside every cell in the body.
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Take **Circadian Sleep** before bedtime for optimal results.

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An elderly man with a white beard and hair, wearing a blue athletic jacket, is leaning forward and smiling. Next to him, an elderly woman with short grey hair, wearing a teal athletic jacket, is also leaning forward and smiling. They appear to be in a park or outdoor setting with trees in the background. The text "Why People Supplement with B VITAMINS" is overlaid in white on the image.

# Why People Supplement with **B VITAMINS**



BY MICHAEL DOWNEY

B vitamins have numerous vital functions *throughout* the body.

They aid in the assembly of your genetic blueprint, keep your nervous system healthy, turn food into energy, and more.<sup>1-13</sup>

Maintaining healthy **B vitamin** levels helps protect against problems ranging from cardiovascular disease and neurodegenerative disorders to UV-induced skin damage and vision loss.

A **deficiency** in B vitamins is common for multiple reasons:<sup>14</sup>

- They are not stored by the body. B vitamins are water-soluble and are quickly washed out of the body.
- They are impacted by low dietary intake, poor absorption associated with age, taking certain medications, alcohol, and following certain diets.

These factors make daily supplementation with a **B-complex** essential for aging individuals.

In this article, you'll learn how **B vitamins** can reduce the odds of a variety of serious disorders.

### Cardiovascular Disease

Without sufficient amounts of the B vitamins folate, riboflavin (B2), B6, and B12, there is a buildup of the amino acid **homocysteine**.

B vitamins help convert homocysteine into an important protein building block. When there's a shortage of the four B vitamins mentioned above, that conversion process isn't as efficient, causing homocysteine levels to increase.<sup>15,16</sup>

Elevated homocysteine is associated with **cardiovascular disease**.<sup>17</sup> Studies indicate lower blood homocysteine will reduce risk of coronary heart disease up to **16%** and risk of stroke up to **24%**.<sup>18</sup>

Research shows that different B vitamins play an important role in balancing homocysteine, demonstrating the necessity of supplementing with all of them, for example:

- Both B2 (riboflavin) and folate must be present in ample amounts for *optimal* homocysteine-lowering.<sup>18,19</sup>
- Even people whose B2 and folate levels are restored by supplementation may not significantly lower homocysteine until vitamin B6 is added to the equation.<sup>20</sup>
- Patients with coronary artery disease have, on average, **34.2%** lower levels of the bioactive form of B6 (pyridoxal 5'-phosphate) compared to those without heart problems, which may relate to its role in lowering homocysteine.<sup>21-23</sup>

**Folic acid** and **vitamin B12** detoxify homocysteine via the "methylation"<sup>24</sup> pathway, whereas vitamin B6 detoxifies homocysteine via the "transsulfuration"<sup>25</sup> pathway.

Activated forms of these vitamins (such as **5-MTHF**, **methylcobalamin**, and **pyridoxal-5-phosphate**) provide direct maintenance of these two homocysteine-detoxification pathways.



## Brain Shrinkage

A deficiency of B vitamins can cause the brain to *shrink*.

Close associations have been found between low **folate** levels and severe gray-matter (brain) damage, as well as atrophy of the *hippocampus*,<sup>26</sup> a main memory-processing center in the brain.

Similarly, people with lower **vitamin B12** levels have been shown to have progressive brain atrophy, with rates of brain volume loss **517% greater than those with higher B12 levels**.<sup>15,27</sup>

## Depression

Taking a **B-complex** supplement for 60 days has been shown to improve depression and anxiety symptoms, compared to placebo.<sup>28</sup>

The active form of folate, **5-MTHF**, is especially beneficial against depression. It's been shown to boost the response rate of antidepressant drugs, and it can also help those drugs work more quickly.

In one study, only **7.04%** of subjects taking an antidepressant drug experienced major improvement on a standard depression score. But that number jumped to **18.5%** in patients taking 5-MTHF in addition to the drug.<sup>29</sup>

Even more impressive, those with the most *severe* depression improved by just **16.3%** when taking the drug by itself. But that number jumped to **40%** when they added 5-MTHF.<sup>29</sup>

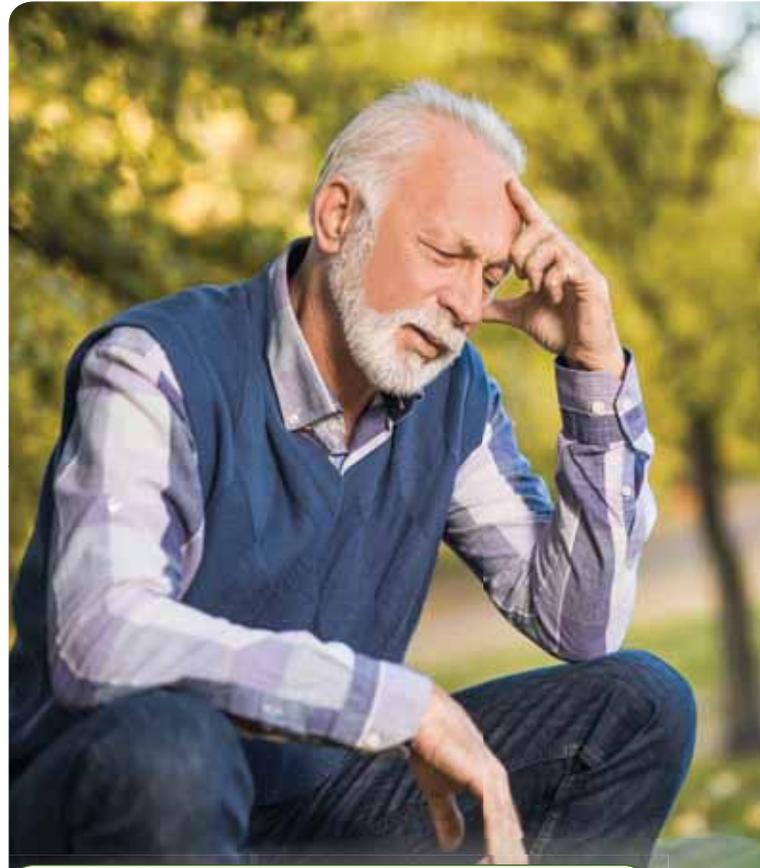
In addition, it took **150 days** for the severely depressed patients taking just the antidepressant drug to experience improvement. But adding in 5-MTHF cut the time almost in half, with the patients seeing improvements in just **85 days**.<sup>29</sup>

**Inositol** is often included in quality B-complex products despite not being a B vitamin. Inositol has a long history of reducing general anxiety, panic, and OCD (obsessive-compulsive disorder) symptoms.<sup>30</sup>

In one study, researchers found inositol to be just as effective as a popular antidepressant for panic disorders, and volunteers tolerated it well even at extremely massive doses up to **18 grams** a day.<sup>30</sup>

## Neurodegenerative Disorders

**Thiamine** (vitamin B1) is critical to healthy brain function.<sup>31</sup> A thiamine deficiency triggers a cascade of events that lead to oxidative stress and inflammation, which are major contributors to Alzheimer's, Parkinson's, and other dementia-producing disorders.<sup>32</sup>



## Are You Getting Enough B Vitamins?

- B vitamins have numerous functions in the body, including keeping your nervous system healthy, turning food into energy, protecting vision, and more.
- B vitamins also inhibit some diseases associated with aging, including cardiovascular disease and neurodegenerative disorders.
- B vitamins are not stored by the body, requiring daily replenishment.
- The need for B vitamins is more critical for specific individuals, such as older adults, those taking certain medications, or those following particular diets.
- At-risk individuals and all aging people can greatly benefit from a daily, high-quality, B-complex supplement.

What You Need to Know



### What the B Vitamins Do

B vitamins provide vital support for numerous fundamental and critical body functions:

- **B1 (thiamine)** helps convert food into energy, playing an essential role in metabolism.<sup>1</sup>
- **B2 (riboflavin)** helps convert nutrients into energy and provides antioxidant activity.<sup>2</sup>
- **B3 (niacin)** plays a role in DNA repair, cellular signaling, and metabolism.<sup>3</sup>
- **B5 (pantothenic acid)** helps produce hormones and converts food to energy.<sup>4</sup>
- **B6 (pyridoxine)** helps metabolize amino acids and produces neurotransmitters and red blood cells.<sup>5</sup>
- **B7 (biotin)** regulates gene expression and is required for metabolism of fat and carbohydrates.<sup>6</sup>
- **B9 (folic acid, or for superior absorption,<sup>7</sup> 5-MTHF)** is vital for cell growth, amino acid metabolism, production of red and white blood cells, healthy cell division, and proper fetal growth and development to reduce the risk of birth defects.<sup>8-11</sup>
- **B12 (cobalamin or methylcobalamin)** is important for neurological function, development of red blood cells, production of DNA, and promoting healthy homocysteine levels.<sup>12,13,48</sup> Methylcobalamin is the form of B12 that is biologically active in the brain.
- **Inositol** is not a B vitamin, but it is often added to higher quality B-complex supplements. Inositol is essential for calcium and insulin signal transduction.<sup>67,68</sup>

Researchers have used experimental thiamine deficiency for years to model many of these age-related brain diseases. And research shows that a deficiency in thiamine leads to many of the same brain abnormalities associated with those disorders.<sup>32</sup>

Finally, supplementation with **folate** has been shown to decrease blood levels of molecules involved in forming brain-damaging **beta-amyloid** plaques.<sup>33</sup> The presence of these plaque-forming molecules may predict early Alzheimer's disease or cognitive decline.<sup>33-36</sup>

### UV-Induced Skin Damage

A form of vitamin B3 called **nicotinamide** helps prevent skin damage caused by the sun's rays.

Ultraviolet rays cause the body to lose **ATP** (*adenosine triphosphate*), the cellular energy that the body needs to repair damaged DNA.<sup>37</sup> Nicotinamide helps prevent the loss of ATP.

Not surprisingly, studies also show that nicotinamide helps directly prevent UV-induced **DNA damage**.

In one study, researchers pretreated skin cells with nicotinamide and then exposed them to ultraviolet radiation. The nicotinamide removed and replaced damaged DNA and increased the number of cells undergoing DNA repair. It also reduced the production of damaging DNA photoproducts in cell cultures and in human skin.<sup>38</sup>

Nicotinamide has also been shown to protect against UV-induced **immune suppression**.<sup>39</sup>

Taken together, the two actions of repairing DNA and protecting immune suppression contribute to nicotinamide's ability to reduce the risk of **skin cancer**.<sup>40</sup>

### Vision Loss

An epidemiological study found that a deficiency of **folate** was associated with an **89%** higher risk of age-related **macular degeneration**, a leading cause of blindness. Deficiency of **vitamin B12** was associated with **2.56-fold** greater odds of developing the condition.<sup>41</sup>

Supplementation with vitamin B12 was associated with *reduced* odds of developing age-related macular degeneration.<sup>41</sup>

In a randomized, placebo-controlled trial, women who took folic acid, vitamin B6, and vitamin B12 for an average of 7.3 years had a **34%** reduced risk of **macular degeneration** compared to the placebo group. When scientists looked only at those cases of macular degeneration that were causing vision problems, the protection level with treatment rose to **41%**.<sup>42</sup>

These were impressive results, especially considering the levels of daily supplementation are readily obtainable: just **2,500 mcg** of folate, **50 mg** of B6, and **1,000 mcg** of B12.<sup>42</sup>

### Who Is at Risk?

Getting sufficiently high dosages of all B vitamins daily not only ensures an adequate supply to meet the body's vital needs, but also enhances protection against an array of diseases.

The problem is that many older adults are deficient in their Bs for multiple reasons.

First, unlike *fat-soluble* vitamins that are stored by the body (such as vitamins K and D), the *water-soluble B vitamins* must be resupplied daily.

Additionally, some circumstances either boost the body's demand for B vitamins or greatly inhibit vitamin B absorption, making supplementation necessary.

The following information highlights those individuals with the greatest risk of a deficiency. For these individuals, the need for a daily, *high-potency* B-complex supplement can be much more critical.



### Older adults

Deficiencies in vitamins B6, folate, and B12 are common in the elderly.<sup>43-46</sup>

Many older adults experience a decline in their appetite, reducing their overall dietary intake of *all* B vitamins.

Even when they do consume B vitamins, older individuals may be unable to *absorb* naturally occurring vitamin B12. That's because adequate stomach acid is required for B12 to be released from food, and many aging adults do not produce enough stomach acid.<sup>47</sup>

Deficiencies of B12 are associated with a host of symptoms, including sore tongue, depression, weakness, digestive disturbances, cognitive problems, and tingling in the limbs.<sup>47,48</sup>

### Those Who Take Certain Medications

Commonly prescribed drugs that reduce stomach acid production (called proton pump inhibitors) decrease absorption of vitamin B12.<sup>49</sup>

Metformin, the popular diabetes drug, is known to interfere with the absorption of vitamin B12.<sup>50,51</sup>

Birth control pills can deplete vitamins B2, B6, folic acid, and B12.<sup>52</sup>

### Pregnant or Breastfeeding Women

B vitamins, especially vitamin B12, are important for healthy fetal development. A deficiency in either vitamin B12 or folate in breast-feeding or pregnant women can result in severe neurological damage or birth defects in the infant or fetus.<sup>53,54</sup>

### Patients with Certain Medical Conditions

People suffering from alcoholism, hypothyroidism, anorexia, celiac disease, and Crohn's disease have a much greater risk of developing a deficiency in B vitamins.<sup>55-59</sup>

Also, a certain genetic mutation (called **MTHFR**) can affect how the body metabolizes folate, leading to a folate deficiency.<sup>60</sup> This mutation can also cause elevated levels of serum homocysteine,<sup>60</sup> which vitamin B supplementation can help prevent.<sup>61</sup>

Weight-loss surgery also increases the risk of a deficiency in B vitamins.<sup>62</sup>

## Vegetarians and Vegans

Because they avoid meat and animal products, vegans and strict vegetarians may be at risk of a B12 deficiency unless they take a supplement.<sup>63</sup>

This deficiency can lead to digestive disturbances, anemia and blood disorders, and fatigue, but it principally affects the peripheral nerves. In later stages, it may target the spinal cord.<sup>48,64,65</sup>

Impaired mental function is the usual result, often manifesting as slower thinking, attention deficits, and memory lapses.<sup>65</sup>

## Those Who Consume Alcohol

In those who abuse alcohol, thiamine (B1) deficiency occurs in up to **80%** of cases and is a key mechanism for the brain-damaging effects of chronic alcohol intake. The reasons for thiamine deficiency in alcoholics have been theorized to include:<sup>66</sup>

- Inadequate nutrition (as a result of alcohol replacing a quality diet),
- Decreased thiamine absorption from the gastrointestinal tract and reduced cell uptake, and
- Impaired utilization of thiamine within the cells.



## Summary

B vitamins are required for critical body functions.

The body does not store B vitamins, and some circumstances, such as older age, significantly boost the body's demand for B vitamins.

These factors make daily supplementation with **B-complex vitamins** an important component of a comprehensive wellness program. ●

**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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\* *Br J Pharmacol.* 2004 Mar;141(5):825-30.



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**Garbanzo beans** are a bountiful source of basic nutrients, including protein, fiber, iron, and various minerals.<sup>2</sup>

## Weight Management

In human studies, garbanzo beans support healthy weight control and weight loss, even without caloric restriction.<sup>3,4</sup> Part of this effect may be because garbanzo beans encourage the feeling of fullness after a meal, along with beneficial effects on metabolism. In addition, they even help reduce calorie intake in the *next* meal.

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**Metabolic syndrome** and **diabetes** are common disorders characterized by insulin resistance and elevated blood glucose.

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## Digestive System Support & Cancer Prevention

Garbanzo beans contain a significant amount of indigestible **resistant starch** and **oligosaccharides** that work in tandem to restore a healthy and balanced gut microbiome.<sup>6</sup>

Since resistant starch and oligosaccharides in garbanzo beans cannot be digested in the gastrointestinal tract, good gut bacteria feeds on them to produce beneficial **short-chain fatty acids** such as propionate and butyrate.<sup>7</sup> This might explain the results of a study in which mice supplemented with garbanzo bean flour had a **64%** reduction in the number of aberrant crypt foci—precursors to colon cancer.<sup>8</sup>

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# Anti-Aging Exercise Takes GRIT

BY GARY GREENBERG

Maybe someday scientists will come up with a pill that replaces exercise. It would be the best supplement yet, one that increases blood flow, burns fat, builds lean muscle mass, strengthens bones, releases hormones to improve mood and lower stress, detoxifies the body, aids sleep and sex, promotes healthy aging, and boosts longevity.

But that day isn't here yet, and until it arrives, people simply need to get some exercise. And that's where a gym like Alex Osuna comes in.

"Nutritionists like to say that you can't exercise your way out of a bad diet," notes Osuna, who is the managing partner of GRIT Miami, an expansive new workout facility in Florida's southernmost metropolis. "That's true, but so too is the reverse: You can't eat your way out of getting no exercise."

Osuna and partners opened GRIT in early 2018. It's not your father's gym, but rather a clean, airy, well-lit facility with plenty of room to do workouts similar to CrossFit. Its main gym is a cavernous 9,000 square feet and well-equipped with the tools of the trade: free weights, barbells, kettle balls, medicine balls, battle ropes, pull-up bars, rowing machines, air bikes, plyo (jump) boxes, gymnastic rings, and push sleds.



ALEX OSUNA

Although GRIT is not affiliated with CrossFit, it utilizes several elements of the revolutionary workout regimen that originated in California in the late 1990s and has since evolved into its own sport.

“GRIT is a hybrid type of training,” explains Osuna, 35. “We combine Olympic (weightlifting) movements with gymnastic movements and mono-structural movements (such as running, biking and rowing) to create a great overall workout.”

It’s a holistic, natural form of exercise.

“We don’t have a lot of machines here,” continues Osuna. “Machines may allow you to isolate a particular muscle group for growth and definition, but they also restrict motion. Motion is lotion. When you move, blood flows to cells to replenish them. That’s why exercise is so important for longevity.

“You don’t want to inhibit motion. Our ancestors weren’t sitting around repeatedly lifting rocks over their heads. They were running, jumping, climbing, and hauling around carcasses on their shoulders and backs, walking up and down hills, building up core strength.”

And what was good for cave-men is good for us. Numerous studies have shown that regular exercise translates into robust health and increased longevity. In one of the largest, researchers at Harvard University, the National Cancer Institute and other institutions scrutinized data from six separate surveys of exercise habits—encompassing some 661,000 mostly middle aged people—and compared them to death records for the group over 14 years.

The researchers found that even a little bit of moderate exercise, less than the recommended 150 minutes a week, lowered the



risk of death by **20%** over those who didn’t exercise at all. Subjects who met the recommendations were **31%** less likely to die. And those who surpassed 450 minutes of moderate exercise a week were **39%** less likely to be pushing daisies than their sedentary counterparts 14 years later. Benefits beyond 450 minutes of exercise a week flattened out.<sup>1</sup>

So moderate exercise can have a dramatic impact on mortality risk. And it may be amplified when the exercise hits all three metabolic energy systems: phosphagen, glycolytic and oxidative.<sup>2</sup>

The phosphagen system is tapped during sudden outbursts of energy that burn the small amount of the biological fuel adenosine triphosphate (ATP) stored in muscles. It supplies explosive energy but only lasts for a few seconds.<sup>2</sup> A 40-yard sprint or single powerlift would be good examples.<sup>2</sup>

The glycolytic system kicks in when the stored ATP is exhausted. It quickly converts glucose into ATP

and lasts up to a minute before flaming out.<sup>2</sup> Examples include a 200-meter sprint or weightlifting set.

The oxidative system is the long, slow burn of glucose and fat, and the only one of the three that requires oxygen.<sup>2</sup> Aerobic exercises such as jogging and moderately paced biking and swimming are all examples.

GRIT workouts are designed to engage all three metabolic energy systems. And switching between them during a session, a form of high intensity interval training (HIIT), has a dramatic effect on the body.

“Combining aerobic and resistance exercises at varying intensities does the most for overall fitness,” says Osuna. “You push yourself aerobically to improve cardiovascular health while the resistance exercises increase muscle and bone strength.”

The science supports those claims, and more. In a landmark study published in the journal *Cell Metabolism* in 2017, researchers at

the Mayo Clinic found that HIIT training appeared to slow down aging at a cellular level. After examining muscle cells of the exercising subjects and a sedentary control group, the scientists concluded that HIIT seemed to reverse age-related deterioration of mitochondria, the tiny organelles that power cells.<sup>3</sup> Mitochondrial dysfunction is a key marker of cellular aging and one reason why elderly people tend to feel tired a lot. The researchers also believe that the positive changes they observed in muscle cells are likely mirrored in the cells of other types of tissue.<sup>4</sup>

“Based on everything we know, there’s no substitute for these exercise programs when it comes to delaying the aging process,” senior author Dr. Sreekumaran Nair (MD) declared in a statement. “These things we are seeing cannot be done by any medicine.”<sup>4</sup>

So, in a way, the Fountain of Youth springs from sweat. But when pushing the body to those limits, it’s important to have a training coach who recognizes weaknesses that can lead to injury. Osuna started coaching at the gyms of his uncle Mike Osuna—one of Miami’s first CrossFit proponents—and later managed his relative’s largest facility before striking out on his own.

“One of the first things we look at in a new member is mobility, specifically flexibility and range of motion,” says Osuna, who earned a Bachelor of Science at the University of Miami, “We can see where you may have an impingement that can throw your whole system out of balance. And we devise workouts that can improve mobility and stress the body in a way that isn’t dangerous.

“Everybody is different, with different strengths and weaknesses as well as different needs and goals.

So you can’t expect everyone to get a good result doing a cookie-cutter workout.”

Even though GRIT workouts are generally done in groups, they are still individualized. People who may not be able to do regular pull-ups due to a shoulder or weight problem can instead use the low-hanging rings, where their feet touch the ground and adjusting the angle of their bodies to the floor can scale the difficulty of the pull-ups. Or, instead of running sprints, someone with achy knees can do sprints on an air bike or rowing machine.

Osuna, whose fiancée owns a physical therapy business, also incorporates elastic bands and rehab techniques.

“Physical therapy is normally used to recover from an injury, but we use it in a preventative way,” says Osuna. “Why wait until you get hurt? Why not use these tools to prevent an injury?”

Adaptability and variety are two hallmarks of the GRIT workout. Members do something different every time they walk into the gym. One day they may use unevenly weighted slam balls, and the next time swing thick, heavy battle ropes. Osuna and his team of trainers vary the equipment, order of exercises, speed and number of reps, and other factors to help prevent members from falling into the rut of monotony.

“People like coming in here not knowing what to expect,” he says. “It keeps them from suffering burn-out.”

Although Osuna doesn’t focus on supplements as part of the GRIT program, he takes a few himself, including whey protein and creatine monohydrate. When training intensely, he uses beta-alanine to aid endurance. For general health, he takes turmeric for its anti-inflammatory properties and fish oil for its healthy fats.



GRIT workouts can benefit people of all ages, and its clientele ranges from pre-teens to mid-70s. Osuna explains that if people can optimize their fitness during their peak years, between the ages of 25 and 40, the decline that naturally comes with age will be delayed and take a gentler slope.

“If I see an older person who’s willing to come in here and try something new, I get excited,” he says. “You can teach old dogs new tricks, if they’re willing to learn. And I love it when young people come in, because I know GRIT will have a lasting effect on their lives.”

Osuna also prides himself in creating a sense of community, both among GRIT members and trainers. In fact, he rents out three exercise stations on a permanent basis to personal trainers who are in business for themselves.

“At one point, I was a personal trainer going from one client’s home to another, and it wasn’t very efficient in Miami traffic,” he says. “Here, independent trainers can run their own business in a stable environment, where people come to them.”

GRIT provides individual personal training for members who want it, but the main focus is on groups, which promote camaraderie. Members support and encourage each other during workouts and even socialize together. And guess what? That kind of social interaction can also increase longevity.

The ongoing Harvard Study of Adult Development initially involved some 700 men who have been followed since they were teenagers in 1938. Last year, about 60 were still alive. And researchers who analyzed data ranging from brain scans and blood tests

to personal interviews, concluded that social connections appear to be good for health.<sup>5</sup>

“People who are more socially connected to family, to friends, to community, are happier, they’re physically healthier and they live longer than people who are less well connected,” said the study’s current director, psychiatrist Dr. Robert Waldinger.<sup>6</sup>

GRIT has an area set aside for socializing, and the day Life Extension® was there, one member popped a bottle of bubbly after her group workout to celebrate a milestone in her battle against breast cancer.

“Those types of connections are very important in not only motivating people to perform their best during workouts but also in bringing a positive attitude into someone’s life, whether they’re dealing with things like cancer, depression, self-esteem issues or other problems,” says Osuna.

In the end, it’s really all about attitude, hence the name of the gym.

“It takes some grit to challenge yourself to be the best you can be,” says Osuna. “Everybody has grit, and you find it by getting outside of your comfort zone and pushing yourself to the limit. When you find that grit inside of yourself, you can use it in other areas of your life. It gives you the confidence to walk into a room with a stranger for a job interview, or to make a sale, or to just do whatever it takes to achieve your goals.” ●

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Prior to the co-founding of GRIT, Alex Osuna was an educator, coached a variety of team sports, and provided private training. Visit GRIT at [www.gritmiami.com](http://www.gritmiami.com).

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**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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<p><b>FEMALE LIFE EXTENSION PANEL (LC322535)</b>  <b>CBC/Chemistry Profile</b> • DHEA-S • Estradiol • Homocysteine C-Reactive Protein (high-sensitivity) • Progesterone • Free Testosterone Total Testosterone • TSH for thyroid function • Apolipoprotein B (ApoB) Vitamin D (25-hydroxyvitamin D) • Hemoglobin A1c</p>	<b>\$269</b>	<p><b>SIBO HOME BREATH KIT (LACTULOSE) (LC100063) **</b>            SIBO stands for small intestinal bacterial overgrowth. Research shows that up to 70% or more of those diagnosed with IBS have SIBO.</p>	<b>\$249</b>
<p><b>FEMALE ELITE PANEL (LC100017)*</b>  <b>CBC/Chemistry Profile</b> • Free and total Testosterone • Total Estrogens Estradiol • Estrone • DHEA-S • Progesterone Pregnenolone • Apolipoprotein B (ApoB) DHT • FSH • LH • TSH • Free T3 • Free T4 • Reverse T3 • IGF-1 • SHBG • HbA1c Vitamin D 25-OH • hs-CRP • Ferritin • Homocysteine • Hemoglobin A1c</p>	<b>\$575</b>	<p><b>COMPREHENSIVE THYROID PANEL (LC100018)</b>            TSH, Total T4, Free T4, Free T3, Reverse T3, Thyroglobulin Antibody (ATA), Thyroid Peroxidase Antibody (TPO)</p>	<b>\$199</b>
<p><b>FEMALE COMPREHENSIVE HORMONE PANEL (LC100011)*</b>  <b>CBC/Chemistry Profile</b> • DHEA-S, Estradiol • Total Estrogens Progesterone • Pregnenolone • Total and Free Testosterone • SHBG TSH • Free T3  <b>This panel now includes Free T4 and Cortisol with no increase in price!</b></p>	<b>\$299</b>	<p><b>THYROID PANEL WITH REVERSE T3 (LC100044)</b>            TSH, Total T4, Free T4, Free T3, Reverse T3</p>	<b>\$120</b>
<p><b>FEMALE BASIC HORMONE PANEL (LC100013)</b>            DHEA-S • Estradiol • Total and Free Testosterone • Progesterone</p>	<b>\$75</b>	<p><b>OMEGA-3 INDEX COMPLETE ** (LC100066)</b>            Beneficial for everyone taking omega-3/fish oil! You want to target a range of 8%-12% for optimal health.</p>	<b>\$99</b>

**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.**



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

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

\* 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.

**Active Lifestyle & Fitness**

Creatine Capsules  
 Super Carnosine  
 Tart Cherry with CherryPURE®  
 Wellness Bar—Chocolate Brownie  
 Wellness Bar—Cookie Dough  
 Wellness Code™ Advanced Whey Protein Isolate Vanilla  
 Wellness Code™ Muscle Strength & Restore Formula  
 Wellness Code™ Plant Protein Complete & Amino Acid Complex  
 Wellness Code™ Whey Protein Concentrate Chocolate  
 Wellness Code™ Whey Protein Concentrate Vanilla  
 Wellness Code™ Whey Protein Isolate Chocolate  
 Wellness Code™ Whey Protein Isolate Vanilla  
 Wellness Shake—Chocolate  
 Wellness Shake—Vanilla

**Amino Acids**

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

**Blood Pressure & Vascular Support**

Advanced Olive Leaf Vascular Support with Celery Seed Extract  
 Arterial Protect  
 Blood Pressure Monitor Arm Cuff  
 Endothelial Defense™ Pomegranate Complete  
 Endothelial Defense™ with GliSODin®  
 NitroVasc™  
 Optimal BP Management  
 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™  
 Cognitex® Basics  
 Cognitex® Elite  
 Cognitex® Elite Pregnenolone  
 Cognizin® CDP-Choline Caps  
 DMAE Bitartrate (dimethylaminoethanol)  
 Dopa-Mind™  
 Focus Tea™  
 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**

Digest RC®  
 Effervescent Vitamin C - Magnesium Crystals  
 Enhanced Super Digestive Enzymes  
 Enhanced Super Digestive Enzymes W/Probiotics  
 EsophaCool™  
 Esophageal Guardian  
 Extraordinary Enzymes  
 Gastro-Ease™  
 Ginger Force®  
 Regimint  
 Tranquil Tract™  
 TruFiber™

**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  
 Eye Pressure Support with Mirtogenol®  
 MacuGuard® Ocular Support with Saffron  
 MacuGuard® Ocular Support with Saffron & Astaxanthin  
 Standardized European Bilberry Extract  
 Tear Support with MaquiBright®

**Fish Oil & Omegas**

OMEGA FOUNDATIONS® Clearly EPA/DHA  
 OMEGA FOUNDATIONS® Mega EPA/DHA  
 OMEGA FOUNDATIONS® Mega GLA with Sesame Lignans  
 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 Crystals  
 Kenyan Purple Tea Crystals  
 Rainforest Blend Decaf Ground Coffee  
 Rainforest Blend Ground Coffee  
 Rainforest Blend Whole Bean Coffee  
 Stevia Sweetener

**Glucose Management**

CinSulin® with InSea<sup>2c</sup> and Crominex® 3+  
 CoffeeGenic® Green Coffee Extract  
 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  $\alpha$ -Limonene  
 TMG Liquid Capsules  
 TMG Powder

**Hormone Balance**

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

**Immune Support**

AHCC®  
 Bio-Quercetin  
 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 Quercetin  
 Optimized Garlic  
 Optimized Quercetin  
 Peony Immune  
 ProBoost Thymic Protein A  
 Reishi Extract Mushroom Complex  
 Standardized *Cistanche*  
 Ten Mushroom Formula®  
 Ultra Soy Extract  
 Zinc Lozenges

**Inflammation Management**

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

**Joint Support**

Arthro-Immune Joint Support  
 ArthroMax® Advanced NT2 Collagen™ & AprèsFlex®  
 ArthroMax® with Theaflavins & AprèsFlex®  
 ArthroMax® Elite  
 Fast-Acting Joint Formula  
 Glucosamine/Chondroitin Capsules  
 Krill Healthy Joint Formula  
 MSM (Methylsulfonylemethane)  
 NT2 Collagen™

**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 HepatoProtection Complex  
 Calcium D-Glucarate  
 Chlorella  
 Chlorophyllin  
 European Milk Thistle  
 Glutathione, Cysteine & C  
 HepatoPro  
 Liver Efficiency Formula  
 N-Acetyl-L-Cysteine  
 PectaSol-C®  
 Silymarin

## Longevity & Wellness

Alpha-Lipoic Acid  
AppleWise Polyphenol Extract  
Blueberry Extract  
Blueberry Extract with Pomegranate  
DNA Protection Formula  
GEROPROTECT® Ageless Cell™  
GEROPROTECT® Longevity A.I.™  
Grapeseed Extract  
Mediterranean Whole Food Blend  
Mega Green Tea Extract (decaffeinated)  
Mega Green Tea Extract (lightly caffeinated)  
Optimized Fucoidan with Maritech® 926  
Optimized Resveratrol  
Pycnogenol® French Maritime  
Pine Bark Extract  
Resveratrol  
RNA (Ribonucleic Acid)  
Senolytic Activator  
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  
Super Selenium Complex  
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

## Nerve & Comfort Support

ComfortMAX™

## 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®  
Life Extension Toothpaste  
Venotone  
Xylivwhite 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

Adult Blemish Lotion  
Advanced Peptide Anti-Oxidant Serum  
Advanced Growth Factor Serum  
Advanced Hyaluronic Acid Serum  
Advanced Lightening Cream  
Advanced Peptide Hand Therapy  
Advanced Triple Peptide Serum  
Advanced Under Eye Serum with Stem Cells  
All-Purpose Soothing Relief Cream  
Amber Self MicroDermAbrasion  
Anti-Aging Face Oil  
Anti-Aging Mask  
Anti-Aging Rejuvenating Face Cream  
Anti-Aging Rejuvenating Scalp Serum  
Anti-Oxidant Serum with  
Blueberry & Pomegranate Extracts  
Anti-Oxidant Facial Mist Hydrator  
Collagen Boosting Peptide Serum  
Cucumber Hydra Peptide Eye Cream  
DNA Support Cream  
Environmental Support Serum  
Essential Plant Lipids Serum  
Eye Lift Cream  
Face Rejuvenating Anti-Oxidant 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  
Renewing Eye Cream  
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 Ceramides  
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 Rejuvenex®  
Ultra RejuveNight®  
Ultra Wrinkle Relaxer  
Under Eye Refining Serum

Under Eye Rescue Cream  
Vitamin C Lip Rejuvenator  
Vitamin C Serum  
Vitamin D Lotion  
Vitamin K Cream  
Youth Serum

## Sleep

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

## Vitamins

Ascorbyl Palmitate  
Benfotiamine with Thiamine  
Beta-Carotene  
BioActive Complete B-Complex  
Biotin  
Buffered Vitamin C Powder  
Fast-C® with Bio-Quercetin Phytosome  
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 B6  
Vitamin B12  
Vitamin C and Bio-Quercetin Phytosome  
Vitamin D3  
Vitamin D3 with Sea-Iodine™  
Vitamins D and K with Sea-Iodine™

## Weight Management & Body Composition

2:5 Foundational Support  
2:5 LE Plan Chocolate  
2:5 LE Plan Combo  
2:5 LE Plan Vanilla  
7-Keto® DHEA Metabolite  
Advanced Anti-Adipocyte Formula  
Advanced Appetite Suppress  
AMPK Metabolic Activator  
CalReduce Selective Fat Binder  
DHEA Complete  
Garcinia HCA  
HCAActive 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™  
Wellness™ Code Appetite Control

## Women's Health

Enhanced Sex for Women 50+  
Breast Health Formula  
Femmenessence MacaPause®  
Estrogen for Women  
Menopause 731™  
Progesta-Care®  
Super-Absorbable Soy Isoflavones

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

**TO ORDER CALL: 1.954.766.8433 or 1.800.544.4440 ■ TO ORDER ONLINE VISIT: [www.LifeExtension.com](http://www.LifeExtension.com)**

ITEM No.	PRODUCT	YOUR PRICE			QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each		
25SUPPORT	2:5 FOUNDATIONAL SUPPORT	324.00	195.99			
***25CHOC	2:5 LE PLAN CHOCOLATE	504.00	299.99			
***25COMBO	2:5 LE PLAN COMBO	504.00	299.99			
***25VAN	2:5 LE PLAN VANILLA	504.00	299.99			
<b>A</b>						
01524	ACETYL-L-CARNITINE • 500 mg, 100 veg. caps	32.00	24.00	22.00		
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	61.98	46.49			
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		
02240	ANTI-ALCOHOL HEPATOPROTECTION COMPLEX • 60 veg. 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 & APRÈSFLEX® 120 veg. caps	44.00	33.00	30.00		
02238	ARTHROMAX® ADVANCED NT2 COLLAGEN™ & APRÈSFLEX® 60 veg. caps	34.00	25.50	22.00		
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		
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 (BioActive 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		
00664	BETA-CAROTENE • 25,000 IU, 100 softgels	11.75	8.81			
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		
**01006	BIOSIL™ • 5 mg, 30 veg. caps	19.99	15.99			
**01007	BIOSIL™ • 1 fl oz	31.99	25.59			
<b>SUBTOTAL OF COLUMN 1</b>						

ITEM No.	PRODUCT	YOUR PRICE			QTY	Total
		Retail Each \$	1 Unit Each	4 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			
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		
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/INSEA2® AND CROMINEX® 3+ • 90 veg. caps	38.00	28.50	25.50		
02300	CIRCADIAN SLEEP • 30 liquid veg. caps	28.00	21.00	19.00		
01906	CISTANCHE (Standardized) • 30 veg. caps	20.00	15.00	12.00		
00818	CLA BLEND W/SESAME LIGNANS (Super) • 120 softgels	36.00	27.00	24.75	19.75	
<b>SUBTOTAL OF COLUMN 2</b>						

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

**TO ORDER CALL: 1.954.766.8433 or 1.800.544.4440 ■ TO ORDER ONLINE VISIT: [www.LifeExtension.com](http://www.LifeExtension.com)**

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
01620	COFFEEGENIC® GREEN COFFEE EXTRACT • 400 mg, 90 veg. caps	32.00	24.00	21.00			
02321	COGNITEX® BASICS • 30 softgels	32.00	24.00	22.00			
02396	COGNITEX® ELITE • 60 tablets	56.00	42.00	38.00			
02397	COGNITEX® ELITE PREGNENOLONE • 60 tablets	58.00	43.50	40.00			
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			
02398	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		
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	17.00	12.75	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			
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			
<b>COSMESIS</b>							
80105	ADULT BLEMISH LOTION • 1 fl. oz	74.50	55.88	49.17			
80157	ADVANCED PEPTIDE ANTI-OXIDANT SERUM • 1 fl. oz	53.00	39.75	34.50			
80165	ADVANCED GROWTH FACTOR SERUM • 1 fl. oz	65.00	48.75	42.75			
80170	ADVANCED HYALURONIC ACID SERUM • 1 fl. oz	45.00	33.75	29.25			
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			
80137	ALL-PURPOSE SOOTHING RELIEF • 1 oz	53.00	39.75	34.07			
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			
80134	ANTI-OXIDANT SERUM W/BLUEBERRY & POMEGRANATE EXTRACTS • 1 fl. oz	33.00	24.75	23.51			
80133	ANTI-OXIDANT FACIAL MIST HYDRATOR • 2 fl. oz	32.00	24.00	22.80			
<b>SUBTOTAL OF COLUMN 3</b>							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
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 SUPPORT 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 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 ANTI-OXIDANT CREAM • 2 oz	69.50	52.13	45.87			
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 ANTI-OXIDANT 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 ANTI-OXIDANT 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	53.00	39.75	34.50			
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	59.00	44.25	39.00			
80101	ULTRA WRINKLE RELAXER • 1 fl. 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			
80171	VITAMIN C LIP REJUVENATOR • 0.5 fl. oz	24.00	18.00	15.60			
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			
80102	VITAMIN K CREAM • 1 oz	79.50	59.63	52.47			
80149	YOUTH SERUM • 1 fl. oz	65.00	48.75	42.75			
<b>D</b>							
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			
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			
01478	DHEA COMPLETE • 60 veg. caps	48.00	36.00	32.40			
30747	DIGEST RC® • 30 caps	19.95	14.96				
<b>SUBTOTAL OF COLUMN 4</b>							

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

FEBRUARY 2019

**SUPER SALE SAVINGS ON ALL PRODUCTS**

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

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ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
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	17.00	12.75	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>							
02097	ENDOTHELIAL DEFENSE™ POMEGRANATE COMPLETE • 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			
01937	EPA/DHA (Mega) • 120 softgels	20.00	15.00	13.50			
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			
02229	FAST-C® W/BIO-QUERCETIN PHYTOSOME • 60 veg. tabs	26.00	19.50	18.00			
01064	FEMMENESSENCE MACAPAUSE® • 120 veg. caps	34.99	26.24				
01825	FLORASSIST® BALANCE • 30 liquid veg. caps	32.00	24.00	21.00			
02125	FLORASSIST® GI W/PHASE 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			
02000	FLORASSIST® MOOD • 60 caps	33.00	24.75	22.50			
02208	FLORASSIST® NASAL • 30 veg. caps	36.00	27.00	24.00			
02120	FLORASSIST® ORAL HYGIENE • 30 lozenges	20.00	15.00	13.00			
02203	FLORASSIST® PREBIOTIC • Strawberry flavor, 60 chewable tabs	20.00	15.00	13.00			
01920	FLORASSIST® THROAT HEALTH • 30 lozenges	20.00	15.00	13.50			
02212	FOCUS TEA™ • Spearmint flavor, 14 stick packs	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			
<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			
<b>SUBTOTAL OF COLUMN 5</b>							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
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			
02218	GLA WITH SESAME LIGNANS (Mega) • 30 softgels	22.00	16.50	15.00			
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			
02211	GRAPE SEED EXTRACT 100 mg, 60 veg. caps	35.00	26.25	23.00			
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				
02222	HAIR, SKIN & NAILS REJUVENATION FORM W/VERISOL® 120 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	38.00	28.50	26.50			
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			
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	28.55	21.41				
00789	KYOLIC® RESERVE • 600 mg, 120 caps	30.15	22.61				
01681	LACTOFERRIN • 60 caps	45.00	33.75	30.50			
00020	LECITHIN • 16 oz granules	19.00	14.25	12.50			
<b>SUBTOTAL OF COLUMN 6</b>							

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ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
02355	LIFE EXTENSION MIX™ • 240 tablets	74.00	55.50	48.00	42.00		
02357	LIFE EXTENSION MIX™ W/EXTRA NIACIN • 240 tablets	74.00	55.50	48.00	42.00		
02354	LIFE EXTENSION MIX™ • 360 caps	78.00	58.50	50.00	44.00		
02356	LIFE EXTENSION MIX™ POWDER • 12.70 oz	80.00	60.00	54.00	50.00		
02365	LIFE EXTENSION MIX™ W/O COPPER • 240 tablets	74.00	55.50	48.00	42.00		
02364	LIFE EXTENSION MIX™ W/O COPPER • 360 caps	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/APRÈSFLEX® • 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			
02234	MELATONIN (Fast-Acting Liquid) • 2 fl. oz (Citrus-Vanilla)	12.00	9.00	8.25			
02201	MELATONIN IR/XR • 60 caps	12.00	9.00	7.50			
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			
02204	MENOPAUSE 731™ • 30 tablets	36.00	27.00	24.00			
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			
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 (Methylsulfonylethane) • 1,000 mg, 100 caps	14.00	10.50	8.96			
02221	MUSCLE STRENGTH & RESTORE FORMULA • 94.2 grams powder	36.00	27.00	24.00			

**SUBTOTAL OF COLUMN 7**

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
<b>N</b>							
01534	N-ACETYL-L-CYSTEINE • 600 mg, 60 veg. caps	14.00	10.50	9.25			
01904	NAD+ CELL REGENERATOR™ NICOTINAMIDE RIBOSIDE 100 mg, 30 veg. caps	24.00	call for pricing				
02144	NAD+ CELL REGENERATOR™ NICOTINAMIDE RIBOSIDE 250 mg, 30 veg. caps	48.00	call for pricing				
02148	NAD+ CELL REGENERATOR™ W/RESVERATROL (Optimized) 30 veg. caps	54.00	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			
02090	NITROVASC™ • 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			
02231	NT2 COLLAGEN™ • 40 mg, 60 small caps	34.00	25.50	22.00			
<b>O</b>							
01824	OLIVE LEAF VASCULAR SUPPORT W/CELERY SEED EXTRACT (Advanced) • 60 veg. caps	36.00	27.00	24.00			
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 easy-to-swallow 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			
02313	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	115.95	98.56				
*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			
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		
00302	PREGNENOLONE • 50 mg, 100 caps	26.00	19.50	16.50			
00700	PREGNENOLONE • 100 mg, 100 caps	22.00	16.50	15.00			
*01373	PRELOX® ENHANCED SEX FOR MEN • 60 tablets	52.00	39.00	36.00			

**SUBTOTAL OF COLUMN 8**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

FEBRUARY 2019

**SUPER SALE SAVINGS ON ALL PRODUCTS**

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

**TO ORDER CALL: 1.954.766.8433 or 1.800.544.4440 ■ TO ORDER ONLINE VISIT: [www.LifeExtension.com](http://www.LifeExtension.com)**

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
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			
02261	PROTEIN CONCENTRATE (Whey) Chocolate • 640 gram	30.00	22.50	19.95			
02260	PROTEIN CONCENTRATE (Whey) Vanilla • 500 grams	30.00	22.50	19.95			
02246	PROTEIN ISOLATE (Advanced Whey) Vanilla • 454 grams	30.00	22.50	19.50			
02243	PROTEIN ISOLATE (Whey) Chocolate • 437 grams	30.00	22.50	19.50			
02242	PROTEIN ISOLATE (Whey) Vanilla • 403 grams	30.00	22.50	19.50			
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			
01209	PUMPKIN SEED EXTRACT (Water-soluble) • 60 veg. caps	20.00	15.00	13.50			
01637	PYCNOGENOL® 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>							
02302	QUERCETIN (Bio) • 30 veg. caps	12.00	9.00	8.00			
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				
02171	RAINFOREST BLEND WHOLE BEAN COFFEE 12 oz. bag	13.00	9.75				
02170	RAINFOREST BLEND DECAF GROUND COFFEE 12 oz. bag	14.00	10.50				
01030	RED YEAST RICE (Bluebonnet) • 600 mg, 60 veg. caps	18.08	13.56				
00605	REGIMINT • 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 FIRING 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			
02210	RESVERATROL • 100 mg, 60 veg. caps	32.00	24.00	21.00			
02230	RESVERATROL (Optimized) • 60 veg. caps	45.00	33.75	30.00			
00889	RHODIOLA EXTRACT • 250 mg, 60 veg. caps	16.00	12.00	10.50			
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			
<b>S</b>							
01432	SAFFRON W/SATIREAL® (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			
02176	SAMe (S-Adenosyl-Methionine) 400 mg, 30 enteric coated tablets	36.00	27.00	24.00			
02174	SAMe (S-Adenosyl-Methionine) 400 mg, 60 enteric coated tablets	66.00	49.50	45.00			
<b>SUBTOTAL OF COLUMN 9</b>							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
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			
02301	SENOLYTIC ACTIVATOR • 24 veg. caps	24.00	18.00	16.00			
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			
02096	SKIN RESTORING CERAMIDES 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			
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	42.95	36.51				
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	THERALAC® PROBIOTICS • 30 caps	47.95	35.96				
00668	THYROID FORMULA (Metabolic Advantage™) • 100 caps	21.95	16.46				
00349	TMG POWDER • 50 grams	14.00	10.50	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 tube (Mint)	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			
<b>SUBTOTAL OF COLUMN 10</b>							

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

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ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
01469	<b>TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL</b> • 60 veg. caps	32.00	24.00	22.20			
02003	<b>TRIPLE ACTION THYROID</b> • 60 veg. caps	36.00	27.00	24.00			
01803	<b>TRI SUGAR SHIELD®</b> • 60 veg. caps	36.00	27.00	24.00			
01386	<b>TRUFIBER™</b> • 180 grams	32.95	24.71				
01389	<b>TRUFLOA® PROBIOTICS</b> • 32 veg. caps	42.95	32.21				
01722	<b>L-TRYPTOPHAN</b> • 500 mg, 90 veg. caps	33.00	24.75	22.50			
01721	<b>TRYPTOPHAN PLUS (Optimized)</b> • 90 veg. caps	32.00	24.00	21.75			
02317	<b>TWO-PER-DAY CAPSULES</b> • 60 caps	13.00	9.75	8.50			
02314	<b>TWO-PER-DAY CAPSULES</b> • 120 caps	24.00	18.00	16.00			
02316	<b>TWO-PER-DAY TABLETS</b> • 60 tablets	12.00	9.00	7.50			
02315	<b>TWO-PER-DAY TABLETS</b> • 120 tablets	23.00	17.25	15.50			
00326	<b>L-TYROSINE</b> • 500 mg, 100 tablets	13.50	10.13				
<b>U, V</b>							
01921	<b>URIC ACID CONTROL</b> • 60 veg. caps	24.00	18.00	16.50			
00213	<b>VANADYL SULFATE</b> • 7.5 mg, 100 veg. tablets	15.00	11.25	9.38			
02102	<b>VENOFLOW™</b> • 30 veg. caps	52.00	39.00	36.00			
00408	<b>VENOTONE</b> • 60 caps	18.95	14.21	12.00			
01327	<b>VINPOCETINE</b> • 10 mg, 100 veg. tablets	18.00	13.50	10.50			
00372	<b>VITAMIN B3 NIACIN</b> • 500 mg, 100 caps	7.65	5.74	4.99			
02028	<b>VITAMIN B5</b> • 500 mg, 100 veg. caps (Pantothenic Acid)	14.00	10.50	9.50			
01535	<b>VITAMIN B6</b> • 250 mg, 100 veg. caps	12.50	9.38	8.25			
00361	<b>VITAMIN B12</b> • 500 mcg, 100 lozenges	8.75	6.56	5.44			
02228	<b>VITAMIN C and BIO-QUERCETIN PHYTOSOME</b> 1,000 mg, 60 veg. tablets	10.00	7.50	6.75			
02227	<b>VITAMIN C and BIO-QUERCETIN PHYTOSOME</b> 1,000 mg, 250 veg. tablets	30.00	22.50	20.00			
00084	<b>VITAMIN C POWDER (Buffered)</b> • 454 grams	28.00	21.00	19.00			
01736	<b>VITAMIN C-MAGNESIUM CRYSTALS (Effervescent)</b> • 180 grams	20.00	15.00	13.50			
01753	<b>VITAMIN D3</b> • 1,000 IU, 90 softgels	7.00	5.25	4.50			
01751	<b>VITAMIN D3</b> • 1,000 IU, 250 softgels	12.50	9.38	8.44			
01713	<b>VITAMIN D3</b> • 5,000 IU, 60 softgels	10.00	7.50	6.50			
01718	<b>VITAMIN D3</b> • 7,000 IU, 60 softgels	14.00	10.50	9.45			
01758	<b>VITAMIN D3 W/SEA-IODINE™</b> • 5,000 IU, 60 caps	14.00	10.50	9.38			
02244	<b>VITAMIN D3 LIQUID</b> • 2,000 IU, 1 fl. oz, unflavored	28.00	21.00	18.75			
02232	<b>VITAMIN D3 LIQUID</b> • 2,000 IU, 1 fl. oz, mint flavor	28.00	21.00	18.75			
02040	<b>VITAMINS D AND K W/SEA-IODINE™</b> • 60 caps	24.00	18.00	16.50			
01863	<b>VITAMIN E (Super)</b> • 400 IU, 90 softgels	28.00	21.00	19.50	18.00		
01936	<b>VITAMIN K2 (Low dose)</b> • 45 mcg, 90 softgels	18.00	13.50	12.00			
<b>W</b>							
01902	<b>WAIST-LINE CONTROL™</b> • 120 veg. caps	42.00	31.50	28.50			
02151	<b>WELLNESS APPETITE CONTROL BAR</b> Cocoa Quinoa Crunch • Box of 12 Bars	40.00	30.00				
^02146	<b>WELLNESS BAR</b> • Chocolate Brownie • Box of 12 Bars	32.00	24.00				
^02147	<b>WELLNESS BAR</b> • Cookie Dough • Box of 12 Bars	32.00	24.00				
02220	<b>WELLNESS SHAKE</b> • Chocolate • 656 grams	50.00	37.50	34.00			
02219	<b>WELLNESS SHAKE</b> • Vanilla • 648 grams	50.00	37.50	34.00			
<b>SUBTOTAL OF COLUMN 11</b>							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
<b>X, Y</b>							
01919	<b>X-R SHIELD</b> • 90 veg. caps	15.00	11.25	9.75			
00409	<b>XYLIWHITE™ MOUTHWASH</b> • 16 fl. oz	10.00	7.50				
<b>Z</b>							
01813	<b>ZINC HIGH POTENCY</b> • 50 mg, 90 veg. caps	9.00	6.75	6.00			
01561	<b>ZINC LOZENGES</b> • 60 veg. lozenges	9.00	6.75	6.00			
01961	<b>ZINC LOZENGES (Enhanced)</b> • 30 veg. lozenges	12.00	9.00	6.00			
^01254	<b>ZYFLAMEND™ WHOLE BODY</b> • 120 liquid veg. caps	72.95	54.71				
<b>BOOKS</b>							
33842	<b>HEART ATTACK PROOF</b> by Michael Ozner, MD • 2018	19.95	11.99				
33998	<b>THE RIGHT TO TRY</b> by Darcy Olsen • 2016	26.99	20.24				
33875	<b>DOCTORED: THE DISILLUSIONMENT OF AN AMERICAN PHYSICIAN</b> • by Sandeep Jauhar • 2015	26.00	19.50				
33874	<b>MISSING MICROBES</b> • by Martin J. Blaser, MD • 2014	28.00	21.00				
DPT05	<b>DISEASE PREVENTION AND TREATMENT, FIFTH EDITION (Hardcover)</b> • 2014	69.95	39.95	36.00			
33862	<b>I'M TOO YOUNG FOR THIS</b> • by Suzanne Somers • 2013	26.00	19.50				
33835	<b>PHARMOCRACY</b> • by William Faloon • 2011	24.00	9.60	8.00			
33838	<b>YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY</b> by Gary Goldfaden, MD • 2012	26.00	15.00				
33815	<b>KNOCKOUT</b> • by Suzanne Somers • 2009	25.99	17.00				
34132	<b>TWO'S COMPANY: FIFTY YEAR ROMANCE</b> by Suzanne Somers • 2017	26.00	19.50				
33867	<b>THE COMPLETE MEDITERRANEAN DIET</b> by Michael Ozner, MD • 2014	19.95	9.99				
<b>SUBTOTAL OF COLUMN 12</b>							

- \* These products are not 25% off retail price.
- \*\* Due to license restrictions, this product is not for sale to customers outside of the USA.
- \*\*\* Due to license restrictions, this product is not for sale to Canada.
- † Due to license restrictions, this product is not for sale to customers outside of the USA and Canada.
- †† These products are not 25% off retail price. Due to license restrictions this product is not for sale to customers outside of the USA.
- ††† 2:5 LE Plan Kits are not for sale to customers outside the USA and are not included in Super Sale.
- ^ Wellness Bars are not for sale to customers outside the USA.



**Not sure exactly which supplements you need?**

Talk to a **Wellness Specialist** toll-free at **1-800-226-2370**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

FEBRUARY 2019

**SUPER SALE SAVINGS ON ALL PRODUCTS**

## ORDER SUBTOTALS

SUBTOTAL COLUMN 1	
SUBTOTAL COLUMN 2	
SUBTOTAL COLUMN 3	
SUBTOTAL COLUMN 4	
SUBTOTAL COLUMN 5	
SUBTOTAL COLUMN 6	
SUBTOTAL COLUMN 7	
SUBTOTAL COLUMN 8	
SUBTOTAL COLUMN 9	
SUBTOTAL COLUMN 10	
SUBTOTAL COLUMN 11	
SUBTOTAL COLUMN 12	

## ORDER TOTALS

SUBTOTAL OF COLUMNS 1 - 12

**SUPER SALE DEDUCT 10% (Subtotal X 10%)  
ENDS 01/31/19**

†† Customers enrolled in Premier receive free unlimited standard delivery in the U.S., excluding U.S. territories, and do not have to pay the \$5.50 postage and handling fee.

**POSTAGE & HANDLING** (Any size order, in the U.S., includes Alaska & Hawaii) **\$5.50** ††

**C.O.D.s** (ADD \$7 FOR C.O.D. ORDERS)

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

**GRAND TOTAL** (MUST BE IN U.S. DOLLARS)

**PLEASE MAIL TO:** Life Extension  
P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198  
Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050



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## BILL TO ADDRESS

NAME	E-MAIL
ADDRESS	
CITY/STATE/ZIP-POSTAL CODE	COUNTRY
PHONE	FAX
VISA/MASTERCARD/AMEX/DISCOVER #	
EXP. DATE	
SIGNATURE	

## SHIP TO ADDRESS

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

Prices subject to change without notice.  
Please notify Life Extension of any address change.

**SUPER SALE SAVINGS ON ALL PRODUCTS • OFFER ENDS JANUARY 31, 2019**

# PROSTATE HEALTH

The best way to keep You in the picture.

**Ultra Prostate Formula** was created to help maintain prostate health. It contains a dozen *standardized* ingredients to:

- Support healthy urination
- Promote healthy prostate function
- Encourage healthy prostate cell division

**Ultra Prostate Formula** is a unique comprehensive *standardized*-ingredient prostate-health supplement.

For full product description and to order **Ultra Prostate Formula**, call **1-800-544-4440** or visit **www.LifeExtension.com**

	Retail Price	Super Sale Price
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1 bottle	\$38	\$25.65
4 bottles		\$23.63 each

Item# 02029 • 60 softgels



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



## WHAT'S INSIDE

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## LifeExtension® Magazine



**7 AMERICANS ARE AGING MORE SLOWLY**  
Beginning in **1988** and extending to **2010**, adults delayed their rate of **biological aging** by about **4 years**. The **degree of age delay** had a lot to do with **modifiable health behaviors** followed by readers of *Life Extension Magazine*®.



**24 POWER A LONGER LIFE**  
Restoring **NAD<sup>+</sup>** boosts brain function and can reduce risk of age-related disorders. The patented supplement **nicotinamide riboside** quickly replenishes **cellular NAD<sup>+</sup>**.



**62 REDUCE RECOVERY TIME**  
**French oak wood extract** has been shown to markedly speed **post-flu recovery**, reduce fatigue, and improve sleep patterns, thereby reducing the risk of further infections.



**38 STOP UNHEALTHY FOOD CRAVINGS**  
A novel **plant extract** has been shown to *decrease* **cravings** for snacks and sweets by **36%** in a clinical study.



**73 LOWER BLOOD PRESSURE SLASHES DEMENTIA RISK**  
New data confirms that **high blood pressure** damages not only the heart but also the **brain**.



**48 JAMA REPORTS ON SENESCENT CELL REMOVAL**  
The *Journal of the American Medical Association* reports that "**senolytics could transform care of older adults with multiple chronic diseases.**" Two plant-based extracts with **senolytic** action, taken once a week, can help remove **senescent cells** from the body.