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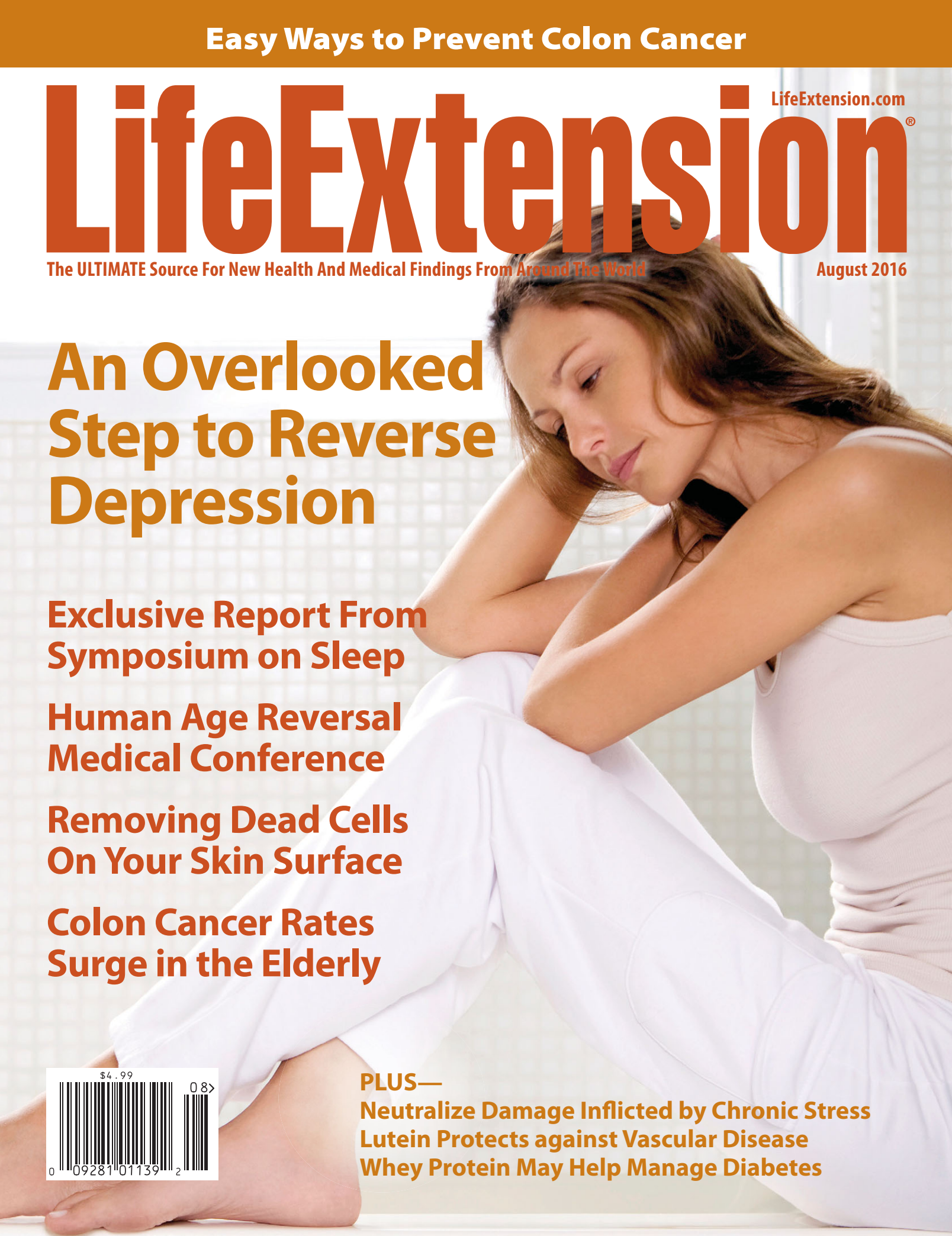

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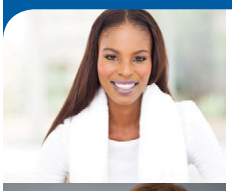




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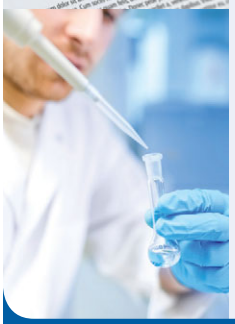



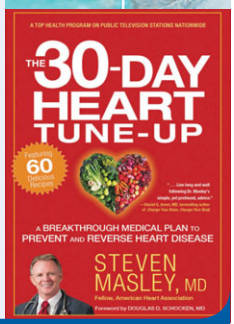

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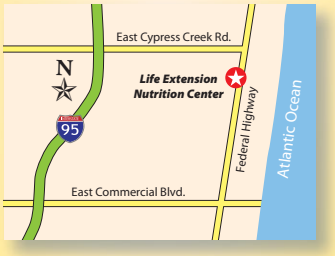


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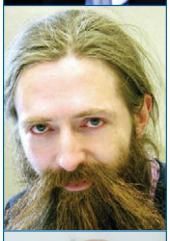

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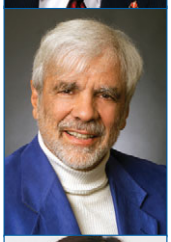

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**Non-GMO**

# Government Inflicted Colon Cancer

BY WILLIAM FALOON

***Life Extension Magazine***® publishes articles that sometimes contain material your government prefers you not read. The reason they don't want this knowledge circulated is that it increases their medical costs in the short term.

The dilemma is that governments cannot **afford** their healthcare obligations.[1-8]

This happened because free or subsidized medical care was promised, but costs are soaring and people are living longer.[9-11]

Medical technology is improving, but not fast enough to bring about needed price reductions.[12-14] The solution will be **curative** therapies that slash today's high price of chronic illness, but we are not there yet.

Governments are fighting this cost crisis by reducing healthcare outlays. The human group most targeted is over age **74**.

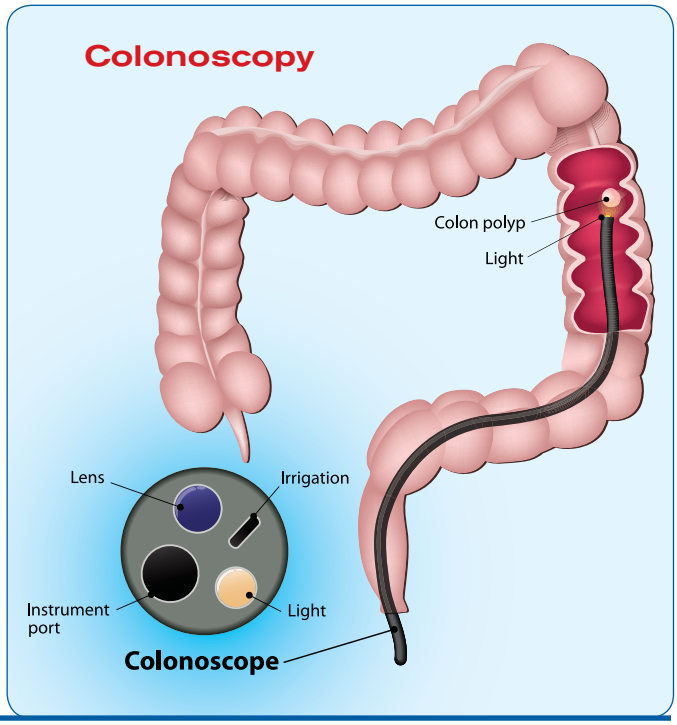
That age group represents many people reading this article, which obligates me to refute what is an illogical **rationing** of a **lifesaving** diagnostic procedure.

Earlier this year, a **Canadian** government task force recommended against screening **colonoscopies** for citizens aged 50 years and older. They suggested that a **fecal occult blood test** or **sigmoidoscopy** were sufficient. For people over **74**, the task force recommended no screening for polyps or early-stage colon cancer.[15]

The **US Preventive Service Task Force** made a similar recommendation in **2008** for people over **75**.[16] This may be changing to let those aged **76-85** make the choice. As of May 2016, however, draft guidance from the US Preventive Service Task Force recommends ***against*** routine screening for colorectal cancer in individuals **86** or over.[17]

You're going to learn about a substantial increase in **metastatic colon cancers** that will be inflicted by these senseless governmental edicts.

The encouraging news we report this month are documented ways to reduce your risk of developing **colon cancer** and curtail **metastasis** in case you are ever diagnosed with this malignancy.



Humans are living longer, yet government policies seek to preclude older groups from accessing diagnostic testing.[18-20]

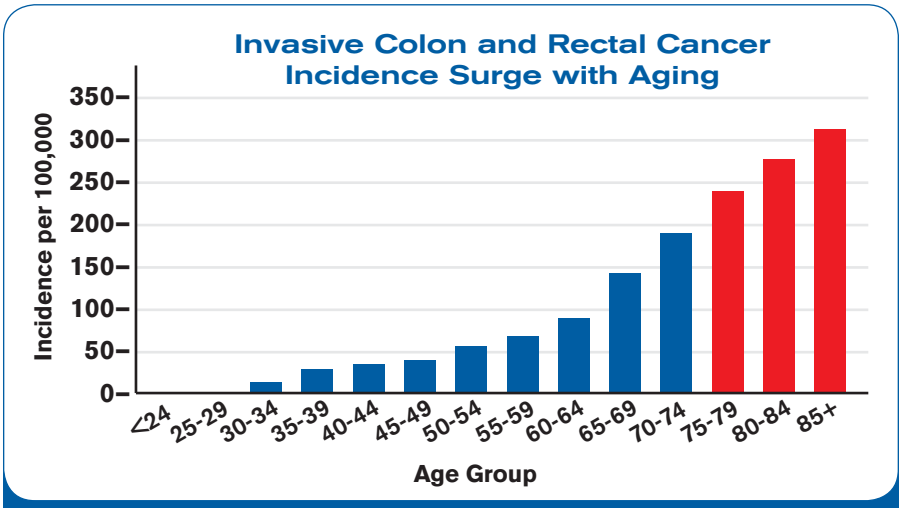
New government recommendations make it appear that once people age past **74** their risk for diseases like **colon cancer** mystically disappears. As the chart on this page clearly shows, incidence of invasive **colon** and **rectal cancer** spirals upwards as people grow older.[21]

There is no reason to deprive a person over **74** of colon cancer **screening**. It is proven to be effective in detecting early-stage lesions before they progress and spread to the liver, lungs, and other organs.

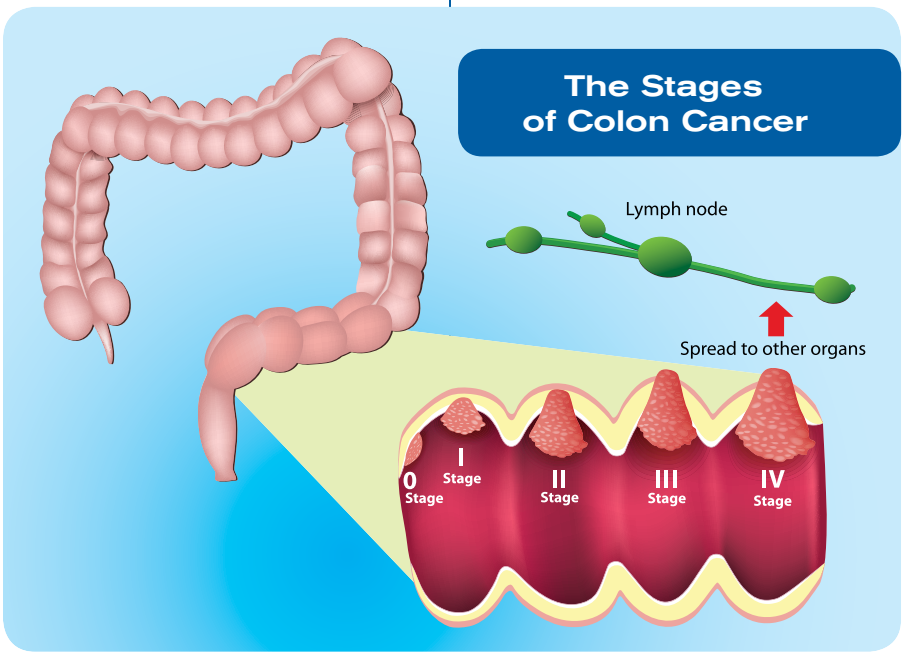
If a polyp or other suspicious lesion is detected during a colonoscopy, it can usually be removed and biopsied without further procedures. Early removal of polyps reduces future colon cancers.[22]

A **sigmoidoscopy** typically evaluates only **one-third** of the colon, whereas a **colonoscopy** examines the entire colon.[23-26] Since the bowel preparation requirements are similar,[27-29] we at **Life Extension®** have long advocated **colonoscopy** over **sigmoidoscopy**.

We disagree with government recommendations regarding how often one should have a colonoscopy. We suggest individuals over age **40** consider a **colonoscopy** more frequently than current guidelines of once every **10 years**.[16]




This chart shows the incidence of invasive colorectal cancer by age group per 100,000 population.[21] Invasive colon cancer is less likely to be cured with surgery.




## Troubling Statistics

Colorectal cancer usually (but not always) develops slowly,[30,31] over a period of 10 to 20 years.[32,33] Most cancers begin as a noncancerous growth called a ***polyp*** that develops on the inner lining of the colon or rectum.[34]

When caught at these early stages, polyps and precancerous lesions can be easily removed during the **colonoscopy** procedure.[35-37] So screening for colorectal cancer is not only diagnostic, but **therapeutic** when suspicious lesions/polyps are removed during the colonoscopy.[38,39]

While colonoscopies have spared countless lives since widespread screening began, about **50,000** Americans still perish each year from metastatic **colorectal cancer**.[40,41]

Most of these deaths would not have occurred had the victim utilized a proven diagnostic procedure. For example, in 2010 only **59%** of people age 50 or older reported having received colorectal cancer screening consistent with guide-

lines.[42] Yet about **1** in **18** Americans will be diagnosed with colorectal cancer sometime in their life.[43]

Colorectal cancer is the second leading cause of cancer death in the United States. The **American Cancer Society** estimates that about **135,000** people will be diagnosed with colorectal cancer this year.[44]

In 2014, about **50,310** people died from the disease.[42] This number represents a decline in colorectal deaths from previous years and probably reflects removal of polyps and other precancerous lesions during **colonoscopy**, along with finding early stage malignancies during colonoscopy that are curable.[45,46]

With government groups now recommending ***against*** colonoscopies and the inconvenience of having it done, an increasing number of unwary humans will not avail themselves to this proven lifesaving procedure.

## How Effective Are Colonoscopies?

Initial studies on high-risk patients undergoing colonoscopy indicated a reduced risk of colon cancer incidence by as much as **90%**.[47]

An editorial published in ***Annals of Internal Medicine*** challenged this assertion. While acknowledging the importance of screening, it suggested that physicians inform patients that for lesions located in the descending or left side of the colon, high quality colonoscopies reduce the mortality risk by **60%** to **70%** and that limited data exists for reduction of right colon cancer mortality risk.[48]

What we know is colon cancer diagnosis and death from metastatic disease remains rampant. Even curative treatment often inflicts permanent side effects.[49,50] This means you should not wait for symptoms to occur that necessitate surgical removal of a section of your bowel and follow up chemotherapy as a precaution against metastasis.

In seeking to identify the hard facts, we are disappointed by the lack of long-term high-quality studies to validate how many lives are really spared by colonoscopy, and what time intervals are ideal for average-risk individuals to have colonoscopies performed.[51]

I've therefore taken a **commonsense** approach in writing this editorial as to what health-conscious individuals should consider in order to reduce their risk of this common malignancy.

## Comparing Screening Techniques

A number of investigative studies have been done to compare the benefits of **colonoscopy**, **sigmoidoscopy** and/or **fecal occult blood testing**.[52-56]

A **fecal occult blood test** is done at home by swiping a tiny amount of stool onto a card for three consecutive days and delivering it to your doctor's office or sending to a laboratory. It is recommended that this test be done **annually**.[57-59]

If traces of blood are present in the stool then additional diagnostics are prescribed, typically colonoscopy.[59-61]

When compared to **colonoscopies** done every **ten years,** high-sensitivity **fecal occult blood tests** performed **every year** showed similar benefits in detecting colorectal cancers.[62]

Since **fecal occult blood tests** cost relatively little, health authorities view them as a way of reducing the higher cost of **colonoscopy** screening.

We take issue with this comparison data because we believe colonoscopies should ideally be done more frequently than every **10 years**.

When governments base recommendations to use **fecal occult blood tests** in lieu of **colonoscopy**, and compare it to **10-year** colonoscopy intervals, they are missing a potential benefit of more frequent colonoscopy screening.

Fecal occult blood test kit

We think **colonoscopies** performed about every **5 years** will yield superior results compared to annual **fecal occult blood testing**.

My reasons for suggesting more frequent colonoscopies include poor quality of prior colonoscopies and the benefit of more frequent removal of polyps and premalignant lesions (adenomas).[63,64] There is also a small risk of what is termed "interval cancer," which means a fast growing malignancy that occurs between colonoscopy screenings.[65,66]

We've reprinted a chart at the end of this article that shows what is currently being recommended as far as **time intervals** between colonoscopy procedures. As I have written in the past, these kinds of recommendations are based on typical population groups. As a reader of this magazine, you expect better than "average" as far as your longevity is concerned.

## Common-Sense Suggestions

The ***Canadian Task Force on Preventive Health Care*** is recommending **fecal occult blood screening** or sigmoidoscopy in lieu of **colonoscopy** for non-high-risk people aged **50-74**.[68] This recommendation is based on data showing only slightly better detection with **colonoscopy** compared to the cheaper **fecal occult blood** tests.

What's being overlooked, however, is that when **blood** is detected in the stool, the patient may have been growing ***polyps*** or developing colorectal cancer years prior to this. We think more frequent colonoscopies will lead to more polyps and other suspicious lesions being identified and removed before early stage colon cancer develops.

While polyps can also bleed, and the blood can show up in the stool, their diagnosis and removal still requires a scoping procedure of the colon.

Health "authorities" are now proposing that people forgo **colonoscopy** screening and instead deliver each year to their doctor's office three consecutive days of stool samples to be **fecal occult blood tested**.

If traces of blood are detected, the patient is then usually told to undergo a **colonoscopy** to ascertain what is causing blood to appear in their stool.[69]

Once a person reaches age **75**, the Canadian task force says no screening is needed,[70] which is analogous to what the **US Preventive Services Task Force** published in **2008**.[16] We at **Life Extension** disagree with these recommendations for most healthy individuals.

We suggest that low-risk individuals over age 40 consider having a **colonoscopy** about every **5 years** to reduce risk of developing advanced or metastatic colorectal cancer.

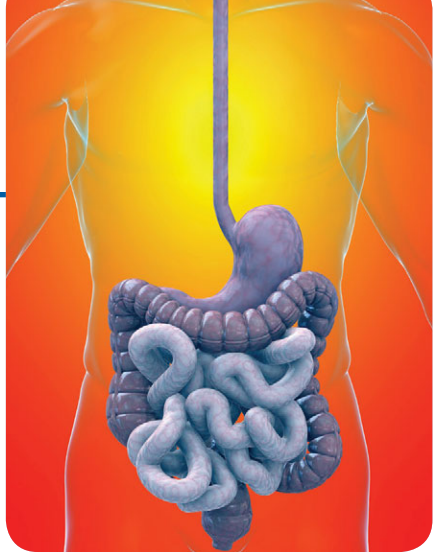
What's missing from all these analyses is direct evidence, i.e. randomized, controlled trials over long time periods on large human populations showing how frequently colonoscopies should be performed.[71]

Rather than wait for results from conclusive trials, the common-sense approach we advocate is colonoscopies done more frequently than every **10 years** for low-risk individuals.

## Putting This in Perspective

By the time the typical person (who neglects their health) ages past 74, they often suffer from so many chronic disorders that their lifespans are limited.

It may thus be understandable for a government task force to



recommend against colonoscopy for the **general population** over age 74 as they may not derive much real-world benefit.

When it comes to the general population, the government sees cost savings in sigmoidoscopy, which does not always require sedation as do most colonoscopies.[72,73] Sedation adds costs to any medical procedure. Although serious complication rates are very low for both colonoscopies and sigmoidoscopies, colonoscopies have higher rates of serious complications compared to sigmoidoscopies.[62] To save money in the short term, governments are looking to reduce the number of colonoscopies performed.

Readers of this publication are different. We take extraordinary measures to slow aging, prevent disease, and extend our healthy longevity. We don't fit in with the "average" American or Canadian, who lets nature and deadly lifestyle choices accelerate degenerative processes.

We're also privileged to know about ***age reversal*** research that may enable us to purge our bodies of multiple pathologies while our cells simultaneously become biologically younger. (Refer to article on page 54 of this month's issue.)

**Life Extension** participants have huge incentives to protect against common disorders of today such as **colorectal cancer**, so they can remain healthy and alive to benefit from pending breakthrough biomedical advances.

## What Should You Do?

Colonoscopies do not guarantee one will never die of colon cancer. The encouraging news is that the healthy lifestyle programs most of you practice have been shown to reduce (but not eliminate) colorectal cancer risk.

Colon cancer prevalence is so high that we suggest low-risk individuals should make an effort to undergo colonoscopy about every **5 years**. Those with certain risk factors like inflammatory bowel diseases or history of adenomas may want to have colonoscopies more frequently.

Governmental edicts that people over **age 74** should forgo colonoscopy may not apply to individuals who plan on living far longer, healthier lifespans.

Conventional medicine is recognizing the role of aspirin,[74-76] calcium,[77,78] vitamin D,[79,80] and healthy dietary choices in reducing colorectal cancer risk. An article in this month's issue of ***Life Extension Magazine*** delves into this topic in detail.

The point I need to emphasize is that while many of the supplements you are taking have shown a profound effect in reducing colorectal cancer risk, they do not protect against the disease completely.

In addition, certain upper digestive tract malignancies are increasing in prevalence, such as ***esophageal cancer***.[81] If you are going to schedule a colonoscopy and be sedated anyway, it makes sense for people at risk to ask their gastroenterologist to perform an **endoscopy** and **colonoscopy** at the same visit.[82]

By having these two procedures performed, lesions can be detected from the throat to the anus when they are likely to be treatable before a **metastatic** disease manifests.

I realize these screening suggestions are in opposition to governmental guidelines that seek to cut back on healthcare outlays. There are also side-effect risks associated with any invasive diagnostic procedure such as colonoscopy and endoscopy.

My mission, however, is to keep you alive and healthy. I yearn for the day when the scourge of **cancer** will become a relic of the past, just as **smallpox** is today. Until that time, we should remain vigilant, even if we happen to be over **74 years** of age.

For longer life,

William Faloon

**Conventional Recommendations for Surveillance and Screening Intervals in Individuals with Baseline Average Risk[67]**

| Baseline colonoscopy: most advanced finding(s) | Recommended surveillance interval (years) | Quality of evidence supporting the recommendation |
|---|---|---|
| No polyps | 10 | Moderate |
| Small (**<10 mm**) hyperplastic polyps in rectum or sigmoid | 10 | Moderate |
| 1–2 small (**<10 mm**) tubular adenomas | 5–10 | Moderate |
| 3–10 tubular adenomas | 3 | Moderate |
| >10 adenomas | <3 | Moderate |
| One or more tubular adenomas ≥**10 mm** | 3 | High |
| One or more villous adenomas | 3 | Moderate |
| Adenoma with HGD [high-grade dysplasia] | 3 | Moderate |
| Serrated lesions | | |
| Sessile serrated polyp(s) **<10 mm** with no dysplasia | 5 | Low |
| Sessile serrated polyp(s) ≥**10 mm**, or sessile serrated polyp with dysplasia, or traditional serrated adenoma | 3 | Low |

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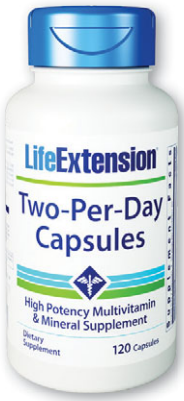


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**Caution:** If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.



## Higher Vitamin D Levels Linked with Improved Prostate Cancer Survival

In an article in *Cancer Epidemiology, Biomarkers & Prevention*, researchers at the National Cancer Institute document an association between higher serum **vitamin D** levels and an increased chance of surviving prostate cancer.*

The current investigation included 1,000 participants in the Alpha-Tocopherol, Beta-Carotene Cancer Prevention Study who were diagnosed with prostate cancer following enrollment. Just over 360 subjects died from their disease over 23 years of follow-up from the time of diagnosis. Serum ***25-hydroxyvitamin D*** levels and other factors were measured upon enrollment and questionnaires concerning diet and medical history were completed by all participants.

Among men whose vitamin D levels were among the top **20%** of subjects, there was a **28%** lower average adjusted risk of dying from prostate cancer compared to those whose levels were among the bottom **20%**. The effect was stronger among those who survived more than 3.3 years.

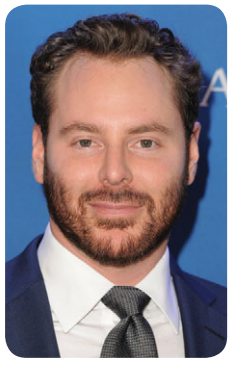
**Editor's Note:** "Our findings that higher 25(OH)D reduces the most clinically relevant prostate cancer outcome, disease-specific mortality, if true, could have important public health implications, including whether vitamin D supplementation should be considered for men diagnosed with prostate cancer," the authors conclude.

**Cancer Epidemiol Biomark Prev*. 2016 Jan 25.

## Philanthropist Donates $250 Million to Fund Cancer Research

Sean Parker, 36, co-founder of the file-sharing computer service Napster and former president of Facebook, is donating $250 million to cancer research via his philanthropic Parker Foundation.*

The newly created Parker Institute for Cancer Immunotherapy will concentrate on this developing field, which harnesses the body's immune system to fight cancer cells.



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The institute comprises more than 300 researchers and more than 40 laboratories, including New York's Memorial Sloan Kettering; Stanford Medicine; the University of California, Los Angeles; the University of California, San Francisco; Houston's; University of Texas MD Anderson and the University of Pennsylvania in Philadelphia. The focus will be on three key areas of research: modifying a patient's own immune system T cells to target a tumor, studying ways to boost patient response to current immunotherapy drugs, and research to identify other novel targets to attack a tumor.

Parker hopes the grant will foster collaboration amongst various research centers. "Any breakthrough made at one center is immediately available to another center without any kind of intellectual property entanglements or bureaucracy," said Parker.

**Editor's Note:** Parker says the death of his friend Laura Ziskin, who produced the films *Pretty Woman* and *Spider-Man*, raised his awareness of the need to overhaul cancer research. Ziskin died of the disease in 2011.

*Available at: http://www.latimes.com/science/sciencenow/la-sci-sn-cancer-immunotherapy-research-silicon-valley-20160412-story.html. Accessed April 12, 2016.

## Decreased Bioavailable and Total Vitamin D Predict Greater Cardiovascular Event Risk

Results of a study presented at the American College of Cardiology Scientific Sessions reveal an association between vitamin D (total and bio-available) levels and lower risk of major adverse cardiovascular events including heart failure, stroke, and heart attack.*

"Many epidemiological studies have shown that [low] total circulating levels of ***25-hydroxyvitamin D*** [25(OH)D] are strongly associated with poor cardiovascular outcomes," note Heidi T. May, PhD, MSPH, and colleagues. "However, **85%-90%** of circulating vitamin D is bound to vitamin D binding protein or albumin, and levels obtained may not be truly reflective of the vitamin D available to act on target cells."

Acting on the results of observational studies, the researchers determined levels of total serum 25(OH)D and 25(OH)D bound to albumin and vitamin D binding protein in 4,200 men and women.

"Our study found that low levels of both total vitamin D and bioavailable vitamin D appear to be associated with poor cardiovascular outcomes," Dr. May reported.

**Editor's Note**: Bioavailable vitamin D includes that which is bound to albumin but not vitamin D binding protein.

*American College of Cardiology Scientific Sessions. 2016 Apr 2.

## Meta-Analysis Affirms Association Between Omega-3 and Lowered Inflammation

A meta-analysis published in *PLOS One* found more evidence of a reduction in pro-inflammatory factors in association with supplementation with marine-derived **omega-3 fatty acids**.*

The researchers selected 18 randomized controlled trials involving 826 subjects for their review. Trials included those that evaluated the effects of fish oil (which contains EPA and DHA) or EPA alone on levels of prostaglandin E2, thromboxane B2, or leukotriene B4.

The meta-analysis uncovered a significant association between omega-3 supplementation in reduction in thromboxane B2 in the blood of participants at high risk of cardiovascular disease and in leukotriene B4 in the neutrophils of unhealthy subjects. Reductions in leukotriene B4 occurred only with 14 or more weeks of treatment with omega-3 fatty acids.

"High quality randomized controlled trials are needed to explore the effects of marine-derived omega-3s on different pro-inflammatory factors in subjects with different health status," concluded the authors.

**Editor's Note:** "Several arachidonic acid-derived eicosanoids exert their significant influence on the inflammatory response," write the authors. Authors stated previous research that "Prostaglandin E2 is involved in the classic signs of inflammation and possesses both pro-inflammatory and anti-inflammatory actions; thromboxane A2, formed by platelets, macrophages and polymorphonuclear leukocytes, can induce vasoconstriction and promotes aggregation of platelets as well as adhesiveness of polymorphonuclear neutrophils; leukotriene B4 (LTB4) can not only increase vascular permeability and enhance local blood flow by stimulating neutrophil secretion, but also stimulate other inflammatory substances."

**PLOS One*. 2016 Jan.

## Whey Protein for Breakfast Could Help Manage Diabetes

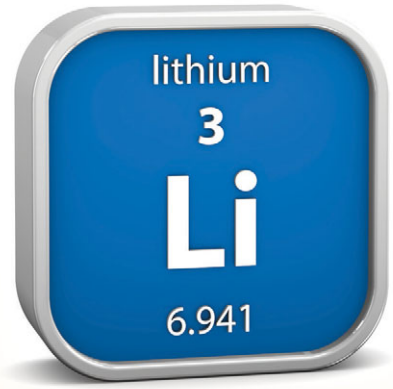
A study reported at the annual meeting of the Endocrine Society found a benefit for the inclusion of whey protein at breakfast by individuals with type II diabetes.*

The study included 48 overweight and obese type II diabetics with an average age of 59. Participants were instructed to consume a large breakfast, medium-sized lunch and small dinner that provided the same amount of daily calories for 23 months. Subjects were assigned to breakfasts that consisted of whey protein shakes, other proteins such as eggs and tuna, or carbohydrates. Hemoglobin A1c and other factors were measured at the beginning and end of the study.

The group who received the whey protein shake for breakfast had less hunger, lower glucose spikes following meals and a greater reduction in hemoglobin A1c compared with the other groups. "The whey protein diet significantly suppresses the hunger hormone ghrelin," lead author Janiela Jakubowicz, MD, noted.

**Editor's Note:** "A high-calorie protein breakfast, medium-sized lunch, and small dinner is a proven successful strategy for weight loss, improved satiety, and reduced glucose spikes throughout the day in people with obesity and type II diabetes," Dr. Jakubowicz stated. "However, the benefits of high protein content at breakfast also depend on the protein source and quality. Whey protein powder, which is a byproduct of milk during cheese production, induced greater satiety and reduction of glucose spikes after meals compared to other protein sources such as eggs, soy, or tuna."

*Annual Meeting of the Endocrine Society. 2016 Apr 1.




## Lithium Extends Life in Flies

A study published in *Cell Reports* found longer life for flies that were given **lithium**, a chemical element and drug used to stabilize mood in bipolar disorder.*

Researchers gave male and female flies high or low doses of lithium chloride or sodium chloride during adulthood or later in life. Flies that received low-dose lithium lived **16%** longer than average and had a maximum lifespan that was **18%** longer than controls, which the researchers attribute to blockage of **glycogen synthase kinase-3 (GSK-3)** and activation of a protein known as NRF2 that aids in the defense of cells against damage.

"We studied the responses of thousands of flies in different conditions to monitor the effects of lithium and how it extends life," coauthor Dr. Ivana Bjedov stated. "We found low doses not only prolong life but also shield the body from stress and block fat production for flies on a high-sugar diet."

**Editor's Note**: "Identifying a drug target for aging is a crucial step in achieving this and by targeting GSK-3, we could discover new ways of controlling the aging process in mammals, including humans," predicted first author Jorge Iván Castillo-Quan of University College London.

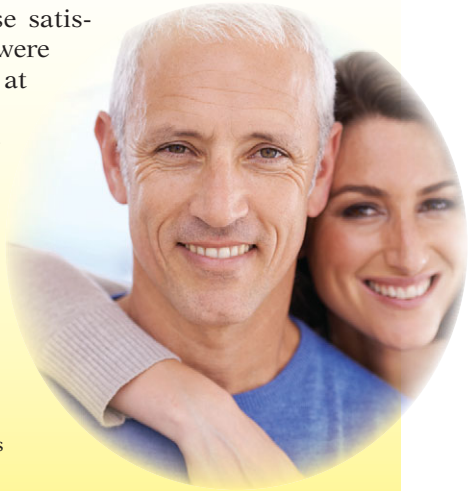
**Cell Rep*. 2016 Apr 7.

## Testosterone Therapy Improves Sexual Function in Diabetic Men

An article appearing in *BJU International* reveals better sexual function in men with type II diabetes and severely depressed testosterone levels who were treated with testosterone undecanoate.*

The study included 189 men, among whom 107 had mild hypogonadism and 87 had severe hypogonadism as demonstrated by low total and free serum testosterone levels. Participants received **1,000 mg** testosterone undecanoate or a placebo at the beginning of the study and at 6 and 18 weeks. Questionnaires that assessed erectile function, intercourse satisfaction, orgasmic function and desire were administered prior to treatment and at 6, 18 and 30 weeks.

After 30 weeks, significant improvement in erectile function was noted by the severely deficient men treated with testosterone. Intercourse satisfaction and desire also improved at 6, 18, and 30 weeks in the severely deficient testosterone-treated group.



**Editor's Note:** Lead author Geoffrey Hackett of the Heart of England Foundation NHS Trust commented that "The study's results also suggest that trials of testosterone therapy should be for a minimum of 6 months and not shorter periods as suggested by some guidelines."

* *BJU Int*. 2016 Apr 28.

## Meta-Analysis Shows Ginseng's Benefits in Treating Diabetes

Researchers at China's Zhejiang University provide evidence of a beneficial effect for ginseng in men and women with impaired glucose tolerance or type II diabetes.*

Yun-mei Yang and colleagues selected eight trials that included 195 participants treated with ginseng and an equal number of control subjects. The analysis revealed improvements in fasting glucose, post-meal insulin levels, and insulin resistance, as well as a reduction in triglycerides and total and low-density lipoprotein (LDL) cholesterol among ginseng-treated subjects.

**Editor's Note:** As possible mechanisms for ginseng, Dr. Yang and colleagues suggest modulations of insulin production and secretion, glucose metabolism, glucose uptake and inflammation, and activation of the activated protein kinase (AMPK) pathway. Their research suggests that ginseng may be more beneficial for patients who have not started antidiabetic drug therapies than those already being treated.

**Medicine*. 2016 Feb.

## Supplements May Prevent Hereditary Deafness

Findings from a study appearing in *Scientific Reports* suggest a role for a combination of free radical scavengers in the prevention of a common form of hereditary deafness caused by mutations in the connexin 26 gene.*

"Many babies born with a genetic mutation that causes deafness pass their newborn screening test but then lose their hearing later in life," explained co-author Glenn Green, MD, CS. "These patterns suggest that for some children, there may be an opportunity to potentially save cells present at birth."

In mice with a deletion of connexin 26, prenatal or postnatal supplementation with beta-carotene, vitamins C and E, and magnesium slowed hearing loss progression and improved hearing thresholds. "Our findings suggest that a particular high dose of mineral and vitamin supplements may be beneficial to one genetic mutation," observed senior author Yehoash Raphael, PhD, of the University of Michigan.

**Editor's Note**: Co-author Josef Miller, PhD, who developed the formula, noted that lowering overstimulation-related oxidative stress has been shown to protect the ear's sensory hair cells. Additionally, free radical scavengers have been shown to preserve cell connections impacted by connexin 26 loss.

**Sci Rep*. 2016 Mar 11.

## Decreased Vitamin C Levels Found in Patients Treated for Hematologic Malignancies

An article appearing in *Results in Immunology* documents the finding of decreased serum levels of **vitamin C** in patients with hematologic malignancies that include leukemia, multiple myeloma, and non-Hodgkin lymphoma.*

"As ascorbic acid has a major influence on (re)generation of immune cells *in vitro*, we executed an observational study in which ascorbic acid serum values of patients with hematological malignancies treated with and without hematopoietic stem cell transplantation were compared with those of healthy volunteers to see if low ascorbic acid levels should be considered of importance regarding immune recovery of these patients," explained authors Mirelle Huijskens and colleagues.

The researchers measured vitamin C levels in 79 healthy volunteers and 42 hematology-oncology patients treated with chemotherapy or hematopoietic stem cell transplantation. While healthy subjects had median serum ascorbic acid levels of **1.14 mg/dL**, those with hematologic malignancies had levels of **0.36 mg/dL** per liter.

**Editor's Note**: The authors add: "Since ascorbic acid might be crucial for immune function and for in vitro development and expansion of T and natural killer cells from stem cells, we are currently studying the function and recovery of immune cells while patients are on treatment for various malignancies, and determine the correlation of ascorbic acid serum and leukocyte levels and the possible effect of vitamin C supplementation."

**Results Immunol.* 2016 Jan 12;6:8-10.

## FDA Fast Tracks Potential Breakthrough Glioblastoma Treatment

A new treatment for a particularly aggressive form of brain cancer has been granted breakthrough status and is being fast-tracked by the Food and Drug Administration.*

As reported on CBS's *60 Minutes*, the first test subject was 20-year-old Stephanie Lipscomb, who began experiencing headaches in 2011. She was diagnosed with a large glioblastoma tumor and told she had months to live. After having **98%** of the tumor removed, her cancer returned. Lipscomb then volunteered for an experimental treatment at Duke University. Today, she is free of a type of cancer that had previously been regarded as an almost-certain death sentence.

The treatment, devised by molecular biologist Matthias Gromeier, utilizes a genetically reengineered polio virus which attacks cancer cells but is harmless to the patient.

Gromeier explains that human cancers "develop a shield of protective measures that make them invisible to the immune system…by infecting the tumor, we are actually removing this protective shield, and enabling the immune system to come in and attack."

**Editor's note:** If you or someone you know has recurrent glioblastoma—that is, you have failed at least one conventional treatment, and you only have one area of tumor and are fully mentally coherent and able to walk and function normally, you may qualify to participate in the Duke University study. Go to www.lifeextension.com/glioblastoma for details.

*www.cbsnews.com/news/polio-cancer-treatment-duke-university-60-minutes-scott-pelley. Accessed May 16, 2016.

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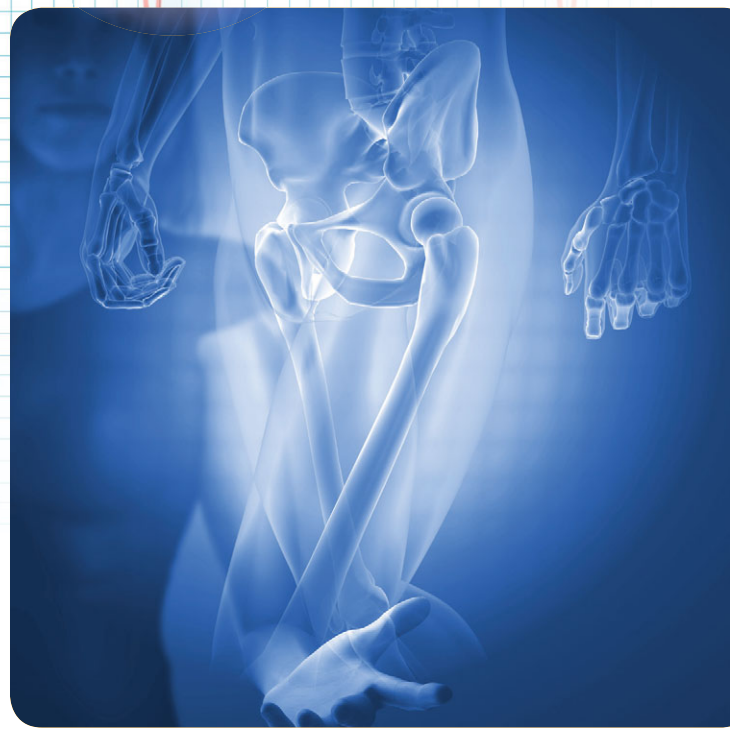


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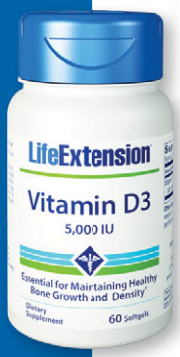


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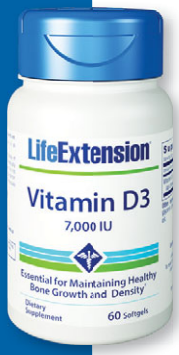


### Vitamin D3 • 7,000 IU

Item #01718 • 60 softgels

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

***If you have a thyroid condition or are taking anti-thyroid medications, do not use without consulting your health care practitioner.**

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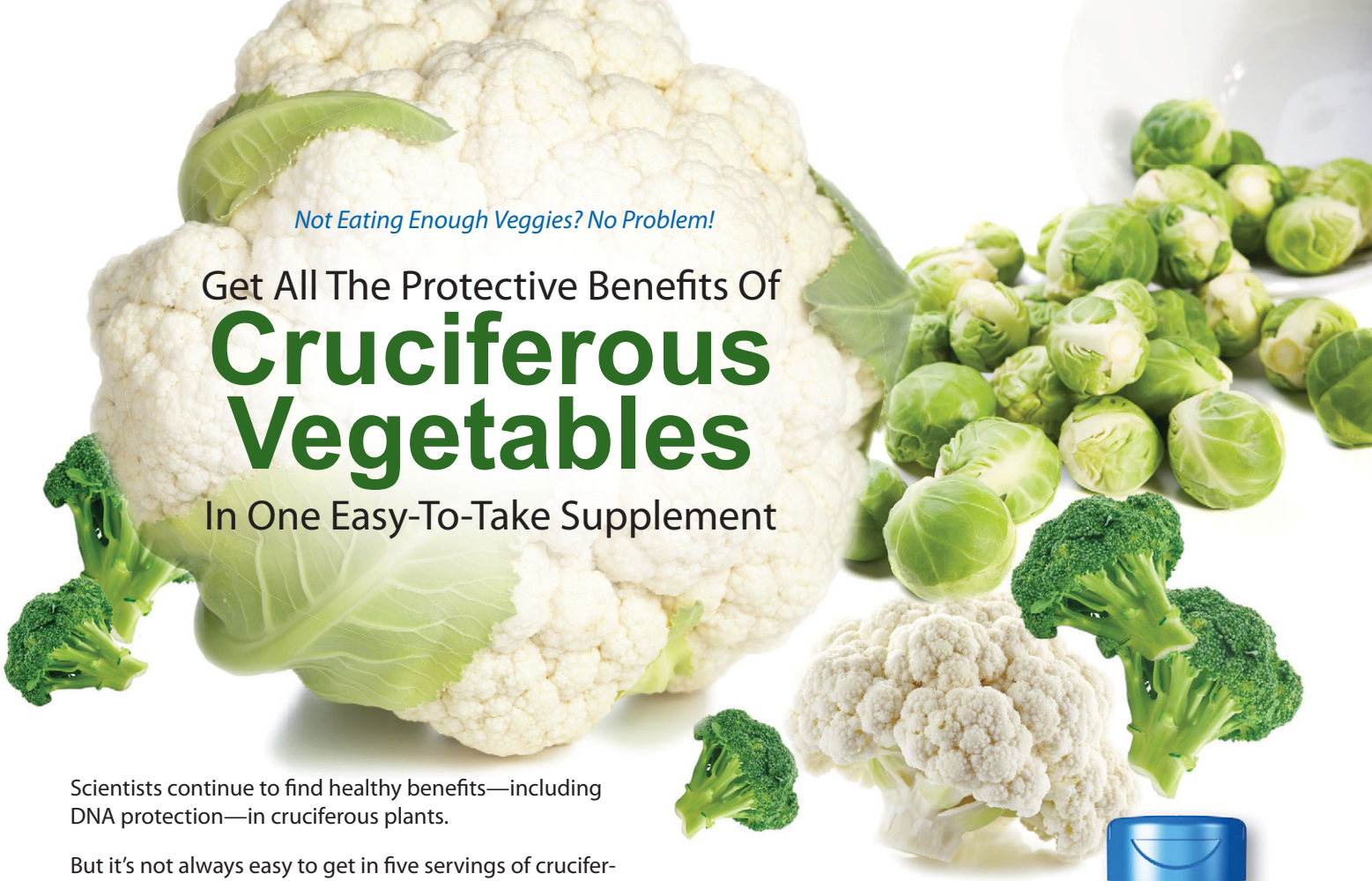

Scientists continue to find healthy benefits—including DNA protection—in cruciferous plants.

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

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

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


**References**

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## Triple Action Cruciferous Vegetable Extract

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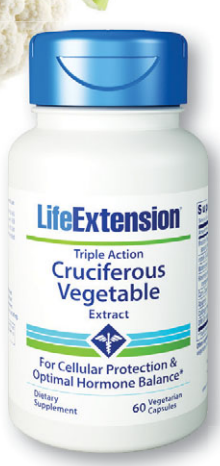


## Triple Action Cruciferous Vegetable Extract with Resveratrol

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BY TIMOTHY RICE

# An Overlooked Cause of DEPRESSION

While great strides have been made in diagnosing and treating depression, millions of Americans still suffer with this difficult-to-treat disease. It is estimated that **15.7 million** American adults experienced depression in the past year.[1]

Antidepressant use is on the rise with one in 10 Americans using them.[2,3] Unfortunately, antidepressants only work as little as **50%** of the time and come with an array of side effects.[4,5]

One reason that so many people continue to bear this burden is that most physicians are unaware of the well-documented link between **homocysteine** and **depression**.

A simple blood test that measures **homocysteine** levels, along with a metabolically active form of **folate**, better known as **5-MTHF**, may offer hope to millions of depression sufferers.

## Homocysteine and Depression

Homocysteine is an amino acid that, when elevated, can damage the inner linings of the body's vessels leading to a range of cardiovascular conditions including stroke. There is also a correlation between high homocysteine levels and depression.[6,7]

Researchers studied this association in a group of 924 middle-aged men. They found that individuals in the upper tertile for homocysteine levels had more than a **two-fold** increased risk for being **depressed** compared to those in the lowest tertile.[7]

Another study found that people with the highest levels of homocysteine (**>12 µmol/L**) have significantly lower amounts of **SAMe**, a nutrient required for the synthesis of mood-enhancing neurotransmitters.[8] Not surprisingly, they also had lower levels of mood-enhancing neurotransmitters.

The researchers also found that nearly a third of the depressed participants from the study had red blood cell folate levels below normal, and half of these participants had homocysteine levels ***higher*** than levels of the two control groups.[8]

The connection between low folate levels and imbalances in neurotransmitters shouldn't be surprising since folate is required for the production of neurotransmitters in the brain.

## Improvement with 5-MTHF

Once the connection between high homocysteine levels and the occurrence of depressive symptoms was discovered, researchers began to investigate whether the active form of folate, **5-MTHF**, could have a beneficial impact on major depression.[9,10]

The results of these studies open a new door for the treatment of depression. What the scientists discovered was that taking 5-MTHF in addition to antidepressant drugs dramatically improved response rates and did so in a significantly shorter amount of time.

In one study, only **7%** of subjects taking an antidepressant drug experienced major improvement on a standard depression score. That number jumped to **19%** in those patients taking 5-MTHF in addition to an antidepressant drug.

The results were even more impressive in those with the most severe depression. Improvements of **40%** were experienced while taking **5-MTHF** in addition to their antidepressant drug, versus just **16%** of those only taking the drug by itself.[10]

In addition to improving symptom severity, 5-MTHF brought about these improvements significantly faster than antidepressant drugs alone. Specifically, the 5-MTHF group saw improvements in just **177** days, compared to **231** days in the


### What is Homocysteine?

Homocysteine is a non-protein amino acid. It is produced in the body by the breakdown of **methionine**, a common amino acid present in a variety of foods such as cereals, legumes, seafood, meat, and dairy products.[25] The conversion of methionine into homocysteine is a process that involves the addition of a methyl group, known as *methylation*, and requires key B vitamins for proper processing.

The best way to control dangerous levels of homocysteine is through adequate intake of folate and vitamin B12. When either of these vitamins are deficient, homocysteine levels rise.[26] Healthy levels of folate and vitamin B12 have been shown to keep homocysteine in check.

What You Need to Know

control group. For those with the most severe depression, the results were even more dramatic. The median time to improvement took only **85** days, compared to **150** days in the control group. A key finding was that nearly twice as many people in the antidepressant-only group stopped therapy due to adverse events (**34%**) versus the 5-MTHF group (**17.9%**), providing evidence of the nutrient's superior safety profile.[10]

These results are very encouraging, especially considering the fact that major depression is notoriously difficult to treat, with only about **30%** of patients treated with a single antidepressant achieving resolution of their symptoms, a figure that rises to just **50%** to **55%** when a second drug is added.[11,12]

This correlation makes supplementing with the metabolically active form of folate, 5-MTHF, a good idea for anyone suffering from depression.

## Cognitive Decline, Alzheimer's Disease, and Aging

Depression by itself is bad enough. But now, scientists are finding that depression can lead to Alzheimer's disease and cognitive decline.[13,14]

Research has confirmed the link between elevated homocysteine, cognitive decline, and Alzheimer's disease.[15-17]

## Lowering Homocysteine Levels

- **Elevated homocysteine levels have been linked with a variety of health conditions including stroke, heart disease, macular degeneration, and dementia.**
- **New findings confirm the connection between elevated levels of homocysteine and depression as well as other psychiatric disorders.**
- **Factors such as commonly prescribed medications, alcohol, smoking, and advancing age contribute to elevated homocysteine levels.**
- **B-vitamins like folic acid, vitamin B6, and vitamin B12 can help the body maintain homocysteine levels within a healthy range.**
- **A significantly high proportion of the American population is at risk for carrying a genetic variant for the MTHFR gene mutation, leading to an impaired ability to metabolize folic acid to its active form.**
- ***5-methyltetrahydrofolate* or 5-MTHF, the active form of folic acid, is now available as a dietary supplement.**
- **Together with other complementary nutrients like vitamin B6 and vitamin B12, 5-MTHF provides advanced protection against homocysteine-related disorders.**

### Postpartum Depression

The well-documented relationship between elevated levels of homocysteine and depression has led scientists to propose using it as a risk biomarker in postpartum depression (PPD).[22]

Postpartum depression has been shown to be present in **10%** to **15%** of new mothers.[23] Due to biochemical changes in their brains, mothers with postpartum depression experience fewer positive emotions relating to their pregnancy, and lack desire to actively care for and bond with their newborn children.

A recent study concluded that increased levels of homocysteine are not only related to postpartum depression, but are also associated with impaired production and metabolism of serotonin, an important mood enhancer. Likewise, newborns with mothers affected by postpartum depression scored lower on the APGAR scale (a common assessment of fetal well-being) compared to infants from mothers in a control group.[24]

A study published in the *New England Journal of Medicine* following elderly participants with dementia found that more than **75%** of participants were eventually diagnosed with Alzheimer's disease over an eight-year follow-up period.[18] The researchers reviewed participants' homocysteine levels and found that for those with homocysteine levels greater than **14 µmol/L**, the risk of Alzheimer's nearly doubled. They concluded that increased plasma levels of homocysteine are a strong, independent risk factor for the development of dementia and Alzheimer's disease.

Homocysteine alone is not the sole cause of age-related cognitive decline or memory impairment related to Alzheimer's disease, but there is a significant amount of evidence pointing to its role as a contributing factor.

## Get Tested and Safely Lower Homocysteine

Those striving for longevity and seeking to safeguard their health can readily and safely prevent and modulate elevated homocysteine levels. Certain factors such as a diet poor in folate or other important B vitamins may be partially to blame. Sometimes other more complex issues need to be addressed as well to optimally maintain homocysteine levels. It is also important to avoid leading a sedentary lifestyle and consuming excessive amounts of foods rich in the amino acid **methionine**, such as red meats and dairy products. Decreasing or eliminating consumption of alcohol and smoking is also important.

Homocysteine levels should be part of a yearly battery of blood tests to ensure a healthy, long life. **Life Extension**® advises that the optimal range for homocysteine levels is **<7-8 µmol/L**, a much more aggressive cut-off than the currently accepted **<15 µmol/L**.

Individuals with elevated homocysteine levels should begin supplementation with 5-MTHF and retest levels after 3 months.

## Summary

The buildup of homocysteine poses a major threat to one's health, raising the risk for cardiovascular and neurodegenerative diseases. New findings are confirming the connection between levels of homocysteine and psychiatric conditions like depression.

Those interested in guarding themselves from the devastating consequences of elevated homocysteine levels should begin proper supplementation with the bioactive form of folate, 5-MTHF, a convenient and low-cost nutrient that can provide the body with the best ammunition for controlling homocysteine.

Daily doses of **1,000 mcg** to **5,000 mcg** (**1-5 mg**) of bioactive folate are typically used in research studies to achieve clinically beneficial reductions in plasma homocysteine concentrations.

For optimal homocysteine reduction, adequate amounts of other B-vitamins such as B2, B6, and B12 are also required. These powerful and inexpensive nutritional strategies are readily available to help individuals prevent the wide array of chronic disorders and complications that can be traced to excessive levels of homocysteine. ●

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

## 5-MTHF Lowers Homocysteine Levels

The superiority of 5-MTHF for increasing blood levels of folate translates directly into lower levels of homocysteine.

In a study on healthy people, a low dose of folic acid (**100 mcg** per day) was compared to a low dose of 5-MTHF (**113 mcg** per day). After six months, the mean total homocysteine was reduced by **9.3%** in the folic acid group, compared to a **14.6%** mean reduction in the 5-MTHF group.[19]

Numerous human studies have confirmed just how much more effective 5-MTHF is than folic acid. One particular crossover study examined cardiovascular patients with the gene variant for the weakened MTHFR enzyme. The researchers found that the subjects' peak serum folate levels were nearly **7 times** higher when taking the active 5-MTHF as they were when taking folic acid.[20]

Another crossover study compared folic acid and the active 5-MTHF in women with both the typical gene variant for MTHFR and the weaker gene variant. Regardless of the women's genetic makeup, the total amount of folate in the blood, as well as the maximum concentration reached, were significantly higher when taking 5-MTHF.[21]

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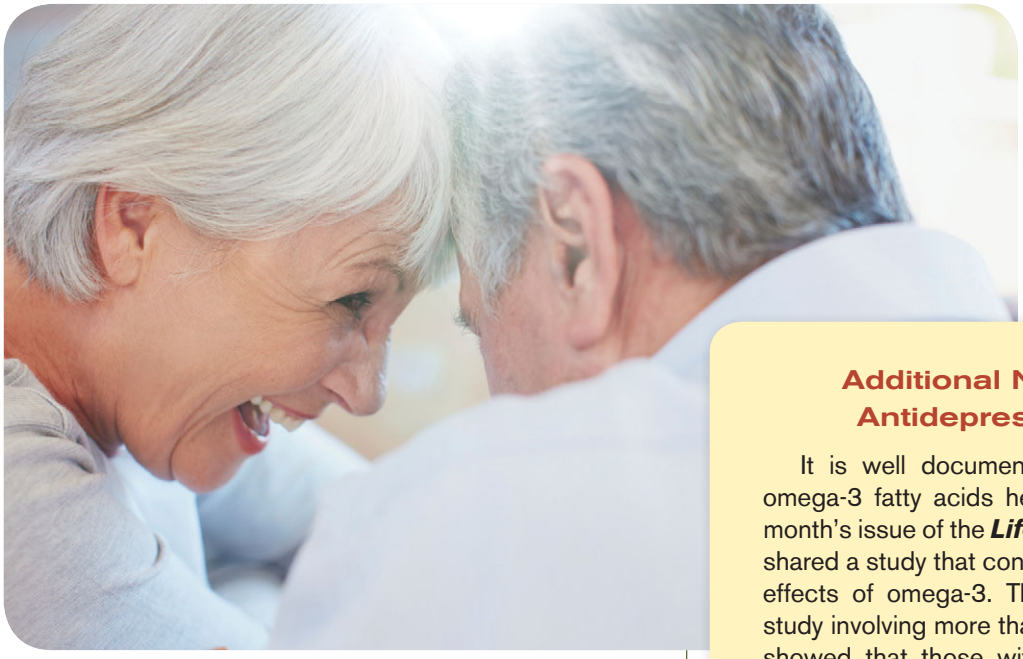

## Additional Nutrients with Antidepressant Effects

It is well documented in the literature that omega-3 fatty acids help fight depression. Last month's issue of the ***Life Extension Magazine***® shared a study that confirmed the anti-depression effects of omega-3. This large "cross-sectional" study involving more than 2,000 men and women showed that those with higher blood levels of omega-3s had a **43%** lower risk of depression.[27] For the study, the researchers used a standard 20-question scale of depression symptoms that had been previously validated to show that scores of 16 and higher are present in people with relevant depressive symptoms.

And omega-3s supplementation in combination with commonly prescribed antidepressants is showing additional promising effects. In one study of patients with known major depressive disorder, the combination of omega-3 with antidepressant drug Celexa® proved to be superior to the drug alone in relieving depressive symptoms.[28]

Of no surprise to **Life Extension** are the findings of a recent paper published by *The American Journal of Psychiatry* reporting on the benefits of improving the effectiveness of antidepressants in those with clinical depression through the use of nutrients like SAMe, 5-MTHF (methylfolate), omega-3, and vitamin D.[29]


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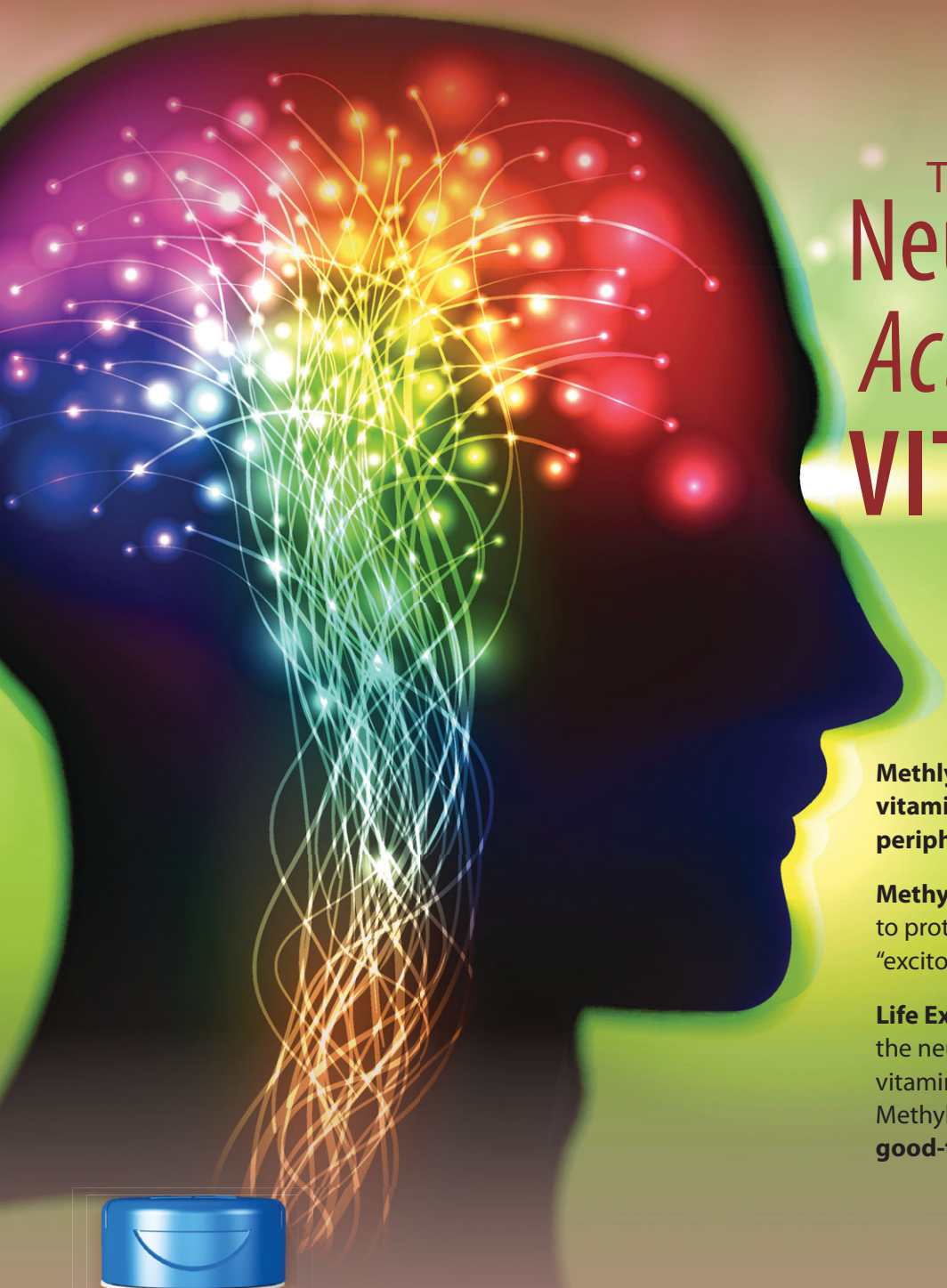

# THE Neurologically *Active* Form of VITAMIN B12

**Methlycobalamin** is the form of **vitamin B12** active in the **central** and **peripheral nervous system**.

**Methylcobalamin** has been shown to protect against glutamate-induced "excitotoxic" neuronal damage.

**Life Extension®** offers **methylcobalamin**, the neurologically active form of vitamin B12, at remarkably low prices. Methylcobalamin lozenges come in a **good-tasting vanilla flavor**.


**Methylcobalamin**
**1 mg dissolve-in-mouth**
Item #01536 • 60 vegetarian lozenges

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| 4 bottles | | **$6 each** |

Non-GMO

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| 1 bottle | $32 | **$24** |
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# "Turn On" Your Body's Longevity Genes!

**Optimized Resveratrol** supports **longevity** mechanisms **four** different ways:

- **Resveratrol** facilitates youthful *gene expression* analogous to some longevity functions of **calorie restriction**.[1]
- **NIAGEN® nicotinamide riboside** helps replenish cellular NAD+ to enhance energy efficiency of mitochondria to support physical performance.[2]
- **Quercetin*** helps purge the body of inflammation-inducing senescent cells and augment the beneficial gene expression effects of resveratrol.[3]
- **Pterostilbene**, **fisetin**, and other **fruit** compounds work synergistically with resveratrol to facilitate youthful gene expression and mimic calorie restriction.[2,4]

* **Optimized Resveratrol with Nicotinamide Riboside** provides **2.5 times** the previous amount of **quercetin**.


**Just one vegetarian capsule of Optimized Resveratrol provides:**

| | |
|---|---|
| ***Trans*-Resveratrol** (most biologically active form) | **250 mg** |
| **Quercetin** | **150 mg** |
| **NIAGEN® Nicotinamide Riboside** | **100 mg** |
| **Red grape** (fruit) **and wild blueberry** (fruit) **blend** | **40 mg** |
| **Fisetin** | **10 mg** |
| ***Trans*-Pterostilbene** (from pTeroPure®) | **0.5 mg** |

**Optimized Resveratrol with Nicotinamide Riboside**

Item #02031 • 30 vegetarian capsules

| | Retail Price | Your Price |
|---|---|---|
| 1 bottle | $42 | **$31.50** |
| 4 bottles | | **$27 each** |

**Non-GMO**

To order **Optimized Resveratrol with Nicotinamide Riboside,** call **1-800-544-4440** or visit **www.LifeExtension.com**


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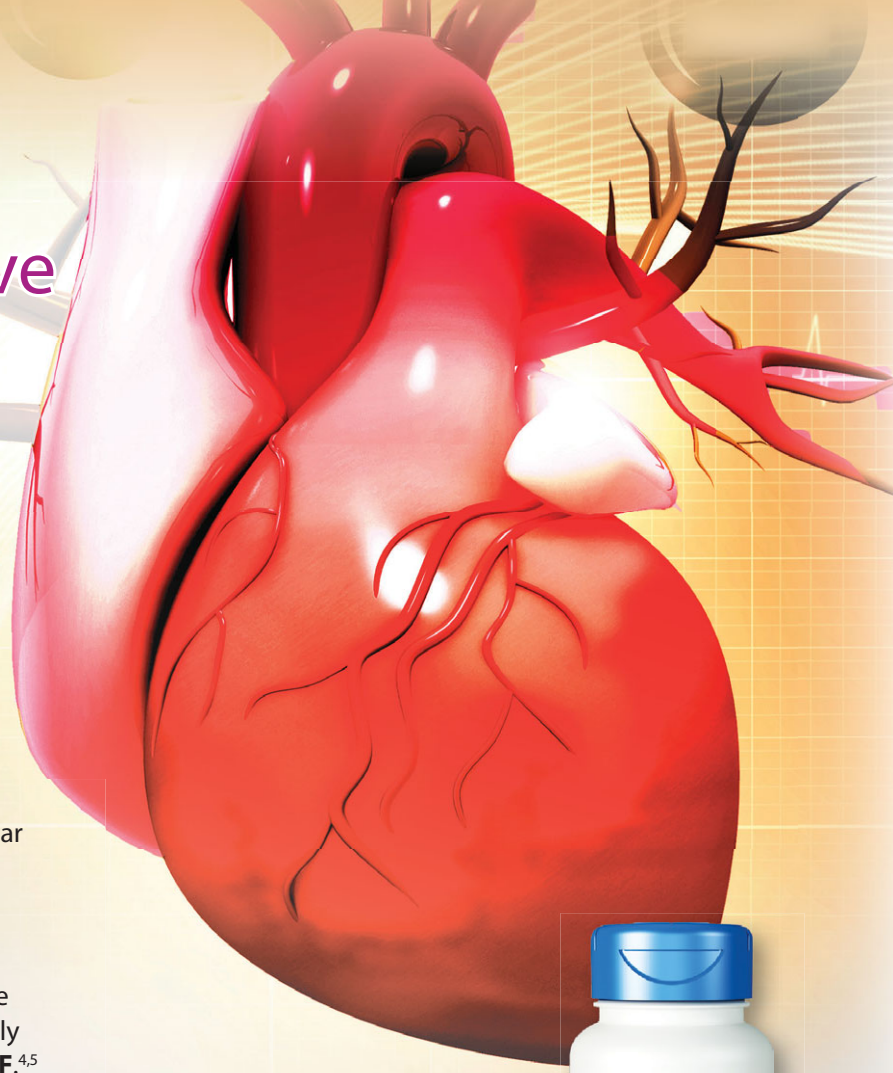
**CAUTION:** If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

# Metabolically Active FOLATE

## *Supports Cardiovascular Health*



Folate helps maintain homocysteine levels within the normal range,[1] thereby promoting cardiovascular health.[2] Folate also supports neurotransmitter synthesis—which in turn helps maintain cognitive abilities.[3]

However, not everyone has sufficient activity of the **enzyme** required to convert folate to its biologically active form, **5-methyltetrahydrofolate**, or **5-MTHF**.[4,5]

For those whose homocysteine levels remain stubbornly high, the answer lies with the *bioactive* form of folate called **5-MTHF**, which is up to ***7 times*** more bioavailable than ordinary folic acid.[6] This unique compound requires no enzymatic conversion to become metabolically active[6]—providing maximum support for both cardiovascular and cognitive health.

**Optimized Folate** provides metabolically active **5-MTHF** folate in **1,000 mcg** or **5,000 mcg** strengths.

The demand for **5-MTHF** has surged as more consumers have discovered its potent **homocysteine-lowering** effects.

**Non-GMO**
**Quatrefolic® is a registered trademark of Gnosis, S.p.A.**
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### **Optimized Folate** (1,000 mcg)

Item #01939 • 100 vegetarian tablets

| | Retail Price | Your Price |
|---|---|---|
| 1 bottle | $19 | **$14.25** |
| 4 bottles | | **$12.75 each** |


### **High Potency Optimized Folate** (5,000 mcg)

Item #01913 • 30 vegetarian tablets

| | Retail Price | Your Price |
|---|---|---|
| 1 bottle | $25 | **$18.75** |
| 4 bottles | | **$16.50 each** |

**Caution:** Do not use this product if treated with methotrexate, fluorouracil, phenytoin, phenobarbital, primidone, or levodopa prior to consultation with your personal physician.

To order either of these **Optimized Folate** formulas, call **1-800-544-4440** or visit **www.LifeExtension.com**

BY CAROLINE MEYERS

# Healthy Choices *Protect Against* Colorectal Cancer

The **American Cancer Society** estimates that the majority of colorectal cancers, and subsequent deaths, could be prevented if we applied *existing knowledge* about this prevalent malignancy.[1]

Simply making healthy diet and lifestyle choices can reduce the risk for developing **colorectal cancer**.

With a wealth of research available, too many people continue to needlessly die from this preventable disease.

This article describes strategies available for reducing one's risk of contracting colorectal cancer, which translates into living a longer, healthier life.

## The Most Preventable Cancer

Colorectal cancer (cancer that occurs in the colon or rectum) represents the second leading cause of cancer death in men and women combined in the United States.[2,3] According to the American Cancer Society, an approximate **135,000** new cases will be discovered and close to **50,000** deaths will occur in this year alone.[4]

Despite these statistics, colorectal cancer is one of the most preventable of all cancers. Lifestyle factors play a predominant role in the development of the disease, which means we have a tremendous amount of control over this second-leading cause of cancer deaths.

Cancers in general do not thrive when the body is operating at peak health. This includes active biological systems that work to stop cancer before it even starts by preventing and repairing DNA damage, identifying and destroying abnormal cells, and regulating normal cell growth. The best way to keep these systems in peak condition is through healthy diet and lifestyle choices, as well as incorporating a supplement regimen that includes powerful chemopreventive agents.

The authors of a study published in *Clinical Colorectal Cancer* said, "Improving the awareness of the population with regard to the benefits of a healthy lifestyle, including a balanced diet associated with exercise, could globally reduce CRC (colorectal cancer) risk."[5]

A "healthy lifestyle" can include something as simple as regular brisk walking, which has been shown to reduce colorectal cancer risk by **18%-24%**.[6,7]

The reason why exercise is always near the top of any health-optimization regimen is because increased physical activity significantly improves insulin resistance, and also improves levels of inflammatory mediators and inappropriate growth factors. All of these factors, if left untreated, tend to promote cancer development.[5,8]

**Studies show that these foods are associated with *increased* colorectal cancer risk.[6,9,11]**

## Importance of Diet on Colorectal Cancer Incidence

Even more vital than exercise, ***diet*** is known to be one of the most important aspects of reducing colon cancer risk.[9-11] While dietary factors can impact **all** cancer types, they are especially critical in colorectal cancer because of the function and location of the large intestine (which includes the colon and rectum).

All food and drink that enters the body and has to be eliminated must pass through the large intestine. This exposes cells that line the large intestine to carcinogens that either directly damage DNA, or that increase inflammation, which causes free radicals that also damage DNA.

Eating foods cooked at very high temperatures, as ***Life Extension Magazine***® has warned readers about for decades, can cause the formation of cancer-causing chemicals that damage cells of the large intestine.

Studies show that there are numerous foods (or components of foods) that are associated with *increased* colorectal cancer risk.[6,9,11] These include red and processed meats, preserved foods, saturated fats, high-sugar foods, and refined carbohydrates ("white" starches).

Numerous dietary factors have been shown to have a *protective* effect against colorectal cancer. These include regular consumption of calcium, vitamin D, fruits, vegetables (especially cruciferous vegetables such as broccoli, cauliflower, and Brussels sprouts), fiber, and fish.[6,9]

More specifically, regular fish consumption reduces the risk of colorectal cancer by **12%**, and eating fish while ingesting more than **20 grams** per day of fiber can reduce risk by **25%.**[6]

## Cancer-Fighting Nutrients

A glance at the protective dietary factors above reveals that plants and fish products play an especially large role in colorectal cancer prevention. This is due in large part to the abundance of protective molecules that these organisms produce, including vitamins and a host of other biologically active compounds.

While healthy diet is critical, nutrient supplements also provide many compounds shown to help guard against cancer. The use of supplements to reduce the risk of cancer (known as **chemoprevention**) shows promise for preventing, slowing, and even reversing colon cancer development.

Here is a list of some of the best-studied nutrients in this area:

Higher **vitamin D** levels are associated with reduced colorectal cancer incidence and deaths. This is likely because vitamin D has immune-supportive functions that can boost the activity of cells that seek and destroy early cancer cells. Vitamin D also reduces the chronic inflammation that can promote colorectal cancer development.[12]

Studies show that **vitamin E**, especially in the form of ***gamma-tocotrienol***, reduces colorectal cancer cell growth and even induces tumor cell death.[13,14] In addition, vitamin E has strong free radical scavenging properties that may prevent DNA mutations from occurring to begin with.[15]

**Folic acid** is important in protecting DNA strands from damage, and has been shown to reduce colorectal cancer risk by **42%** in people with inflammatory bowel disease, a group at high risk for this type of cancer.[16]

**Minerals**, particularly calcium and selenium, also appear to factor heavily in colon cancer prevention.[12] In a large Korean study, people in the highest **25%** of **calcium** intake had an impressive **84%** reduction in colon cancer risk, compared with those in the lowest **25%** of intake.[17] Lab studies reveal that **selenium** compounds can induce ***autophagy***, a form of cancer cell death in which cells simply destroy themselves. This powerful mechanism is currently being targeted by drug developers.[18]

**Fish oil**, rich in omega-3, is a potent inhibitor of inflammation throughout the body, making it a natural fit for colon cancer prevention.[19,20] Human studies demonstrate that supplementation with the omega-3 EPA (eicosapentaenoic acid, **2 grams** daily for 30 days prior to surgery for colorectal cancer) can reduce the formation of new blood vessels essential for tumor growth, and appeared to produce some increases in overall survival for the first 18 months post-operatively.[21]

**What You Need to Know**

### Powerful Chemoprevention for Colorectal Cancer

- **Colorectal cancers are the third most common cancer and the second deadliest cancer among US adults.**
- **Aggressive screening with colonoscopy has reduced rates of colorectal cancers and the resulting death rates, but even aggressive screening misses thousands of cases annually.**
- **Prevention is always better than treatment, and for colon cancer multiple nutrients are available that can slow or prevent colorectal cancer development.**
- **Several drugs, especially metformin, also show strong cancer chemopreventive effects.**
- **Given the clear and present risk of colorectal cancers in all of our lives, it makes sense to construct and follow a cancer-prevention strategy that includes lifestyle and diet changes as well as a thoughtful supplement regimen.**

**N-acetyl cysteine (NAC)** is a strong natural free radical scavenger compound, making it appealing for use in cancer prevention of the colon.[22] Studies have shown that people at risk for colorectal cancer who took NAC supplements, **600 mg** per day, had a **40%** reduction in the recurrence of colonic polyps.[22] Biochemical and microscopic studies reveal that NAC augments the function of mitochondria (powerhouse of our cells), and produces microscopically detectable changes in early colon cancer in animals.[23]

## Cimetidine Prevents Colon Cancer Metastasis and Increases Survival

**Cimetidine**, commonly known as Tagamet®, is a well-known over-the-counter medication used historically to alleviate heartburn. A growing body of evidence has shown that it also has potent anti-cancer ability. It functions via several mechanisms to *inhibit* metastasis and *improve* survival in colon cancer patients.[68-75]

A study published in the *British Journal of Cancer* showed cimetidine's potent anti-cancer effects. For the study, 64 colon cancer patients received chemotherapy with or without cimetidine (**800 mg** per day) for one year. For the cimetidine group, the 10-year survival was close to **90%** compared to only **49.8%** for the control group. Remarkably, for those subjects with a more aggressive form of colon cancer, the 10-year survival was **85%** in those treated with cimetidine compared to **23%** in the control group.[74] These findings were confirmed in another study in which colorectal cancer patients were given cimetidine for just seven days at the time of their surgery, and 3-year survival increased from **59%** to **93%**.[75]

Cimetidine does not reduce colon cancer incidence, so it should not be taken for prevention purposes. It has demonstrated powerful **treatment** benefits in those who contract colon cancer. Colon cancer patients should consider taking **800 mg** per day of cimetidine five days prior to surgical removal of their tumor and for one year after surgery to reduce metastatic risk. Some people take a 2-3 month course of cimetidine once a year to boost natural killer cell activity.

As beneficial as they are when taken separately, taking certain nutrients in combination has been shown to have additional value in colorectal cancer prevention. In a large clinical study, the combination of vitamins A, C, and E, along with the element selenium (**200 micrograms**), reduced the recurrence rate of precancerous polyps by **39%**.[24] Daily multivitamin use was associated with an **8%** reduction in colorectal cancer risk compared with nonusers.[25]

## The Protective Power of Plant-Based Nutrients

**Phytonutrients** are components of plants thought to promote human health. They help protect plants from dangers such as UV radiation and insect attacks. They also confer protection to those who consume the plants.

Not surprisingly, plant-based nutrients have multiple protective effects against colon cancer. We've included a summary of some of the best-studied phytonutrients.

**Garlic**, especially aged garlic, suppresses the excessive cell proliferation that occurs in the earliest stages of colon cancer. One animal study showed that supplementation with aged garlic extract significantly reduced the development of ***aberrant crypt foci*** (precursors of cancer).[26] It also reduced the total number of polyps and cancers that formed, a finding that was replicated in humans with a dose of **2.4 mL** (approximately half a teaspoon of liquid aged garlic extract) per day for one year.[27] Human studies show a **37%** reduction in colorectal cancer risk in people with the highest garlic consumption.[28]

**Ginger** has effects similar to those of garlic, especially by blocking cell replication and boosting cancer cell self-destruction.[29-32] Doses of ginger at **2 grams** per day have produced significant favorable changes in the intestinal lining cells of people at increased risk for colorectal cancer.[29]

**Milk thistle extracts**, particularly ***silibinin*** and ***silymarin***, have numerous mechanisms that help prevent cancers from forming. These include triggering cancer cell suicide (apoptosis), reducing inflammatory changes, and blocking cell replication. Importantly, they also help prevent the spread of existing cancers by reducing the production of ***protein-melting*** enzymes that cancer cells use to invade and metastasize.[33-35]

**Cruciferous vegetable extracts** are those derived from broccoli, cabbage, Brussels sprouts, and related plants. These extracts are rich in molecules called ***isothiocyanates***, which have been shown to promote cancer cell suicide and inhibit colorectal cancer development in animal and lab models.[36,37] ***Indole-3-carbinol* (I3C)** is another component of these plants that has

been shown to reduce inflammation and attenuate colorectal tumor development in animal models. Human studies show that those with higher levels of indole-3-carbinol have significantly lower colorectal cancer risk.[38-41]

**Modified citrus pectin** is a gel-like compound extracted from citrus peels that has direct tumor-killing effects on cancer cells. More importantly, animal studies show that it significantly prevents the spread of colorectal cancers to other parts of the body.[42,43] This effect arises from pectin's ability to bind to and block adhesion molecules that metastatic tumor cells use to stick to, and invade, distant tissues.[42,43] (Modified citrus pectin is usually taken by those already stricken with cancer. It is not considered a preventive.)

**Coffee** is rich in numerous bioactive molecules that appear to have anti-cancer properties, such as inducing cancer cell suicide.[44,45] Studies show that people with the highest coffee consumption (more than 3 cups per day) have a **33%-79%** reduction in their risk for colorectal cancers compared to the lowest consumers.[46,47]

## Polyphenols Reduce Cancer Risk

Among the largest group of plant-based nutrients with demonstrated cancer-fighting potential is the **polyphenol** family.[48] Numerous epidemiological studies offer solid evidence that diets rich in polyphenols result in significantly lower incidence for many kinds of cancer—including colon cancer.[49,50]

## Understanding Colorectal Cancer

Cancers of the colon and rectum are collectively referred to as **colorectal cancer**. Both structures have similar cellular linings, which is where cancers arise. Although colorectal cancer has numerous causes, these all boil down to chronic chemical stress, inflammation, and loss of control over cell division common to all cancers.

Like all other types of cancer, colorectal cancer begins when DNA damage leads to mutations that deregulate DNA replication.[76,77] This causes cells to begin to multiply out of control, which can lead to cancer. Colorectal cancer typically begins as a precancerous growth called a **polyp** (also known as an *adenoma*).[78-80] Over time, inflammation and oxidative stress can cause benign polyps to progress to a specific kind of cancer called ***adenocarcinomas***.[76,81] This type of cancer can be especially dangerous because it is known for spreading to other parts of the body.

Colorectal cancer is typically a silent disease. By the time it produces noticeable symptoms (diarrhea, constipation, bloody stools), the disease is often already in its advanced stages. This highlights the importance of having a routine colonoscopy, which is associated with a **77%** mortality risk reduction over 10 years.[82] But these screenings are not foolproof.

While it's true that colonoscopies have sharply reduced the death rates from colorectal cancers, we are still missing far too many dangerous colorectal cancers, often until it is too late.

That's why **prevention** is so important. Experts agree that lifelong colon health may be promoted safely, effectively, and naturally using **cutting-edge**, **low-cost** nutritional therapies.[83]

Three of the most potent polyphenols with colon cancer-preventive effects are resveratrol, quercetin, and curcumin.

**Resveratrol** is found in grape skins and other red-pigmented foods. It is one of the best-known polyphenols—and for good reason. It has actions against multiple stages of the cancer-development process that make it a potent chemopreventive agent. Resveratrol is a gene-modifying agent that enhances cells' resistance to oxidant- and inflammation-promoting stresses.[51] It has multiple, complementary effects on colon cancer development, including switching "on" a tumor suppressor gene that gets switched "off" early in

carcinogenesis and inhibiting genes for invasion-promoting proteins.[52] Preliminary human studies show that oral doses of resveratrol, ranging from **500** to **5,000 mg** per day, achieve levels in the intestine consistent with anti-carcinogenic effects.[53,54] For people ingesting a wide variety of polyphenols from their healthy diet and supplements, lower doses (**100** to **250 mg** per day) of resveratrol may be all that is needed.

**Quercetin** is found in apples and onions. It has been shown to stop the cancer cell replicative cycle and is strongly associated with a reduction in inflammatory molecules that promote cancer development.[55,56]

**Curcumin** is what gives the Indian spice turmeric its yellow color. This phenolic compound has an impressive suite of anti-cancer properties that prevent or fight cancer at multiple stages of the development process.[57] It blocks inflammation that promotes cancer progression, it stops the cancer cell replication cycle in its tracks, it increases the rate of cancer cell self-destruction, and it prevents tumor cells from developing invasive and metastatic potentials.[58-60] In addition, lab studies reveal its ability to inhibit the recently-discovered ***cancer stem cells***, which hide in tissues and are a major cause of cancer recurrence after treatment.[61] And a human clinical trial showed that curcumin, **4 grams** per day for 30 days, significantly reduced the number of precancerous lesions found on colonoscopy, compared with controls.[62] (Those obtaining nutrients from healthy diets and supplements usually need only **400 mg** per day of highly absorbable curcumin.)

## Drugs that Prevent Colorectal Cancer

Several pharmaceutical agents are showing signs of effectiveness in preventing colorectal cancers. **Aspirin** has been associated with a reduction in colorectal cancer incidence and deaths, even at the low doses used for cardiovascular disease protection (**75** to **100 mg** per day).[63] One very large, long-term study has shown that regular aspirin use is associated with as much as a **19%** reduction in colorectal cancer rates.[64] Unfortunately, most doctors overlook aspirin's cancer-preventive properties.

**Metformin** is an antidiabetic drug with a longstanding safety record and a suite of actions more similar to natural supplements with multiple targets than to most single-targeted drugs (indeed, it is derived from the French Lilac tree). Because diabetes is a major risk factor for colorectal cancer, there has been great interest in metformin for cancer prevention, both in diabetes patients and in others.[65] A study demonstrated that metformin use is associated with a **10%** reduction in the incidence of colorectal cancers and a **32%** increase in survival, compared with nonusers.[66] In another study, metformin at a dose of **250 mg** daily showed a **40%** reduction in the prevalence of precancerous adenomas.[67]

## Summary

Colorectal cancer remains the second leading cause of cancer deaths.

Colorectal cancer risk may be greatly reduced through a combination of lifestyle and diet interventions.

A number of nutritional supplements have demonstrated colorectal cancer-preventive properties. These supplements are well-tolerated and widely available, and can form the backbone of a thoughtful, long-term, overall disease prevention strategy. ●

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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- Support normal cell-cycle growth,[4]
- Maintain immune system health,[5]
- Promote healthy brain function,[6]
- Help maintain normal, healthy platelet function,[7]
- Support natural defenses against estrogen-mimicking chemicals,[8] and
- Benefit joint health and bowel function.[9]

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Note: Those taking anticoagulant drug Coumadin® (warfarin) should use Bone Restore without K2.

BY ROBERT GOLDFADEN AND GARY GOLDFADEN, MD

# *Novel* ***Method*** *Uncovers* ***Younger****-Looking Skin*

**Microdermabrasion** is one of the top five minimally invasive topical procedures performed in the United States.[1]

This mechanical form of exfoliation has increased in popularity in recent years due to its effectiveness in revitalizing aging skin on the face and across the entire body.[2,3]

Body microdermabrasion can transform dull, thick, and peeling skin into soft, silky, and smooth youthful skin.

However, this in-office treatment can be expensive and also carries potential health risks that leave many individuals seeking safer, effective alternatives.

Fortunately, a unique body exfoliator has been formulated with ingredients that provide skin rejuvenating effects similar to microdermabrasion but without the significant drawbacks. The result is a safe, affordable, and gentler at-home alternative that delivers the appearance of younger, healthier, and more radiant skin.

## Microdermabrasion: Multiple Benefits and Drawbacks

The outermost layer of the skin, called the *stratum corneum*, is composed of dead cells that form a protective outer barrier and prevent moisture loss.[4] As new replacement cells migrate to the surface, these dead cells slough off. This continuous natural exfoliation maintains skin integrity and function.[5]

As the years pass, the migration of replacement cells to the surface of the skin slows down, leading to the accumulation of dead cells in the stratum corneum that produce changes associated with premature aging.[6]

So, in an attempt to overcome this problem, a growing number of individuals have turned to a non-surgical procedure originally developed in Italy in 1985 called **microdermabrasion** that primarily targets the facial area.[7] This technique uses a machine to spray micro-crystals onto the face and then gently remove them simultaneously with aged surface skin.[8] Since the body interprets this as a mild injury, it speeds up repair mechanisms to renew the skin surface—revealing fresh, younger cells.[8,9]

Additionally, removing dead skin cells opens the door for more effective delivery of moisturizers, antioxidants, and collagen-boosting compounds deeper into the layers of the skin for a substantial anti-aging effect.[10]

Despite its effectiveness, microdermabrasion has several drawbacks. First, the machine is shared among patients, and, without proper sanitation measures, increases the risk of blood-borne pathogen transmission.[11] Second, most procedures are performed by non-physician personnel, which heightens the potential for human error. For instance, there is a greater likelihood of crystals entering the patient's eye and causing irritation. Third, treatments in a qualified professional setting such as a certified medical clinic can cost up to $300 per session, with a total of 12 sessions typically required for results.[12] This quickly adds up to $3,600 without taking into account other expenses like the initial consultation fee.

## Development of a Safe and Affordable Alternative

But suppose you had access to an effective means of achieving similar results as machine-administered microdermabrasion without all the downsides. Better yet, what if it was designed to target the entire surface of the body, rather than solely the face, as in traditional microdermabrasion?

***Life Extension***® readers will be gratified to learn that such an intervention is now available in a body exfoliator—*featuring scientifically proven ingredients*—that can be safely used in the shower, especially on the neck and décolleté, hands, and back.

What You Need to Know

## Body Exfoliator Rejuvenates Aging Skin

- A minimally invasive exfoliant procedure called microdermabrasion has increased in popularity in recent years due to its remarkable ability to rejuvenate aging facial skin.
- Its potential health risks, along with a hefty price tag, have many individuals seeking alternatives.
- A safe, affordable, and gentler at-home alternative in a body exfoliator has been developed that delivers the same results as microdermabrasion without all the notable drawbacks.
- This unique body exfoliator provides cleansing benefits, exfoliating properties, and stimulation of the skin.
- It is formulated with amber crystals and jojoba beads, as well as potent antioxidants and effective moisturizers that translate into fresher, more radiant, younger-looking skin.

This whole-body cleanser removes the buildup of dirt, grease, and other impurities—leaving your skin with a soft and clean feeling accompanied by a healthy, bright glow. Its exfoliating properties eliminate the rough, dry, and crepey skin characteristic of aging. Lastly, this body exfoliator effectively treats skin nuisances like calluses and back acne.

Let's now discuss the natural substances incorporated into this unique formula, and how they work in a complementary way to leave behind a more youthful appearance.

### Amber Crystals and Jojoba Beads

**Amber** is a natural organic substance derived from fossilized resin trees in the present territory of central and northern Europe almost 45 million years ago. This stone has been historically used in the Baltic Sea region to treat a variety of ailments, from asthma to rheumatism to jaundice.[13] Skin rejuvenation can now be added to this already impressive list of benefits thanks to the terpene compounds present in amber,[13] which provide powerful free-radical scavenging and anti-aging properties.[14]

Amber crystals have been shown time after time to combat the tell-tale signs of aging. In dermatologist test cases, the daily use of an exfoliant containing amber crystals for one to three weeks was shown to produce the following improvements in patients with aging skin:[15]

- Improvement in **skin roughness** by **50%**
- Reduction in **dark hyperpigmentation** by **30%**
- Improvement in **sun-damaged skin** by more than **70%**

Another substance with exfoliating properties is **jojoba beads** (also known as jojoba esters) derived from jojoba oil. Since jojoba beads are biodegradable and possess a unique spherical shape,[16] they are an ideal choice for gently exfoliating the skin without leaving behind any scratches or cuts. Additionally, jojoba esters fit the bill perfectly for improving skin hydration as its chemical composition closely resembles human sebum—the oily substance that naturally moisturizes and soothes the skin.[17] In one clinical study, jojoba esters increased skin suppleness by approximately **25%** after eight hours.[18] As an added bonus, jojoba esters have anti-inflammatory actions.[19,20]

## Antioxidant Tea Blend

Repeated exposure to ultraviolet radiation produces a chronic stream of free radicals that induce oxidative stress, which in turn slowly destroys key skin structures and triggers the formation of wrinkles, sagginess, and fine lines.[21,22] Regular exfoliation allows extracts of red, green, and white tea to better penetrate the skin to combat free radicals and protect against oxidative stress.[23,24]

Most of green tea's skin benefits have long been attributed to the potent polyphenol ***epigallocatechin-3-gallate*** **(EGCG)**, which quenches inflammation and prevents photoaging.[25] Red tea extract boasts a noteworthy one-two punch of aspalathin, a rare flavonoid that enhances concentration of free radical-fighting ***superoxide dismutase*** **(SOD)**,[26] and **alpha-hydroxy** acids that stimulate new cell growth and repair following exfoliation.[27]

Lastly, white tea extract has been shown to inhibit enzymes that break down the structural proteins collagen and elastin, as well as possessing antioxidant power comparable to the aforementioned teas.[28]

## Seaweed Extract

*Chondrus crispus*, a form of red seaweed found in the Atlantic Ocean, acts as an emollient to help soothe, smooth, and hydrate aging skin.[29] With its wealth of anti-aging nutrients, from proteins, vitamins, and minerals to its high content of the moisturizing compound carrageenan, *Chondrus crispus* has the repertoire to nourish and restore the skin's healthy appearance.[30,31]

## Peppermint Oil

Peppermint oil contains a high concentration of **menthol**, which produces a cool, soothing sensation when applied to the skin.[32] This refreshing effect, combined with its pain-relieving,[33] antimicrobial,[34] and antifungal properties,[35] makes peppermint oil an ideal compound to enhance the skin's healing capacity after exfoliation.

## Summary

**Microdermabrasion** refers to a type of mechanical exfoliation that has been highly successful in revitalizing aging facial skin. While microdermabrasion has been proven to visibly improve the health and appearance of aging skin, its high cost and potential health risks have left many individuals seeking safer and effective alternatives.

Fortunately, a low-cost, at-home alternative exfoliator has been developed that offers deep cleansing benefits and overall stimulation of the skin all over the body. This unique body exfoliator contains ultra-fine amber crystals and jojoba beads, along with potent antioxidants and moisturizers, that work together to gently rub away skin imperfections to restore a youthful appearance. ●



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


**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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**Microdermabrasion** is a form of exfoliation that **revitalizes** aging skin.[1,2]

By removing the tough layer of dead cells on the skin's surface, **microdermabrasion** can help restore skin back to the soft, silky, smooth look and feel of youth.

The new **Ultimate MicroDermabrasion** provides:

- **Amber** crystals to smooth skin and help even out discoloration,[3]
- **Jojoba** crystals that exfoliate and boost skin suppleness,[4]
- **Green, red, and white tea** extracts to support skin-cell growth and collagen, elastin, and antioxidant levels,[5-7]
- **Seaweed** to smooth and hydrate the skin,[8] and
- **Peppermint oil**, which provides a cooling, soothing sensation to exfoliated skin.[9]

Designed to be used **at home** for the entire body, **Ultimate MicroDermabrasion** can be used daily until youthful appearance and softness is restored. It can then be used as needed to maintain benefits.

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CURE AGING
in Our Lifetime
www.RAADfest.com

# A NEW ERA!

# Curing Aging in Our Lifetime

by William Faloon,
Co-Founder of Life Extension Foundation®

Many of you know I've spent my career pursuing scientific methods to eradicate **biological aging** in humans.

By networking with like-minded individuals, I've helped introduce discoveries that have had profound impacts on human longevity.

In our early years, **Life Extension Foundation®** introduced the anti-aging properties of **coenzyme Q10** and the heart attack-prevention effects of **aspirin**.

These innovations spared countless lives. What was lacking up to now were therapies to reverse systemic **aging** in the elderly.

A pivotal turning point emerged in **2015**. The game-changers were laboratory findings demonstrating that **systemic rejuvenation** can be induced in old animals.

This prompted scientists we work with to design **clinical studies** whereby techniques that have **reversed aging** in the animal model can be tested in elderly people.

As we delved into the prospect of **human age reversal**, we began finding others who were planning similar research endeavors. We were not alone in conjecturing that a cure for human aging might be attainable relatively soon.

This article will enlighten you to an exciting conference in San Diego where a host of **age-reversal** initiatives will be presented.

Since our inception in 1980, the **Life Extension Foundation** has funded **biomedical research** aimed at extending lifespans beyond conventional expectations.

What's happening today with rejuvenation research is nothing short of a **medical renaissance**. It will likely have a far greater impact on human longevity than the discovery of antibiotics.

On **August 4-7, 2016**, in **San Diego**, **California**, you will have the opportunity to interact with the **physicians** and **scientists** who will oversee human rejuvenation studies.

The name of the event is ***Revolution against Aging and Death*** conference. It is sponsored by several non-profit groups. The focus is **human age-reversal**.

Before describing this unprecedented scientific gathering, let me discuss a few recent timelines so you can appreciate the rapid pace with which **age-reversal** technology has progressed.

## We Were Desperate in 2005

In **2005**, I hosted a Sunday afternoon get-together with some of our dedicated supporters. I'll never forget an educated woman approaching me with a complaint. She was annoyed that she had an outlandish amount of money at her disposal but nowhere to contribute it to that had any chance of reversing biological aging.

She asked me if there were any direct donations she could make to **Life Extension Foundation** that would accelerate human age-reversal research. My response to her **blank check offer** was that I suffered the same dilemma.

**Life Extension**® was doing modestly well, but there were no projects in which meaningful human age-reversal theories could be clinically tested.

This was not the first time a wealthy person offered us donations for impossible-to-conduct clinical research. There were in fact instances of hostility expressed to me by individuals saying, "***I'm offering to pay you to do human age reversal research… why aren't you taking my money***?"

The reality in those early years was that there were no viable human age-reversal concepts that could be clinically tested…no matter how much funding was offered.

## The "Emergency" Summit of 2013

In **January 2013**, a group of anti-aging doctors and motivated individuals invited me to what they described as an "**emergency summit**" in South Florida. The credibility of the people involved mandated my attendance.

An inspirational speech given by the lead physician enlightened the group to the nature of the "emergency." Put simply, this doctor made it clear we were all "***aging to death***," yet no one was doing anything to reverse this lethal trend. The group united behind the premise that scientific methods to reverse pathological aging had to be fast-tracked. They then turned and asked me, "***What should we do?***"

I reminded the group that they were already slowing premature aging via their healthy lifestyle choices, along with their hormone and supplement regimens. They understood this, but the question remained: What could be done to reverse the aging process that was slowly killing us all?

The group wanted to hear something positive, so I reminded them of data showing that the drug **metformin** had anti-aging properties that mimicked the longevity benefits of **calorie restriction**. One doctor stood up and offered to lead a clinical trial to document metformin's benefits. I replied that this would be a waste of money because there was already sufficient data to support the use of **metformin.**

After a few subsequent meetings, this South Florida group disbanded because there was nothing practical at the time that could be funded that would lead to rapid reversal of human aging.

## Age Reversal goes Live in 2015!

Move forward to **2015** and a paradigm shift emerged. For the first time, research initiatives to induce meaningful, systemic human age reversal were evolving into scientific reality.

To put this into perspective, I'd been attending anti-aging conferences since **1978**, when the focus was on disease prevention. The concept of **age reversal** was viewed as something that would occur in the future.

In **2015**, that future arrived in the form of a **biomedical revolution**!

Unlike typical scientific conferences where you often get lost in the crowd, this unique event will bring like-minded individuals close together, with a range of age-reversal strategies presented by avant-garde scientists and lots of group follow-up discussions.

A listing of the speakers scheduled for **Revolution against Aging and Death** appears at the end of this article. We reserve the right to bring in last minute scientists who may be on the verge of major discoveries. What may surprise you is how far along these physician/scientists are in potentially making older people grow functionally younger.

## Exponential Knowledge Eruption

Scientists at this moment are pushing through **human** studies with the objective of biologically transforming older people into measurably younger individuals. Experts believe that many aspects of pathologic aging can be eradicated using these newly developed therapies. The integrity of these findings is what prompted the **Life Extension Foundation** to cosponsor **Revolution against Aging and Death,** our first national **conference** on **aging** since **1986**.

If it were not for the many scientists now engaged in human age reversal initiatives, **Life Extension** would NOT be involved in this conference. In other words, if all you were going to learn at this event was more information on preventing disease and slowing aging, this conference would not be that different from others you may have attended.

What distinguishes this conference from all others is a focus on **human age reversal** and how it can be accelerated through group collaboration.

## A Different Kind of Gathering

If you consider what's included in this multi-day program, you'll realize what a bargain it is. In addition to the impressive speakers, the registration fee covers **healthy lunches** and **dinners** for two straight days in a fabulous hotel resort ballroom. This will allow for productive interactions to occur throughout the multi-day program and eliminates awkward breaks where you wonder what to do for an hour or two. The group is staying together throughout most of this historic meeting.

## Multiple Reasons for You to Attend

There are multiple benefits beyond the illuminating experience you will gain by attending the **Revolution against Aging and Death** conference.

One opportunity is making personal connections with physicians who may already be planning to incorporate ***age reversal*** into their practice on an individual basis. This means you might gain access to regenerative therapies before formal clinical trials are initiated. Another reason for attending is to demonstrate solidarity amongst a huge group of like-minded people. This is important because there may be hundreds of representatives from Wall Street, Silicon Valley and Big Pharma at this conference looking for investment opportunities, along with dozens of media.

We expect over **1,000 people** will attend the conference. Can you imagine how much more energy will be generated if we pack the room with **4,000** individuals whose priority is to gain quick access to age-reversal therapies? This single event could open the floodgates (i.e. billions of dollars) of private investment aimed at rapidly developing validated **age-reversal** treatments.

In case you haven't figured this out yet, we are seeking to bring the science of age reversal to the public forefront. We want to transform **regenerative medicine** into the most important avenue of research that humanity pursues.

## Discounted Registration Fee

Most conferences are put on by commercial entities looking to turn a profit, so they charge substantial fees over and above their expenses.

In contrast, this unique conference is sponsored by several **nonprofit** organizations. The goal is to unite activists, enthusiasts, scientists and entrepreneurs who want to accelerate widespread availability of ***age-reversal*** technologies. By eliminating the profit incentive, we've been able to make participation in this event affordable.

Through July 14, the registration fee is **$577** each, but we've arranged for **Life Extension** supporters to save $100 and pay just **$477**. From July 15 to August 3, the cost is **$627**, **$527** for **Life Extension** supporters. Couples who sign up get an additional **$50** off these promotions. Again, the fee includes two days of healthy lunches and dinners.

To get the best price, enroll by **July 14** and pay only **$477**.

## Dates and Location

The location of this unprecedented event is the **Town and Country Resort** in **San Diego**, **California**. This historic gathering begins **Thursday** evening, **August 4,** and ends **Sunday, August 7** at 1 p.m. Based on the number of pre-registrations, we expect over **1,000** attendees.

To enroll at the discounted rate, log on to **www.RAADfest.com**. Enter "**LEF**" in the promotional code box, and $100 will be subtracted from your registration fee.

If you don't like dealing with websites, just call **1-866-595-6577** (24 hours). A live operator will register you at the **discounted** price.

## Uniting Longevity Enthusiasts

**Life Extension Foundation** is the world's ***largest*** consumer-based longevity group. We fund **millions of dollars** each year in **research** aimed at radically extending the healthy human life span.

Major leaps in knowledge about **aging** have occurred over the past two years. These advances mandate that groups involved in **longevity research** unite to make **age reversal** a reality for those alive today.

In this era of electronic communication, it's vital to have **in-person** interactions with like-minded people to share information, inspiration and insight. This helps create a sense of connection and belonging that strengthens our resolve to gain control of aging in our lifetime. For the first time in medical history, the prospect of human age reversal has become a realistic probability. This represents a renaissance not just in the scientific arena, but also in the way society views human longevity potential.

I hope to personally meet many of you during this unprecedented educational venture **August 4-7** in **San Diego**.

For longer life,

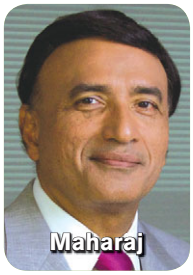
William Faloon

P.S. There are additional perks included with the registration fee that you can review by visiting the official **Revolution against Aging and Death** website at **www.RAADfest.com.**

In addition to **Life Extension**'s William Faloon, presenters at the event include top anti-aging researchers and experts such as:
Ray Kurzweil, Dr. Bill Andrews, Ilana Arzt, Joe Bardin, Greta Blackburn, Bernadeane Brown, Dr. Kristen Comella, Jose Luis Cordeiro, Dr. Brant Cortright, Dr. Aubrey de Grey, Maria Entraigues-Abramson, Dr. Greg Fahy, Dr. Ben Goertzel, Michael Greve, Laurie Handlers, Dr. Steve Hruby, Zoltan Istvan, Dr. Ron Klatz, Dr. Moss Jackson, David Kekich, Dr. Dobri Kiprov, Dr. Mark Gordon, Dipnarine Maharaj, MD, Nuno R.B. Martins, Dr. Max More, Peter Nygard, Liz Parrish, Dr. Kirk Parsley, Steve Perry, Molly Sheridan, James Strole, Suzanne Somers, Neal VanDeree, Dr. Natasha Vita-More, Dr. Kristen Willeumier, and Dr. Alex Zhavoronkov.

## Age Reversal Research Initiatives at RAADfest

There will be over 30 speakers at RAADfest 2016 making presentations on a wide range of health topics. Listed on this page are speakers that will describe age reversal research initiatives they are directly spearheading.




### Dipnarine Maharaj, MD

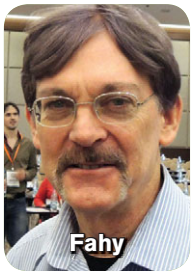
***Reversal of pathologic aging processes along with restoration of functional immune status using stem cell mobilized plasma components from young donors.***

The bone marrow of healthy 21-year-olds contains an abundance of youthful stem cells, immune cells, and paracrine factors including plasma exosomes, proteins, and cytokines.

Using an FDA-approved factor that mobilizes bone marrow and a proprietary protocol for its administration, rapid release of pro-youth factors is enhanced. Through a process known as apheresis, these pro-youth factors are harvested in the plasma of the young donors and administered to older people to induce restoration of healthy immune function.

This study is to be conducted at the South Florida Bone Marrow/Stem Cell Institute. It plans to initially enroll about 30 study subjects who meet the eligibility criteria to receive the mobilized plasma from blood-matched healthy, young donors.

**Dr. Maharaj** is a hematologist/oncologist stem cell transplant physician and director of the South Florida Bone Marrow Stem Cell Institute in Boynton Beach, Florida.




### Greg Fahy, PhD

***Reversal of human immunological aging, along with suppression of autoimmune factors***

Immune senescence is initiated by the atrophy of the thymus gland near the time of puberty. Thymic atrophy can be reversed in animals and in young AIDS patients, but this has not been shown in normal aging humans.

Dr. Fahy reports on an ongoing human aging reversal trial at Stanford University he is overseeing using FDA-approved agents that in combination should safely regenerate not only the thymus, but also other organs as well. Side effects have been minimal, and subjective responses have been positive. Spinoff applications include elimination of diabetes, other autoimmune diseases, and transplant rejection.

**Greg Fahy** is a world renowned authority on aging and cryobiology and is chief scientific officer at 21st Century Medicine, a wholly owned subsidiary of the Life Extension Foundation.


### Dobri Kiprov, MD

***Inhibition of senescent cell behavior in elderly subjects via removal of aged plasma and infusion of young plasma components…Prophylactic plasma exchange in an attempt to suppress inflammation and induce age reversal***

Dr. Kiprov's team was the first in the world to demonstrate that replacing the systemic milieu restores the function of impaired immunocompetent cells in patients with autoimmune diseases.

Based on this observation, he developed a model whereby removing senescent plasma and replacing it with factors derived from young plasma may reset the responsible biochemical pathways to their younger states.

Dr. Kiprov's team has received an Internal Review Board (IRB) approval to conduct a trial study on Intermittent Heterochronic Plasma Exchange as a Modality for Preventing Cellular Senescence that will seek to prove age reversal in a group of older volunteer (human) study subjects.

**Dobri Kiprov** is an internationally recognized pioneer and expert in the field of therapeutic apheresis. He is chief of the Division of Immunotherapy at California Pacific Medical Center in San Francisco and medical director of Apheresis Care Group.


### Aubrey de Grey, PhD

***Why aging's days are numbered, and the diseases of aging even more so***

Over 15 years ago, I proposed that age-related disease and disability might be easier to postpone and prevent by periodically repairing the accumulating damage that causes it, rather than by slowing the body's creation of that damage as almost all researchers had historically assumed. This concept, which is now widely accepted as promising by the expert community, is being pursued by laboratories worldwide and especially by SENS Research Foundation's in-house and extramural laboratory research programs. Progress is accelerating, as illustrated both by increasingly high-profile academic publications and by the translation of these projects to spin-out startup companies.

**Aubrey de Grey** is Chief Scientific Officer at SENS Research Foundation and internationally recognized leader in the field of regenerative medicine research.


## Steve Perry

### *Growth Differentiation Factor 11 (GDF11)*

GDF11 is a naturally occurring peptide that has been cited in several papers as having a capacity to restore aging muscles, hearts and brains in mice, while researchers at Harvard proclaim it may have significant age reversal effects. GDF11 had never been tested in humans until Steve Perry became patient zero on June 7, 2014.

Parabiosis research strongly suggests that blood borne peptides, especially GDF11, are a key component of the "aging program." Steve and about 20 volunteers are working on a GDF11 dosing strategy as well as measuring key biomarkers in the cardiac, pulmonary, cognitive, skin elasticity and immune areas to determine GDF11's effectiveness. Results of this study will be presented.

**Steve Perry** founded GDF11 Rejuvenation, Inc. in June, 2014, to explore the efficacy of GDF11 supplementation.


## Liz Parrish and Bill Andrews, PhD

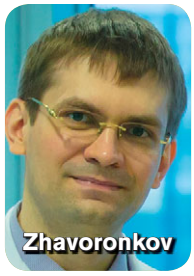
### *Extending telomeres to reverse the clock to aging and declining health*

Lengthening of telomeres using the enzyme telomerase is a protocol that has demonstrated age reversal in experimental models. Longer telomeres not only increased the energy in old mice, but also restored their ability to breed, restored their brain function, revitalized their internal organs, and made them look and behave young again.

Elizabeth Parrish and Bill Andrews will be discussing their joint venture, called BioViva Fiji, to use gene therapy to make this technology of telomere lengthening possible for humans in the very near future.

**Elizabeth Parrish** is the Founder and CEO of BioViva USA. She is a humanitarian, entrepreneur and innovator, and a leading voice for genetic cures for aging. Recently she became patient zero in the highly publicized first gene therapy effort to reverse aging.


**Bill Andrews** is the Founder and CEO of Sierra Sciences. His scientific background for 35 years in the biotech industry has led to many medical breakthroughs including the discovery of human telomerase. His career for the last 17 years has focused specifically on finding ways to extend human lifespan and health span through the intervention of telomere shortening.




## Alex Zhavoronkov, PhD

### *Deep learning and artificial intelligence advances that can accurately evaluate efficacy of age-reversal therapies*

Dr. Zhavoronkov leads an international group of scientists using advances in deep learning and artificial intelligence to develop comprehensive and accurate biomarkers of human aging to measure the effectiveness of many interventions. His team is also developing a set of molecules aimed at reversing age-related changes while targeting cancer and common degenerative disorders. Over the past 3 years his group published over 60 peer-reviewed publications in leading scientific journals and two books including *The Ageless Generation* by Palgrave Macmillan.

**Alex Zhavoronkov** is chief science officer of the Biogerontology Research Foundation, a UK-based registered charity supporting aging research worldwide and a CEO of Insilico Medicine at the Emerging Technology Centers located at the Johns Hopkins University.

His talk at RAADFest will focus on developing comprehensive and actionable biomarkers of human aging, where ensembles of deep neural networks trained on multimodal data coming from tens of thousands of patients predict both chronological and biological age of the patient at any point in time. He will expand on how artificially intelligent systems in coup with human domain expertise in drug discovery can be used to discover, personalize and test geroprotectors intended to slow down or even repair age-related damage.


## Ben Goertzel, PhD

### *Using advanced artificial intelligence to identify pathways to super-longevity and super-abundant health*

Dr. Goertzel has been working for decades on advancing artificial intelligence technology and using artificial intelligence to analyze longevity-related datasets, with exciting results.

He will indicate the kinds of greater insights that would be expected to emerge from larger and more comprehensive initiatives using artificial intelligence-based analysis/simulation of the biological underpinnings of aging and health.

**Ben Goertzel** is the chief scientist of Hanson Robotics, a Hong Kong robotics company, and Aidyia Limited, an investment management firm. He also leads the open-source OpenCog Artificial General Intelligence (AGI) project and the annual AGI conference series. In the area of longevity research, he has been the foremost advocate and practitioner of the application of artificial intelligence technology to the analysis of genomics data regarding longevity.


## Dr. Kristin Comella,

### *Harnessing your body's own stem cells to reverse the effects of disease and aging*

The field of regenerative medicine is rapidly growing with an emphasis on stem cell therapies and the promise of cures for everything from acute injuries to chronic degenerative diseases. The list of indications is expanding as more studies are published to demonstrate safety and efficacy.

Regenerative medicine is the process of replacing or regenerating human cells, tissues or organs to restore or establish normal function. The concept is that damaged tissue can be restored by using the body's own healing mechanism to promote repair. This new branch of medicine may change the course of chronic diseases and standard clinical therapies. The team at US Stem Cell is harvesting stem cells from fat tissue for use in orthopedics, autoimmune diseases, neurological disorders and more.

**Kristin Comella** is a world-renowned expert on regenerative medicine with a focus on adipose-derived stem cells. She was named Number 1 on the Academy of Regenerative Practices list of Top 10 Stem Cell Innovators.


## Peter Nygård

### *Somatic cell nuclear transfer to reverse cellular aging in vivo*

Peter Nygård is a successful entrepreneur who has invested millions of dollars in the pursuit of research aimed at transitioning aging human cells in the living body back into an autologous embryonic state via a process known as Somatic Cell Nuclear Transfer (SCNT).

In 2009, as he got started on the path to reverse aging, he suddenly realized that the trip from 70 to 80 was not a nice trip–that something bad can and will happen on that trip. He wisely decided "not to go on that trip."

His transition from an old 69-year-old to a young 75-year-old is a motivating example of the potential of this technology.

**Peter Nygård** practices and supports all paths to regenerative medicine and is best known for his SCNT work. He is one of the few humans who have used SCNT technology on themselves. He has also written laws for countries to make the use legal. He is heavily financing SCNT translational research throughout the world.


## William Faloon

### *Connecting the dots may be all that's required to cure aging*

A cure for common bacterial infections was published in 1929, yet widespread availability of antibiotics did not occur until 1946. A similar situation exists today whereby aging has been reversed in experimental animal models, but transforming this into human rejuvenation therapies has been delayed.

Bill Faloon will lay out a plan whereby merely connecting the various areas of expertise and commitment will result in laboratory research being rapidly translated into clinical trials and, when successful, made widely available to spare humans today from the lethal impact of age-related disorders.

**Bill Faloon** is co-founder of the Life Extension Foundation, the world's largest consumer-based longevity organization.


## Suzanne Somers

### *Enlightening the world to the prospect of age reversal*

Public acceptance of the medical concept of age reversal will accelerate greater allocation of resources to the field of longevity research.

**Suzanne Somers**, author, lecturer, entertainer, entrepreneur, is the second most recognized female celebrity (after Oprah) in the United States and has exerted a powerful influence on public opinion as it relates to taking charge of one's personal health and well-being.

She has written 26 books, 14 *New York Times* best sellers courageously taking on mainstream medicine by introducing America and then the world to the remarkable benefits to health and aging with bioidentical hormone replacement.

Suzanne's passion for alternatives and non-drug approaches to health and aging include new thinking about cancer and battling environmental pollution and chemicals. To access longevity and quality of life requires a shift in thinking and Suzanne clearly lives her message. She is a breathtaking example of health, sexuality and as she calls it... A NEW WAY TO AGE.

## To Attend This Historic Conference

To enroll at the ***Revolution against Aging and Death*** conference in San Diego (**August 4-7, 2016**) at the discounted rate, log on to www.RAADfest.com. Enter "**LEF**" in the promotional code box, and **$100** will be subtracted from your registration fee. If you don't like dealing with websites, just call **1-866-595-6577** (24 hours). A live operator will register you at the **discounted** price.

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### *Trans*-Tiliroside

*Trans*-tiliroside promotes healthy blood glucose levels and body weight already within normal range.[5]


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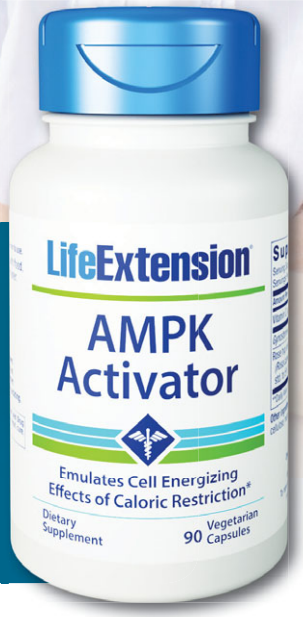


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BY STEVEN LOCKE

# Fight Stress and *Support* Adrenals with Adaptogens

It would be impossible to overstate the devastating impact chronic stress has on Americans' health. As many as **75%** to **90%** of primary care physician visits may be related to acute or chronic stress.[1]

Chronic stress can be harmful to our emotional and physical well-being. It increases the risk for cardiovascular disease, diminished immune function, impaired cognitive function, and depression—and evidence shows that it contributes directly to ***accelerated aging*** and ***premature death***.[1-4]

We now recognize that chronic stress leads to a body-wide imbalance of critical hormones and other essential signaling molecules. While eliminating stress is not practical in today's society, it *is* possible to restore the body's natural hormonal balance and reduce the impact of stress on cells, tissues, and organs throughout the body.[1]

**Adaptogens** are nutrients that have been used for thousands of years to help counteract the negative effects of stress by restoring the body's natural balance.

Modern research has now confirmed that specific **adaptogens** can help the body fight the harmful biochemical and emotional effects of stress. The result is improved mood, greater energy, reduced incidence of chronic disease, and increased longevity.[5,6]

In this article, we'll discuss the four adaptogens best-suited to help naturally neutralize the effects of **chronic stress**.

## How Chronic Stress Affects the Body

The human body is well-equipped to respond to short-term, acute stress. It has a built-in alarm system that, when triggered, releases a surge of hormones that are designed to help ensure survival.

But chronic, unrelenting stress can wreak havoc on the body. Chronic stress leads to higher risk for cardiovascular disease and diminished immune function. It also causes harmful shifts in the human gut microbiome, the community of trillions of bacterial cells in our intestinal tracts that are intimately involved not only with intestinal health but also with normal balance and metabolism throughout the body.[1,7,8]

Studies show that psychological stress is the **strongest** risk factor that predicts future cardiac events—including heart attacks—in people with existing coronary artery disease.[9] And it leads to serious impairment of immune function, leaving us at major risk for cancers or severe viral infections.[1,10,11]

There is also evidence that chronic stress directly contributes to accelerated aging and premature death.[2-4]

One recent alarming study showed that stress is associated with shortened ***telomeres***. As most of you know, ***telomeres*** are stretches of DNA at the end of chromosomes that shorten with aging and can contribute to cellular senescence, or cell aging.[4]

One of the main reasons why chronic stress is so harmful is because it causes fundamental shifts in the way our cells maintain their balanced function, called ***homeostasis***.[12] This imbalance makes us feel edgy, tired, or depressed. It has even been associated with obesity, diabetes, osteoporosis, hypertension, cardiovascular disease, infectious disease, cancer, gastrointestinal complaints, neurological disorders, sexual dysfunction, psychological problems, suppressed immunity, and more.[4,5,12-15]

## How to Protect Against Chronic Stress

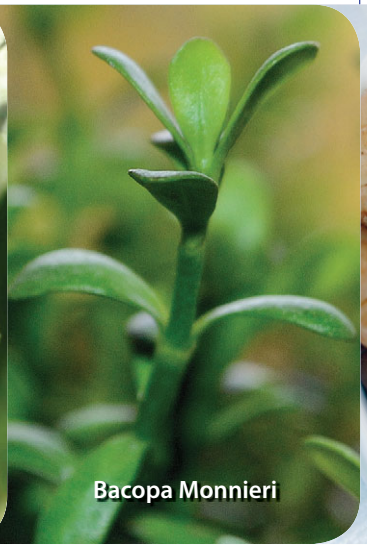
It is nearly impossible to eliminate stress from our lives, which makes it important to supply our bodies with the tools necessary to protect against the long list of consequences stress can produce.

Substances called **adaptogens** have been used for hundreds—and some, even thousands—of years to help restore balance to the body, counteracting the harmful effects of chronic stress.

While adaptogens are not primary stress relievers, what they do is help to naturally fight the harmful effects stress has on the body. Studies show this leads to improved mental and physical performance, reduced incidence of chronic disease, and increased longevity.[5,6]

We've included in this article the latest information on nutrients with adaptogenic properties best suited for rebalancing the body's stress responses.

Let's look at each of them individually.



## Ashwagandha Improves Strength and Endurance

Ashwagandha (*Withania somnifera*) has been used for millennia as an adaptogenic herb in the Indian Ayurvedic system of medicine.[16] In that system, it is considered a ***Rasayana***, or tonic, that can improve endurance and stamina, promote longevity, improve immunity, and enhance fertility.[16,17]

In animal studies, ashwagandha root extract has been found to improve measures of immune function and increase endurance. It has also been shown to prevent stress-induced gastric ulcers, reduce the inflammatory response to foreign proteins, and improve body weight lost as a result of stress.[16]

Recent studies in humans have confirmed ashwagandha's adaptogenic ability to improve the body's response to chronic stress—particularly in the area of physical activity.

Moderate exercise has multiple health benefits, but it also induces injury from muscle cell damage and inflammation. There is an important role, therefore, for adaptogens such as ashwagandha in mitigating exercise-induced stress.

Villagers living high in the Himalayas have used adaptogens for centuries to enhance their resistance to the effects of oxygen deprivation and to boost their endurance from strenuous tasks.[18] Now, modern research offers solid evidence that ashwagandha helps improve the body's response to stressful exercise and resistance training.

In one study, healthy athletic adults taking ashwagandha (**300 mg** twice daily) experienced a **2-fold** increase in their oxygen consumption after 12 weeks, compared with placebo recipients.[17] Increased oxygen consumption is an indicator of improved cardiorespiratory endurance. The supplemented subjects also experienced significant improvement in quality of life scores, compared with the placebo group.

A second study confirmed and extended these findings.[19] Subjects taking ashwagandha root extract (**300 mg** twice daily) showed remarkable improvements in muscle strength compared to placebo recipients. After just eight weeks of training:

- Supplemented men bench-pressed **101.2 pounds**, compared to only **58 pounds** in the placebo group,
- On leg-extension exercises, supplemented men could lift **31.9 pounds**, compared to **21.6 pounds** in the placebo group, and
- Muscle size grew significantly more in the supplemented group than in the placebo group.

Most telling of ashwagandha's adaptogenic properties were the biochemical findings. Compared to the placebo recipients, men taking ashwagandha experienced greater reduction of exercise-induced muscle damage, greater decrease in body fat percentage, and a whopping **4.3-fold** increase in testosterone levels.

These studies are a powerful demonstration of ashwagandha's ability to relieve the physiological effects of physical stress.


### What You Need to Know

### Adaptogens Combat Effects of Chronic Stress

- **Chronic stress can underlie many of the diseases we associate with aging.**
- **Chronic stress can lead to imbalances in metabolic processes throughout the body that can accelerate aging.**
- **Adaptogens can help the body rebalance its hormones and neurotransmitters, resulting in significant protection against stress.**
- **Ashwagandha, bacopa, cordyceps, and holy basil each work by different mechanisms to help the body adapt and protect itself against chronic stress, balancing cortisol levels and supporting adrenal gland function.**
- **People under chronic stress should consider supplementing with these nutrients as a means of restoring a healthy balance in their bodies and protecting themselves against the deleterious effects of stress.**

## Bacopa Improves Cognitive Performance

*Bacopa monnieri* (also called brahmi, or water hyssop) is an herb native to South Asia. It has a lengthy history in Ayurvedic medicine for use in the treatment of **cognitive impairment** and **nervousness**, both of which are closely related to stress.[20-22] Early studies have validated its adaptogenic effects in animal models, and recent human studies have demonstrated its practical impact in those suffering from chronic stress.

For example, one study showed that when rats were subjected to either acute or chronic stress they experienced an imbalance in their blood cortisol levels and in the levels of "fight-or-flight" neurotransmitters in their brains. Treatment with bacopa extracts helped to **normalize** these stress-induced changes, confirming its **adaptogenic** ability. Bacopa has also been shown to help protect against the depressive effects of chronic stress, help prevent the brain degeneration that arises from chronic stress,[23] and help fight the harmful effects of oxidative stress that can be caused by emotional and physical stresses.[22]

Impressive animal studies like these inspired human research into bacopa as a valuable stress-protective adaptogen—and the results did not disappoint. One study showed that bacopa (**125 mg** twice daily) produced significant improvements in mental control, logical memory, and learning.[21]

Another study showed that bacopa can provide protective effects against **multitasking**, an inherently stressful activity that can cause deterioration in cognitive performance. In this human study, bacopa extracts improved both cognitive performance and mood in as little as one to two hours.[24]

Together, these results demonstrate that bacopa has powerful adaptogenic effects, both in its ability to regulate cortisol levels during stress and in its ability to improve cognitive performance in those facing chronic stress.

## Cordyceps Improves Immune Function

*Cordyceps* is a versatile medicinal mushroom that has been used as an adaptogen and health promoter for centuries. It is notable for its ability to battle oxidative stress and inflammation, and extracts of the **cordyceps fungi** have been shown to help enhance immune function in animals facing stress.[25-29]

This is critical, since **diminished immune function** is one of the primary consequences of chronic stress, and has been shown to leave us at major risk for both cancer and severe viral infection.[1,10,11]

Cordyceps's impact on other types of physiological stress is no less dramatic. For example, in mice subjected to a forced swimming test, cordyceps polysaccharide treatment significantly prolonged swimming time (a measure of endurance), increased natural protective systems in blood and tissue, and lowered markers of oxidized cells.[29]

Another common effect of chronic stress is depression. **Cordycepin**, the major bioactive component of cordyceps, has been shown to have antidepressant-like effects in mice subjected to chronic mild stress.[30] Prior to treatment with cordycepin, the chronic stress induced depression-like symptoms, reduced levels of **brain-derived neurotropic factor (BDNF)**, a growth factor for brain cells, and decreased serotonin and dopamine in the brain. But when animals received a cordycepin supplement, their behaviors **normalized**, as did all of the imbalanced neurotransmitters and elevated markers of stress. The low levels of BDNF also rose significantly, especially in the hippocampus, the brain's memory/cognition center.

### What About Adrenal Fatigue?

Although not a diagnosis recognized by the conventional medical establishment, some innovative doctors characterize "adrenal fatigue" as a condition that shares some symptoms with Addison's disease, such as tiredness, depression, muscle pain, poor concentration, low blood sugar, craving for stimulants, and difficulty sleeping. However, in adrenal fatigue it is thought that the adrenal glands are unable to perform, normally due to exposure to chronic stress.[39]

**Life Extension**® believes that symptoms often attributed to "adrenal fatigue" arise from multifactorial pathological processes involving, among other systems, the **hypothalamic-pituitary-adrenal (HPA)** axis, and that these conditions must be treated as such.

These results demonstrate that cordyceps extracts have adaptogenic effects with a focus on improved immune function, an essential feature for any supplement aimed at protecting the body from the long-term effects of stress.

## Holy Basil Protects Against Stress-Induced Anxiety and Depression

Holy basil (*Ocimum sanctum*), also known as ***tulsi***, is an aromatic plant that has been used for more than 3,000 years in Ayurvedic medicine. It is considered by many experts to be the preeminent adaptogen of Ayurvedic medicine.[31] Now, modern science has confirmed holy basil's adaptogenic ability to protect the body against the effects of chronic stress.

The leaf extract of the plant contains several novel compounds that have been shown to normalize high blood sugar and cortisol levels while reducing markers of stress-induced tissue breakdown and excessive adrenal gland size.[32] It also provides strong protection against oxidative and radiation stress on cells, which can affect many aspects of human health.[33,34]

Importantly, animal studies show that holy basil helps the body maintain **homeostasis** of the stress hormone **cortisol**.[35] It rebalances mood-associated neurotransmitters in the brain—specifically ones that can produce feelings of hopelessness, which is a key component of stress-induced depression.[36]

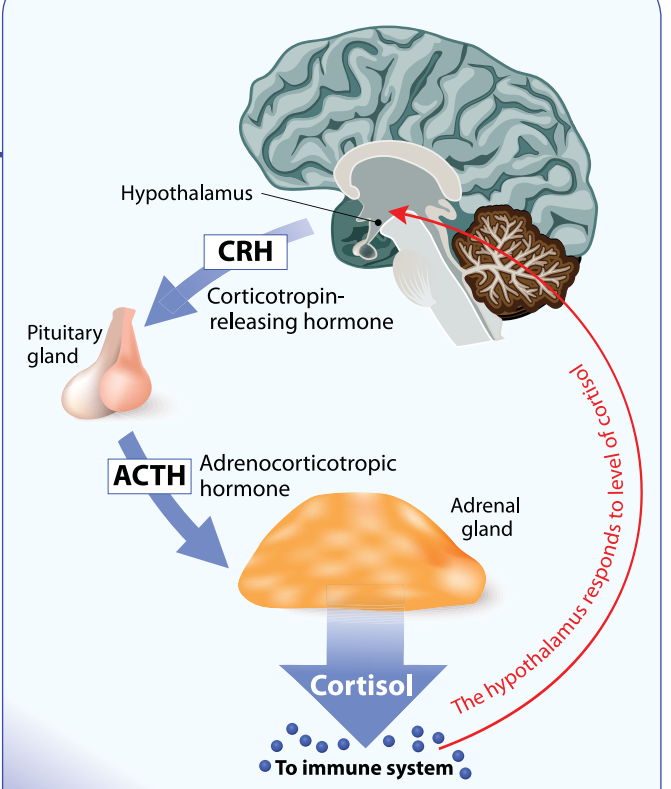
Human studies show that holy basil protects against the psychological effects of stress. In one study, holy basil extract (**500 mg** twice daily) significantly reduced the severity of generalized anxiety disorder, stress, and depression in middle-aged adults. It also improved the "willingness to adjust," an important psychological characteristic that helps people adapt to circumstances beyond their control.[37]

Taking this adaptogenic impact of holy basil one step further, in a human study, researchers demonstrated that **300 mg** a day of holy basil leaf extract produced a significant improvement in many different cognitive parameters, including reaction time and error rates on standardized tests, as well as on a test that measures anxiety.[38]

These findings together highlight the importance of holy basil as an adaptogen capable of controlling the anxiety and depressive effects of chronic stress.

## Summary

Chronic stress is an important factor in Americans' lives today. In addition to the unpleasant feelings and mood that it can cause, chronic stress also underlies many of the disorders associated with aging.




**Human Stress Response System**

Release of cortisol stimulated by hormones from the hypothalamus and pituitary gland in response to stress. Under normal conditions, this system keeps homeostasis in check, but under stressful conditions, it is constantly activated.

The impact of chronic stress on the adrenal gland can be enormous, causing the gland to pump out constant, high levels of stress-adaptive hormones. Over prolonged periods, these hormones, particularly cortisol, produce undesirable consequences—including weight gain, diabetes, and immunosuppression—which can become contributors to further health problems on their own.

We can now help protect our bodies against the impact of chronic stress by using a group of adaptogenic nutritional supplements. Ashwagandha, bacopa, cordyceps, and holy basil have each been in use for hundreds to thousands of years as powerful adaptogens that influence the brain and its stress responses. Each acts by a different mechanism, and each has now been shown to significantly attenuate the effects of chronic stress, resulting in improved mood, greater energy, and better adaptability to the stressful circumstances of life.

Anyone living with the effects of chronic stress should consider supplementing with these proven, stress-relieving adaptogens in order to protect their hormonal status and adrenal glands. ●

**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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- **Holy basil**, supports balanced levels of neurotransmitters[7] and blood sugar[8] for those already within the normal range, and enhances mood.[9]


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BY BEN BEST

# Sleep Medicine CONFERENCE

**Why do people need sleep?** Sleep allows the brain to restore essential nutrients (like glycogen) and remove waste products[1,2] (like the beta-amyloid protein that causes Alzheimer's disease).[3,4] Sleep replenishes proteins depleted during wakefulness.[5] Sleep is important for memory consolidation.[6,7]

Although the brain is approximately **2%** of the body's weight, it uses about **20%** of the body's energy.[8] The major source of that energy is the molecule ***adenosine triphosphate*** (**ATP**).

With increasing hours of wakefulness, there are decreasing amounts of ATP and increasing amounts of **adenosine** from which the high-energy phosphates have been removed. Adenosine causes sleepiness.[9] Caffeine blocks adenosine action, reducing sleepiness and increasing alertness,[10] while impeding learning and memory.[11]

**How much sleep do people need?** The need for sleep diminishes with age. During the first six months of life, infants sleep more than half the time.[12] Medications account for many of the sleeping problems of the elderly,[13] but healthy older adults (age 65-76) tolerate sleep deprivation better than young adults (age 18-29).[14] More than half of sleep-related car accidents occur in drivers under age 30, compared to only **5%** in drivers over age 65.[14] Adolescents tend to go to bed late and sleep late when they are allowed to, but as people get older they tend to go to bed earlier and awaken earlier.[15]

Independent of diabetes and high blood pressure, men who slept less than 6 hours per night were found to have **four times** the risk of dying compared to those who slept more (although this effect was not seen in women).[16] Young healthy adults randomized to spend 4, 6, or 8 hours in bed for 14 nights showed reduced cognitive performance in proportion to lack of sleep for those with bed times of 6 hours or less.[17]

Healthy adults who habitually sleep more than the minimum necessary to avoid sleepiness and impaired function have shown greater development of the cerebral cortex.[18] However, many studies have shown that excessive sleep is associated with increased risk of dying, although this is controversial.[19] Post-menopausal women sleeping more than 9 hours per night exhibited increased inflammation and blood clotting, which are risk factors for cardiovascular disease.[20]

One study showed that napping for 10 minutes improves alertness and cognitive performance over the subsequent 3 hours, whereas a 5-minute nap is of little benefit, and a 20-minute nap results in "sleep inertia," which is the period of confusion, sleepiness, and disorientation that is experienced upon awakening from sleep.[21] A 16-week supplementation of healthy children with **600 mg** daily of the omega-3 fatty acid DHA improved their sleep (longer sleep with fewer awakenings).[22]

On June 6-10, 2015, I attended the annual meeting of the American Academy of Sleep Medicine and the Sleep Research Society in Seattle, Washington.

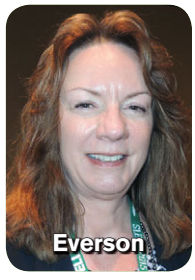
## Effects of Sleep Loss

David Dinges, PhD, (Chief of the Division of Sleep and Chronobiology, Perelman School of Medicine, Philadelphia, Pennsylvania) studies the effects of sleep loss. Between 1985 and 2012, average nightly sleep time reported by American adults declined from 7.40 to 7.18 hours.[23] The reported prevalence of insomnia among US adults increased from **17.5%** in 2004 to **19.2%** in 2012. The largest relative increases occurred among diabetics and those in the 25-34 age group.[24] An estimated **15%** of Americans sleep less than 6 hours per night.[25] Dr. Dinges has demonstrated that healthy adults restricted to four hours sleep per night for five nights ate more food and gained weight.[26] Sleep restriction has been shown to reduce blood levels of the satiety hormone **leptin**,[27] and to increase the hunger-producing hormone **ghrelin**,[28] thereby increasing appetite. Dr. Dinges also showed that an extended night of sleep following the five nights of restricted sleep was not adequate to restore alertness or prevent sleepiness.[29]


Rachel Leproult, PhD, (Researcher, Universite libre de Bruxelles, Brussels, Belgium) studies the relationship between diabetes and quantity or quality of sleep.[30] In one of her studies, she found that persons who slept less than 5 or 6 hours per night had a **28%** greater incidence of diabetes, those who had difficulty initiating sleep had a **57%** greater incidence, and those who had difficulty maintaining sleep had an **84%** greater incidence.[31] Dr. Leproult conducted an experiment in which healthy adults were either simply restricted to less than 5 hours sleep per night for eight days, or restricted to less than 5 hours sleep combined with disruption of the 24-hour circadian rhythm cycle. Both groups showed increased inflammation and insulin resistance, but the effect was substantially greater when sleep restriction was combined with circadian disruption. Insulin sensitivity dropped **39%** for those who were only sleep restricted, but more than **53%** for those who also experienced circadian disruption.[32]

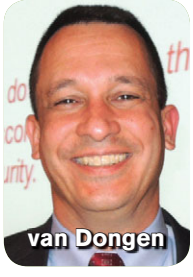

Circadian disruption due to flying across more than three time zones ("jet lag") is most effectively treated by exposure to bright daylight in the morning, and administration of melatonin in the evening.[33] In another experiment, Dr. Leproult asked healthy adults who normally sleep less than 7 hours per night to increase their time in bed by one hour per day. After 40 days the subjects showed substantially improved insulin sensitivity.[34]

Carol Everson, PhD, (Professor, Medical College of Wisconsin, Milwaukee, Wisconsin) has studied the effects of sleep deprivation in rats. She has shown that sleep deprivation weakens the immune system[35] and increases pathogenic bacteria in rats.[36] People sleeping less than 7 hours per night have been shown to be nearly **3 times** more likely to develop a common cold than people who sleep 8 hours or more.[37] Totally sleep-deprived rats will die within about two or four weeks, with over **20%** weight loss.[38] Dr. Everson subjected rats to 10 days of sleep restriction six times, separated by two days of rest each time. The rats lost **15%** of their body weight despite eating more than the usual amount of food. Even after four months of recovery, the rats were consuming **20%** more food and **35%** more water.[38] In another experiment, rats totally deprived of sleep for 10 days showed a **39%** increase in oxidative DNA damage, particularly in the liver, where this damage was almost **2.5 times** greater than in controls.[39]




## Cognitive Effects of Sleep Deprivation

Hans van Dongen, PhD, (Research Professor, Washington State University, Spokane, Washington) has conducted experiments to determine the effects of sleep deprivation on cognitive performance.[40] He has found that sleep deprivation hampers decision making under conditions of uncertainty and unexpected change,[41] but that the hampered decisions were more due to reduced reaction time than to reduced judgement.[42] He has also found evidence that an increase



in the inflammatory cytokine TNF-alpha contributes to the impaired vigilance associated with sleep deprivation.[43] Other studies have shown not only that inflammatory cytokines increase after sleep loss,[44] but that cytokines (including TNF-alpha) released during illness increase sleepiness (to induce recovery-promoting sleep).[45]

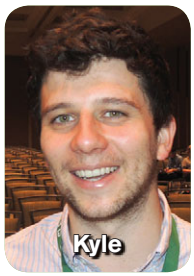
## Objective Measures of Insomnia

Julio Fernandez-Mendoza, PhD, (Assistant Professor, Pennsylvania State University, Hershey, Pennsylvania) seeks objective measures of insomnia. He cited studies that **8%-10%** of people suffer from chronic insomnia and that **20%-30%** of people will be suffering from temporary insomnia at any given time.[46] He notes that insomnia patients have higher levels of adrenalin-like compounds (*catecholamines*), higher oxygen consumption, and higher blood pressure than good sleepers.[46] He has also found elevated stress hormone (cortisol) in the saliva of children aged 5-12 reported by parents to have insomnia.[47] He has found that patients with severe insomnia were several times more likely to also be suffering from depression.[48] And Dr. Fernandez-Mendoza reported that excessive daytime sleepiness (affecting up to **30%** of people) is associated with obesity and weight gain.[49]


Kai Spiegelhalder, MD, PhD, (Insomnia researcher, Freiberg Institute for Advanced Studies, Freiberg, Germany) also has sought objective measures of insomnia. Chronic insomnia is generally defined based on subjective complaints of difficulty falling asleep or difficulty remaining asleep, along with daytime sleepiness and fatigue. For diagnosis of chronic insomnia, these complaints must persist for at least four weeks.[50] Overall, women complain of insomnia more than men, with the difference rising after age 45.[51] Electronic monitoring of brain, heart, skeletal muscle, and eye movements (polysomnography) shows less difference between good sleepers and those complaining of insomnia than the complaints would indicate.[50] Nonetheless, there is evidence that those complaining of insomnia have higher heart rates, elevated cortisol (stress hormone), and greater brain glucose metabolism (indicating greater brain activity) during sleep.[52] Inherited insomnia is associated with increased cortisol and decreased melatonin secretion.[51] These quantitative indications of arousal in insomniacs form the basis of Dr. Spiegelhalder's "hyper-arousal model of insomnia."[50,53] Dr. Spiegelhalder has shown that patients complaining of insomnia put much greater effort into trying to fall asleep, which worsens the problem.[54] He does not recommend benzodiazepine tranquilizers such as **Librium**® or **Valium**® for anything but short-term use because of declining effectiveness, increasing dependency, and memory impairment.[55] Antihistamines and antidepressants are less addictive, but can have worse side effects, including liver and heart damage. Alcohol and barbiturates reduce the amount of time to fall asleep, but also reduce sleep quality.[56,57] Prolonged-release melatonin supplementation has been shown to reduce insomnia in elderly patients without causing side effects.[58,59] The main treatment Dr. Spiegelhalder recommends is Cognitive Behavioral Therapy for Insomnia (CBT-I).[51]


## Cognitive Behavioral Therapy for Insomnia

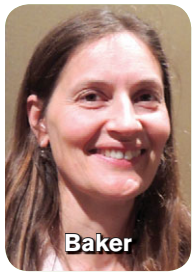
Although Cognitive Behavioral Therapy for Insomnia (**CBT-I**) is often recommended by insomnia specialists as being the most safe and effective treatment, Simon Kyle, PhD, (Lecturer, University of Manchester, Manchester, England) has found that the therapy is not standardized, is poorly documented when used, and often fails to work.[60] CBT-I can involve sleep diaries to identify thoughts or habits that cause sleep problems, relaxation training, using the bedroom only for sleep or



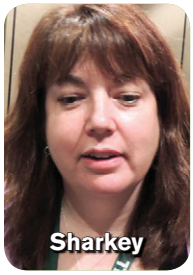

sex, avoiding caffeine, nicotine, or alcohol, leaving the bedroom if sleep does not occur within ten minutes, and sleep restriction therapy. Dr. Kyle has concentrated his attention on sleep restriction therapy. Interviewing patients, he was told that the suffering patients experienced when implementing sleep restriction subsided within a couple of weeks, and that the **craving** they developed for sleep led to sleep that was deeper and more efficient.[61] Conducting objective measures of sleep restriction therapy, Dr. Kyle found that although sleep efficiency improved within four weeks, daytime attention and reaction speed deteriorated, not returning to starting values until after three months of the therapy.[62]

## Sleep Loss and Sex Hormones

Fiona Baker, PhD, (Senior Program Director, Human Sleep Research, SRI International, Menlo Park, California) studies sleep disturbances associated with menstruation and menopause. **Hot flashes** refer to episodes of sweating followed by chills.[63] Hot flashes are reported for **12.5%** of women just before menopause, **79.0%** during menopause, and **50.7%** following menopause. Chronic insomnia increases with increased severity of hot flashes.[64] Dr. Baker found that heart rate increased when hot flashes occurred.[65] Dr. Baker studied young women (average age 21) who did not have menstrual complaints, and found reduced sleep quality for three days before menstruation and for four days during menstruation.[66]




Katherine Sharkey, MD, PhD, (Internist, Rhode Island Hospital, West Warwick, Rhode Island) studies the effects of aging and hormonal changes on sleep. In men between the ages of 64 and 74 the time by which nighttime sleep is reduced corresponded with the amount by which testosterone is reduced.[67] In women, menstrual irregularities begin at an average age of 46, lasting two to eight years.[68] Dr. Sharkey has shown that the greater incidence of waking during sleep is associated with higher levels of progesterone near the time of menstruation.[69]




## Sleep Disturbance with Shift Work

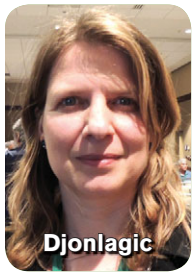
Karl Doghramji, MD, (Director, Sleep Disorder Center, Jefferson University Hospitals, Philadelphia, Pennsylvania) reported on the health consequences of shift work. Worldwide, about **20%** of the labor force works outside the hours of 7 A.M. to 6 P.M.[70] Shift workers suffer more obesity, cardiovascular disease, and cancer as well as experiencing nearly triple the incidence of occupational accidents as day workers.[70] Industrial productivity has been found to be about **5%** lower during night shifts.[71] Caffeine and naps could reduce the accident rate and increase productivity.


A study in Japan found that prostate cancer among rotating-shift workers was triple normal, but that fixed-shift night workers had a regular prostate cancer incidence.[72] The authors speculated that disruption of the circadian rhythm of melatonin secretion was responsible. A study of American nurses found that rotating-shift work was associated with a **4%** increase in ischemic stroke for every five years worked.[73] These authors also speculated that disruption of the circadian rhythm of melatonin secretion could be responsible.

A study of Iranian long-distance night-shift drivers found an increased incidence of metabolic syndrome.[74] In this case, the authors speculated that physical inactivity and roadside restaurant food was responsible. But healthy adults subjected to three weeks of combined sleep restriction (5-6 hours sleep per 24 hours) and circadian disruption (28 hour "days" in a laboratory setting) showed a **32%** decrease in insulin secretion after a standardized meal. Elevated blood glucose rose to prediabetic levels in some cases. The subjects showed an **8%** drop in resting metabolic rate, which would result in a weight gain of approximately **12.5** pounds per year.[75]

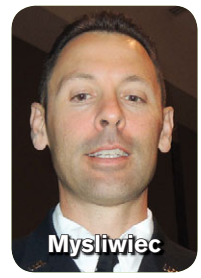
## Obstructive Sleep Apnea (OSA)

Ina Djonlagic, MD, (Instructor, Harvard Medical School, Boston, Massachusetts) has studied the effects of obstructive sleep apnea (OSA). Persons with obstructive sleep apnea suffer bouts of halted breathing (**apnea**) lasting 20 to 40 seconds several times per hour during sleep, resulting in disrupted sleep quality. Victims are often unaware of their condition, although they experience excessive daytime sleepiness.[76,77] Obstructive sleep apnea victims typically have elevated blood pressure, and a four-fold increase in heartbeat irregularities in the atrium of the heart.[78] For people without obstructive sleep apnea, sudden cardiac death risk is minimal between midnight and 6 A.M., but for obstructive sleep apnea victims the risk of sudden cardiac death during that time is elevated more than two-and-a-half times.[79] Up to **95%** of patients with obstructive sleep apnea snore.[76] Obstructive sleep apnea is twice as common in men as it is in women.[80] Other risk factors include being overweight, being over age 40, and having an enlarged neck, tongue, or tonsils. Alcohol and other sedatives contribute to obstructive sleep apnea by relaxing throat muscles. Dr. Djonlagic has found that untreated obstructive sleep apnea caused cognitive deficits and increases the likelihood of becoming demented.[81] Sleeping on one's back greatly increases the risk of obstructive sleep apnea, whereas sleeping on the side reduces it.[82] Sleeping with an appliance that keeps the airways open with *continuous positive airway pressure* (CPAP) is the "gold standard" treatment for obstructive sleep apnea.[83] CPAP reduces the risk of cardiovascular death.[84] Dr. Djonlagic has found immediate benefits for attention, vigilance, and well-being after the first night of CPAP in obstructive sleep apnea patients.[85]



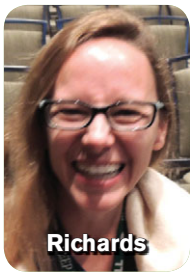

## Sleep Disorders in Soldiers

Vincent Mysliwiec, MD, (Internist, Madigan Army Medical Center, Tacoma, Washington) has studied the sleep disturbances of soldiers returning from combat. Soldiers on deployment often sleep at odd hours, disrupting circadian rhythm.[86] According to one report, sleep time for soldiers averages 6.5 hours, but soldiers suffering from post-traumatic stress disorder (PTSD) sleep significantly less.[86] In the military, there is a stigma associated with mental health problems, which may account for the fact that soldiers are about five times more likely to seek help for insomnia than for a mental health problem.[87] About one quarter of soldiers deployed to combat stations during the war on terror have experienced traumatic brain injury (TBI) from improvised explosive devices.[88] Compared to soldiers without traumatic brain injury, soldiers with a single traumatic brain injury had about four times the incidence of insomnia, whereas soldiers with multiple traumatic brain injuries had close to ten times the incidence of insomnia.[89] Soldiers with traumatic brain injury from blast injuries were more likely to develop anxiety and insomnia, whereas blunt trauma more often resulted in obstructive sleep apnea.[90]




## Age, Cognitive Ability, and Sleep

Anne Richards, MD, (Assistant Professor, University of California School of Medicine, San Francisco, California) used data from the online cognitive training program Lumosity to assess the relationship between age, cognitive ability, and reported sleep time. Other studies have indicated that consolidation of learning occurs during sleep for young adults, but not for healthy elderly adults,[91] and that those who sleep between 6 and 9 hours per night do better on cognitive tests than those who sleep more or less.[92] Dr. Richards found that for young Lumosity participants, cognitive scores were highest for those reporting 7 hours of sleep per night. But, unexpectedly, for the oldest participants, those sleeping 7 hours per night had worse scores than those sleeping more or less.[93]




## Sleep and the Circadian Rhythm

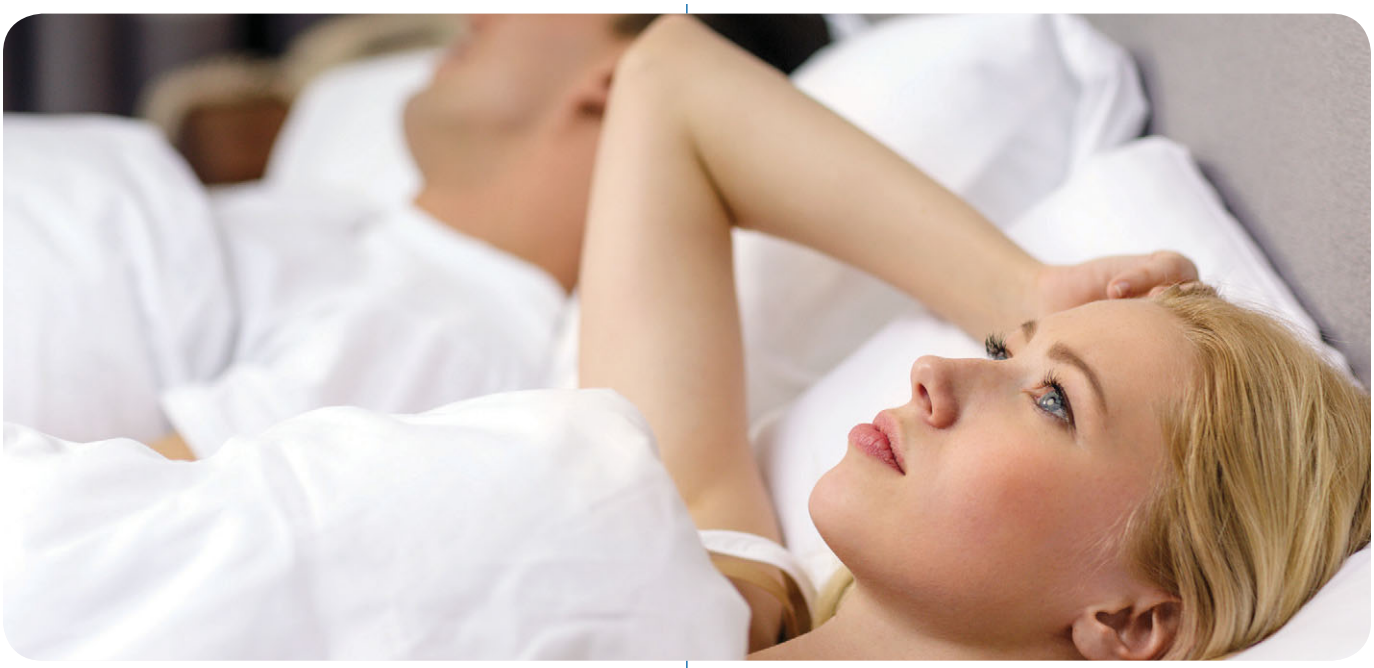
Derk-Jan Dijk, PhD, (Professor of Sleep and Physiology, University of Surrey, Surrey, England) has been studying the effects of the day-night circadian rhythm on sleep and health.[94] The **circadian rhythm** is characterized by melatonin release in the evening (which promotes sleep) and cortisol release before awakening (which promotes arousal).[15] Dr. Dijk has shown that the efficiency of sleep for replenishment of brain function


for humans is highest when sleep times coincide with the 24-hour circadian rhythm, and is greatly reduced when circadian rhythm is disrupted by being in a sleep laboratory with an artificial 28-hour day.[95] He has also shown that the human "circadian clock" is disrupted by insufficient sleep.[96] Dr. Dijk has reported that the study of three geographically-separated modern hunter-gatherer communities without access to electric lighting showed an average sleep time of 7.7 hours, estimated to be about a half-hour longer than in modern industrial society.[97] Comparing three modern industrial countries (Singapore, Norway, and the United Kingdom) he found no seasonal variation in sleep time between the three countries, despite the fact that two of the countries are at high latitude and Singapore is near the equator (lacking much seasonal variation).[98]

## Concluding Remarks

With many sessions at the conference running in parallel, I may have missed presentations about two important sleep problems which I will now mention.

A study in Europe found that more than **5%** of the population suffered from **restless legs syndrome** (more often women than men), which causes insomnia.[99] This affliction is largely inherited, and is characterized by uncomfortable leg sensations when at rest, causing victims to move their legs to stop the discomfort.[100]



The urge to urinate at night is a frequent source of sleep disturbance. Although roughly **10%** of those between age 20 and 40 urinate at least twice per night, nearly half of women and more than two-thirds of men over age 70 urinate at least twice per night.[101] Treatment of benign prostatic hyperplasia (BPH) in men only has a mild benefit.[102] Drug treatments include antidepressants, diuretics,[103] and drugs like *finasteride* that shrink enlarged prostate glands[104] as well as *tamsulosin* (**Flomax**®) that facilitate more complete emptying of the bladder.[105] Patients are advised to avoid drinking too many liquids at night.[103]

Concerning the conference, it seems that most people would be healthier if they would get more sleep. Apparently, modern life increasingly tempts people to stay awake longer so as to be more productive or more entertained. Melatonin and the omega-3 fatty acid DHA may help some people to sleep better, but clearly more is needed to address this widespread problem.

A major problem with sleep research is that it too often relies on people reporting on their sleep rather than objective data. Laboratory measures of sleep (polysomnography) are often at variance with subjective experience. And sleeping in a laboratory can disrupt sleep. Based on the presentations I heard, I could imagine many of the consequences of poor sleep: inflammation, liver DNA damage, blood pressure, or insulin resistance; blood cortisol or immune function; poor performance on standardized tests for cognition and reaction time. "Personalized medicine" has not yet arrived in sleep research because only averages of results for many people are used. The variation in sleep-need from one individual to another might be very large.[106] ●

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

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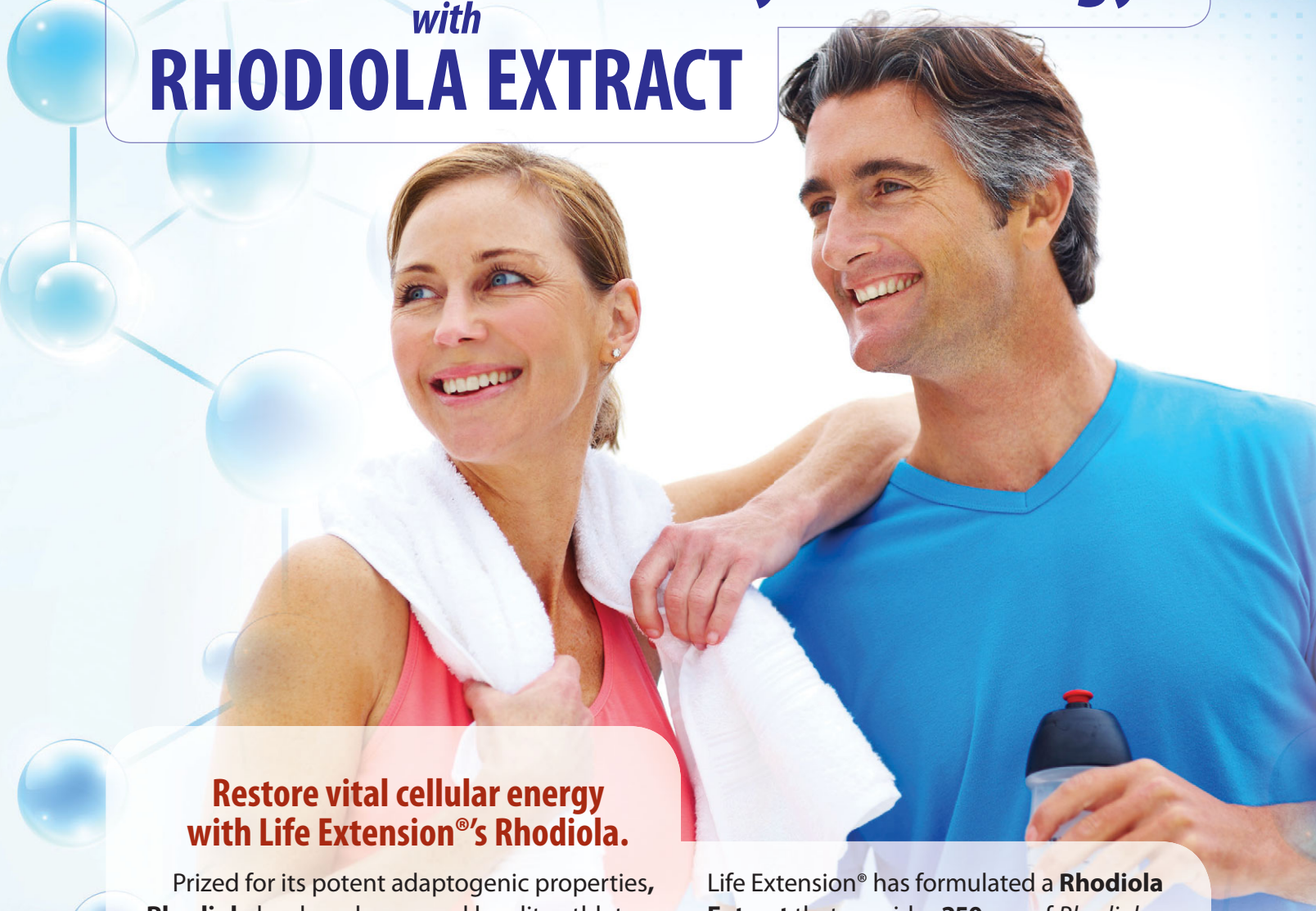

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BY MAUREEN FIONA

# Newly Discovered Benefits of **LUTEIN**

The carotenoid **lutein** has long been studied for its vision-protective properties. It has been shown to reduce the risk of two of the leading causes of blindness: age-related macular degeneration and cataracts.[1]

A recent study has revealed that we've only scratched the surface of lutein's health-promoting benefits. In a first-of-its-kind analysis, lutein has been associated with a reduced risk for **cardiometabolic diseases**.

A large meta-analysis involving **71 published papers** and representing more than **387,000 individuals** showed that people with ***higher*** lutein intake, or higher blood concentrations of lutein, have a reduced risk of coronary heart disease, stroke, and metabolic syndrome.[2]

The reason lutein provides such wide-reaching effects is because of its ability to protect tissues from oxidative stress and inflammation—two factors that play a major role in cardiovascular and metabolic diseases.

This study will likely change the way we think of lutein, broadening its appeal to everyone who wants to optimally protect their blood vessels, heart, and brain against the ravages of oxidative stress and chronic inflammation.

## Beyond Eye Health

Lutein is a type of ***carotenoid***, a natural compound found in vegetables and other plants. Although it is yellow, it is especially abundant in dark green, leafy vegetables such as kale.[3]

Lutein has received a great deal of attention for its ability to help reduce the incidence of age-related macular degeneration and cataracts, two of the leading causes of blindness.[1] These benefits arise from lutein's ability to provide structural support for the macula pigment while protecting the eye from the oxidative stresses caused by exposure to light and oxygen. It also helps reduce inflammation.[2,4,5]

Researchers from ErasmusAGE, a center for aging research, hypothesized that these mechanisms of action could make lutein beneficial for cardiometabolic health as well, since oxidative stress and inflammation play a role in both cardiovascular and metabolic diseases.

That's why Dr. Elizabeth Leermakers and her research team decided to conduct an expansive search of the medical literature for studies involving either lutein intake or blood concentrations of lutein in the context of cardiometabolic diseases.[2]

In this type of study, called a **systematic review and meta-analysis**, researchers review multiple studies on a single topic, and then combine the findings mathematically for analysis. The results of these types of studies have the potential to provide strong indicators of clinical evidence.[6]

And in fact, the results of this particular study were so impactful that they could open the door to new therapeutic benefits of lutein. Instead of being viewed solely as a vision-saving nutrient, lutein could be seen as one that enhances total-body health and longevity.

After examining 4,377 individual studies, the researchers narrowed their review to **71 relevant articles** that included a total of more than **387,000 participants**.[2] They found that in all of these studies there were some very powerful and significant associations between lutein and cardiometabolic diseases.

Compared to people in the group with the lowest 1/3 of intake or blood concentration of lutein, those in the top 1/3 were found to have:[2]

- A **12%** reduction in the risk of having **coronary heart disease** (atherosclerosis of the heart's own blood vessels, which may lead to angina and ultimately to heart attacks)
- An **18%** reduction in the risk of having a **stroke**
- A **25%** reduction in the risk of having **metabolic syndrome**, the cluster of medical conditions that includes abdominal obesity, elevated blood pressure, elevated fasting glucose levels, elevated blood triglycerides, and low levels of protective high-density lipoprotein (HDL) cholesterol

This study is significant because it is the first meta-analysis to show that higher intake or blood levels of lutein have such prominent cardiometabolic benefits.

And ultimately, it validates the use of lutein for reducing the risk for stroke, heart attack, and metabolic syndrome, which itself is associated with an increased risk for developing cardiovascular disease, diabetes, and death from multiple causes.[7,8]

## How It Works

Numerous studies have shown that lutein combats many of the underlying factors in both cardiovascular and metabolic diseases.

Prior studies have shown significant associations between higher lutein levels and improvements in blood lipid levels, especially with higher HDL (good) cholesterol.[9-11]

Inflammation is another underlying factor in the development of cardiovascular disease and atherosclerosis. Studies have shown that lutein may activate branches of the immune system that suppress chronic inflammation.[2,4] In addition, previous studies have shown that lutein is effective in reducing arterial wall thickening, which contributes to poor blood flow and raises the risk of heart attack and stroke.[2,12,13]

Together, these factors may help to explain the reduced risks of heart attack, stroke, and metabolic syndrome that were seen in the recent meta-analysis.

## Summary

Lutein has long been associated with vision protection, which it provides both by reducing oxidative stresses in the eye and by lowering chronic inflammation that can contribute to cataracts and age-related macular degeneration.

Oxidative stress and chronic inflammation also contribute to cardiometabolic diseases such as heart disease, stroke, and diabetes.

In this first-of-its-kind analysis, scientists discovered that higher lutein intake and blood concentrations are strongly and significantly related to reductions in cardiometabolic risks. This analysis showed that lutein reduces the risk of stroke, heart attack, and metabolic syndrome.

Based on the results of this study, people interested in supporting their cardiometabolic health should consider boosting their lutein intake.

Most readers of this publication have been obtaining potent doses of lutein in the supplements they have been using for the past several decades. ●

**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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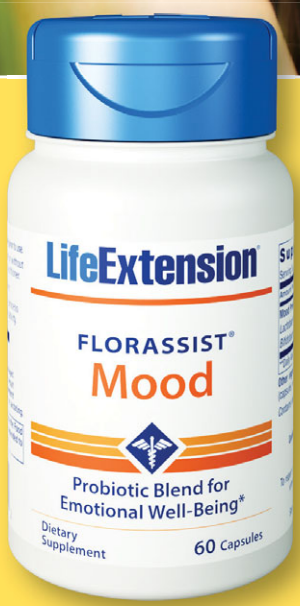
# Probiotic Blend Supports Positive **MOOD** and **RELAXATION**

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**References**

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**References**
1. *Biol Trace Elem Res.* 2004 Oct;101(1):73-86.
2. *Biol Trace Elem Res.* 2011 Sep;142(3):274-83


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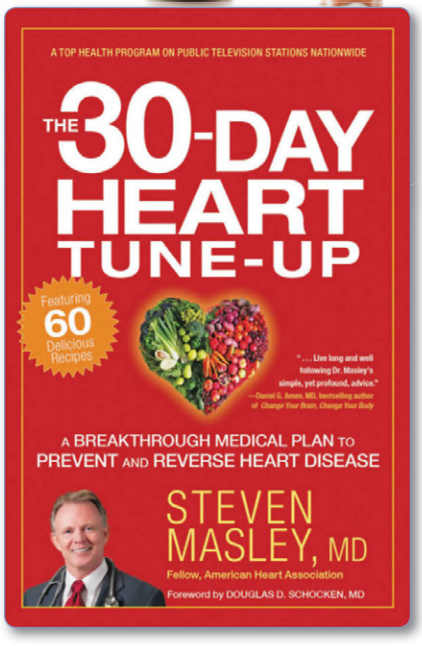
BY ASTRID DERFLER KESSLER

# The 30-Day Heart Tune-Up

## An Interview with Dr. Steven Masley




Steven Masley, MD, a practicing physician from St. Petersburg, Florida, is a fellow with the American Heart Association, the American Academy of Family Physicians, and the American College of Nutrition. He wrote *The 30-Day Heart Tune-Up* because he was becoming increasingly frustrated with the current state of affairs when it comes to America's number one killer, cardiovascular disease. His goal, and the purpose of the book, he says, is to prevent heart disease and stroke by making treatment options available to patients long before they develop the disease. The book provides the tools that are needed—as well as 60 heart-healthy recipes—to accomplish this goal. Following this plan for one month will help prevent plaque from forming, reduce plaque if it already exists, and potentially save your life, says Dr. Masley.

LE: What makes your approach to heart disease different from other plans?

SM: Most doctors focus on lowering cholesterol and blood pressure to prevent heart disease. Their approach relies on drug therapy and laboratory testing, which have been a tremendous boon to the pharmaceutical and medical laboratory industry, but not necessarily to patients. Statins…still have an appropriate use in some patients, yet they increase the risk of diabetes and unfortunately, their testosterone-lowering effect may cause weight gain, reduce sexual enjoyment, and lower a person's drive to stay fit. Managing cholesterol and blood pressure have helped reduce the rate of heart attacks and strokes, but they don't do enough. That's because we're focusing on the wrong issue.

The 30-day heart tune-up is about shrinking arterial plaque, improving circulation, and strengthening your heartbeat. I recommend neither an extreme vegan diet, which few people can maintain for more than a week or two, nor deprivation, nor expensive medications that merely treat symptoms rather than the cause (although I agree that some medications, when indicated, do help make the transition to optimal health).

So how can you accomplish this goal in such a short time? Here are your tools:

- Incorporate five easy-to-remember categories of heart-healing foods into your diet.
- Engage in exercise that strengthens your heart and arteries.
- Learn to better manage stress.
- Follow a customized, heart-friendly supplement plan.

LE: What is the number-one risk factor people face when it comes to cardiovascular disease?

SM: We used to believe that high cholesterol was the number-one risk factor. But we must look at the whole picture. Having metabolic syndrome, appropriately called "diabesity" by Dr. Mark Hyman in his book *The Blood Sugar Solution* and also known as prediabetes, is a greater risk factor than having high cholesterol. In fact, it's the number one risk factor of cardiovascular disease. (To read an interview with Dr. Hyman, see the May 2013 issue of ***Life Extension Magazine®***.)

More than **30%** of adults (**50%** of baby boomers) have this condition. The bad news is metabolic syndrome can kill you before you ever develop diabetes. Because it changes your cholesterol profile, increases inflammation, and raises your blood pressure levels in ways that are similar to those of diabetes, it can cause a heart attack or stroke.

LE: Your book offers the tools people need to, as you put it, "make a U-turn on the road to heart disease in just 30 days." Can you elaborate on your 30-day plan?

SM: It's about shrinking arterial plaque, improving circulation, and strengthening your heartbeat. You will be using four important tools: heart-healing foods, exercise that strengthens your heart and arteries, stress management, and a customized heart-friendly supplement plan. The [plan is] based on my life's work. I've devoted every hour of every day striving to make my patients' lives and hearts better without their having to resort to surgery or other invasive procedures. The losses we suffer due to cardiovascular disease are great—personal pain, decreased income, reduced productivity, physical suffering, and even premature death. So much of this anguish is unnecessary. Instead of muddling through as a helpless, hopeless victim of heart disease, with this plan, you will have all the tools you need to attack and defeat this scourge. It is possible to reverse cardiovascular disease and certainly to prevent it.

## Tune Up Your Heart with Supplements

LE: Feeding the heart the nutrients it needs for total health isn't easy to do from diet alone. Supplements are key to good health. What supplements do you recommend for total heart health?

SM: Everyone needs a personalized eating plan to meet their key nutrient needs because no one eats well all the time. Just bear in mind that…vitamins, minerals, herbals, and other valuable treatments…can only enhance a healthy eating plan and an optimal lifestyle. They can't replace it. They will never make up for snacking on junk food or being stressed or inactive.

Nevertheless, supplements can benefit your heart health substantially even if you eat well, exercise regularly, and manage stress. They can also provide some nutrients you may otherwise be lacking. At least **80%** of Americans are nutrient deficient. Yes, we get plenty of calories, but we don't consume enough vitamins and minerals. Nutrient content has been dropping in our highly processed food supply. That's why supplements are an integral part of your 30-day heart tune-up. And, they may boost your heart health in ways that food alone cannot.

LE: What should a high-quality multivitamin contain?

SM: A multivitamin is a good place to start. Keep in mind that a multivitamin won't supply fiber, fish oil, magnesium, and potassium in a significant way. These are critical heart nutrients.

To begin with [you need at least] **1,500** to **2,000 IUs** of vitamin D. You'll also want a pill that has mixed carotenoids, not just beta-carotene, as well as mixed forms of folate, especially 5-MTHF (5-methyltetrahydrofolate), not just folic acid. If you're over 50, you'll need adequate B12—at least **100 mcg** daily, but if you take an acid blocker, a minimum of **500 mcg** is recommended. Vitamin K should come as a mixture of vitamin K1 and K2, as I'll discuss later. And finally, you should take **75** to **150 mcg** of iodine.

LE: Vitamin D is critical to so many aspects of overall good health, from diabetes and bone health to cancer and cognitive health, but how does it relate to heart health?

SM: Vitamin D is called a fat-soluble vitamin, but once converted to its active form, it functions like a hormone. Every cell in the body appears to have vitamin D receptors, so having adequate amounts in your bloodstream is absolutely critical to your health. Studies show that people with higher blood levels of vitamin D have lower rates of heart attacks and strokes and better blood pressure and weight control. Clearly, vitamin D is essential for optimal heart and general health. As a hormone, vitamin D communicates directly with your genes, influencing how they function, and tells the cells which protein to produce.

How much vitamin D [you need] would depend on your current blood levels. For most people, optimal dosages vary from **1,500** to **3,000 IU** daily, with the goal to achieve a blood level of **40** to **70 ng/mL**. (**Life Extension**® recommends a blood level of **50** to **80 ng/mL**.) Less than **32 ng/mL** is deficient. If your level is very low, then taking **5,000 IU** daily for two to three months will probably bring you back to normal. (**Life Extension** recommends that healthy adults supplement each day with at least **5,000 IU** of vitamin D.)

LE: Vitamin K, in the form of vitamin K1 and vitamin K2, is critical to cardiovascular health, as well as offering protection against arterial calcification, bone loss, cancer, metabolic syndrome, and aging. You call it an essential supplement.

SM: Vitamin K is essential for cardiovascular health because it prevents calcium from shifting from your bones to your arteries. Not surprisingly, then, vitamin K is essential to keeping bones strong. With increasing vitamin K deficiency, artery walls calcify, blood pressure increases, and the lining of your arteries grows more plaque. The minimum dietary intake of vitamin K for proper clotting is around **100 mcg** per day—**90 mcg** for women and **120 mcg** for men. Yet bones and arteries function much better with **250 mcg** and preferably **1,000 mcg** of vitamin K daily. (**Life Extension** recommends **2,700 mcg** of vitamins K1 and K2 together.)

There are two primary forms of vitamin K—K1 and K2. K1 comes from leafy green vegetables and provides most of the dietary intake in the US. K2 comes from fermented soy products and most Americans [don't] consume enough. Keep in mind that calcium supplements may already provide some of the K your body needs. Calculate how much vitamin K you get from your diet and other vitamins, and supplement accordingly.

LE: Several large studies have shown benefits of vitamin E intake in reducing cardiovascular disease and death from heart attacks. What do you recommend regarding vitamin E for cardiovascular health?

SM: Vitamin E is made up of several molecules—four tocopherols (alpha, beta, gamma, delta) and four tocotrienols (alpha, beta, gamma, delta). Gamma and delta tocopherols and tocotrienols improve the advanced lipid profile, so if you're taking…a vitamin E supplement, make sure it has mixed forms of vitamin E—in particular, delta and gamma tocopherols.

## For Those With Congestive Heart Failure and Heart Disease

LE: Your book is focused on the prevention of heart disease and keeping the heart healthy. But what if someone has congestive heart failure or heart disease—what do you recommend as far as supplements are concerned?

SM: With heart failure, the heart is starved for energy. Without it, your heart can't pump efficiently, and the fluid from your blood backs up into your lungs. One of the many keys to restoring function, then, is restoring heart cell energy.

Mitochondria produce most of the energy your cells use. Your heart cells have more mitochondria than any others in the body. Dr. Stephen Sinatra, a nationally known integrative cardiologist, was one of the pioneers in advocating therapy to enhance heart cell mitochondrial function—something he called metabolic cardiology. He focused on three key supplements: CoQ10, ribose, and carnitine. Clinical experience using these agents has shown they're excellent in improving the quality of life for some people who have heart failure.

- CoQ10—**50** to **200 mg** daily. I suggest you ask your doctor to confirm that you have a blood level of at least **2** to **2.5 mcg/mL** of CoQ10. (**Life Extension** recommends a level of **>4 mcg/mL** for those with congestive heart failure.)
- Ribose—**5 grams** twice daily.
- Carnitine—**2,000** to **3,000 mg**. (Some people take **3,000 mg** of lower cost **taurine** in lieu of carnitine.)

LE: What other supplements do you recommend for those who currently have heart disease?

SM: Two other agents have great promise to enhance mitochondrial function and energy production. These are curcumin and resveratrol. [These] compounds are essential to controlling artery inflammation and oxidative stress, but are required in such large amounts that it is unrealistic to get an adequate dosage from food (or red wine, in the case of resveratrol).

Curcumin is such an outstanding anti-inflammatory that I even prescribe it to my patients with arthritis, those who want to limit cognitive decline, and for cancer prevention. Curcumin absorption is highly variable, so it is critical to take a high-quality form with proven absorption rates.

As [stated] earlier, vitamin K prevents artery calcification. If you have advanced heart disease/failure, ask about adding extra vitamin K. Increase magnesium to **300** to **500 mg** twice daily. It will help relax blood vessels and enhance blood pressure control, making pumping easier for the heart. At some point on this dosage, ask your doctor to

measure your blood cell magnesium levels to confirm you're in the normal range.

Arginine is also an excellent nutrient to enhance artery function and improve blood pressure control. It is the building block that the body uses to make nitric oxide, which is essential to arterial health and wellness. Nitric oxide induces the arteries to dilate… [I suggest] a supplement with **1,000 mg** twice daily.

## If You're On a Cholesterol-Lowering Medication

LE: Statin medications are taken by millions of Americans. You recommend additional supplements for those on statins.

SM: Statin medications decrease not only cholesterol but also compounds in the body derived from cholesterol, such as testosterone, CoQ10, and other substances that repair muscle. Yes, cholesterol-lowering medications help reduce heart attacks and strokes in people with known heart disease and for those at high risk, but they can produce a variety of symptoms. Most people assume the benefit from taking a statin is related to its cholesterol-lowering effects, but other important benefits are due to the fact that statins also decrease artery inflammation and make your blood less sticky, so it's less likely to clot.

CoQ10 is essential for energy production, especially for heart cells. Every cell has energy-generating organelles called mitochondria…which require CoQ10 to produce energy. Studies show that the ability to produce CoQ10 drops by **20%** in people who take a statin…and a big concern is that it might decrease your energy and mental sharpness and interfere with quality of life. Most holistic and integrative physicians recommend that patients on a statin should take CoQ10 with it…to bring the body back to its normal, pre-statin state. I find **50** to **100 mg** of high-quality and well-absorbed product will bring the CoQ10 level back to pre-statin levels.

## Summary

LE: You've integrated the 30-day heart tune-up in many of your patients. What do they tell you after that one-month mark?

SM: The combination of eating heart-friendly foods, building your fitness level, managing your stress, and meeting your heart's nutritional needs will not only help you dramatically reduce your risk for heart disease and stroke, but it will also turn back the clock on aging—allowing you to regain energy and vitality you haven't known in years. The greatest thanks I get from my patients have been their frequent observation after the first 30 days [when they tell me] "I forgot how much better I could feel."

LE: Thank you, Dr. Masley, for sharing this important information with our readers. ●

Steven Masley, MD, is a Fellow with the American Heart Association, the American Academy of Family Physicians, and with the American College of Nutrition. He has devoted his medical career to the study of heart disease and aging, and has published significant research on these subjects in leading medical journals. Currently he is the president of the Masley Optimal Health Center in St. Petersburg, Florida, and has a clinical appointment with the University of South Florida.

**For more information or to contact Dr. Masley, visit drmasley.com or email info@drmasley.com**

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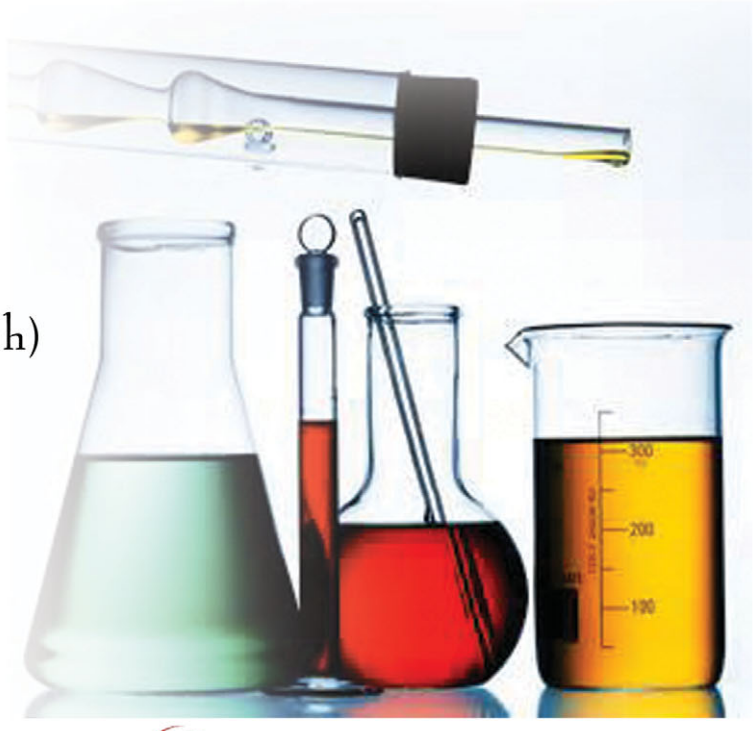

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**Pregnenolone and Dihydrotestosterone (DHT)**
To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel.

**FEMALE HORMONE ADD-ON PANEL (LCADDF)*** — $125
**Pregnenolone and Total Estrogens**
To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel.

**COMPREHENSIVE THYROID PANEL (LC100018)** — $199
TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA

**LIFE EXTENSION THYROID PANEL (LC304131)** — $75
TSH, T4, Free T3, Free T4.

**THYROID PANEL WITH REVERSE T3 (LC100044)** — $120
TSH, T4, Free T3, Free T4, Reverse T3

**THE CBC/CHEMISTRY PROFILE (LC381822)** — $35
**Note: This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.**

**CARDIOVASCULAR RISK PROFILE**

| | |
|---|---|
| Total Cholesterol | Cholesterol/HDL Ratio |
| HDL Cholesterol | Estimated CHD Risk |
| LDL Cholesterol | Glucose |
| Triglycerides | Iron |

**LIVER FUNCTION PANEL**

| | |
|---|---|
| AST (SGOT) | Total Bilirubin |
| ALT (SGPT) | Alkaline Phosphatase |
| LDH | |

**KIDNEY FUNCTION PANEL**

| | |
|---|---|
| BUN | BUN/Creatinine Ratio |
| Creatinine | Uric Acid |

**BLOOD PROTEIN LEVELS**

| | |
|---|---|
| Total Protein | Globulin |
| Albumin | Albumin/Globulin Ratio |

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

| | |
|---|---|
| Red Blood Cell Count | Monocytes |
| White Blood Cell Count | Lymphocytes |
| Eosinophils | Platelet Count |
| Basophils | Hemoglobin |
| Polys (Absolute) | Hematocrit |
| Lymphs (Absolute) | MCV |
| Monocytes (Absolute) | MCH |
| Eos (Absolute) | MCHC |
| Baso (Absolute) | Polynucleated Cells |
| RDW | |

**BLOOD MINERAL PANEL**

| | |
|---|---|
| Calcium | Sodium |
| Potassium | Chloride |
| Phosphorus | Iron |

**MALE COMPREHENSIVE HORMONE PANEL* (LC100010)** — $299
CBC/Chemistry Profile, DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3, Free T4, Cortisol.

**FEMALE COMPREHENSIVE HORMONE PANEL* (LC100011)** — $299
CBC/Chemistry Profile, DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3, Free T4, Cortisol.

**FOOD SAFE ALLERGY TEST** (LCM73001)** — $198
This test measures delayed (IgG) food allergies for 95 common foods.

**STRESS MANAGEMENT PROFILE (LC100043)** — $125
Cortisol AM/PM, DHEA-S, Glucose, Insulin, Progesterone, Free T3, Lipid Panel.

**ADRENAL STRESS PROFILE-SALIVA**(LC100046)** — $175
Cortisol X4, DHEA-S, Cortisol AM/DHEA-S ratio, Secretory IgA.

**BASIC CORTISOL PROFILE-SALIVA** (LC100047)** — $129
Cortisol X4 to measure cortisol rhythm over time.

**SLEEP HORMONES PROFILE-SALIVA** (LC100048)** — $175
Cortisol and Melatonin plus ratio.

**MTHFR/COMT GENETIC METHYLATION PROFILE** (LC100045)** — $149
Tests for genetic mutations in MFHFR and COMT.

## Other Popular Tests and Panels

◯ **HEALTHY AGING PANEL-COMPREHENSIVE* (LC100026)** — $249
CBC/Chemistry profile, C-Reactive Protein (high sensitivity), Vitamin B12,Folate, Homocysteine, Vitamin D 25-hydroxy,Hemoglobin A1c, TSH, Free T3, Free T4, Ferritin,Urinalysis, Fibrinogen, and Insulin.

◯ **HEALTHY AGING PANEL-BASIC* (LC100025)** — $149
CBC/Chemistry profile, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Ferritin, and Insulin.

◯ **NMR LIPOPROFILE® (LC123810)** — $99
The NMR LipoProfile® directly measures LDL particle size and number as well as HDL particle number, total cholesterol, and triglycerides. It also provides a calculation of one's risk of insulin resistance by assessing abnormalities in lipoprotein markers.

◯ **ANEMIA PANEL* (LC100006)** — $79
CBC/Chemistry Profile, Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate

◯ **AUTOIMMUNE DISEASE SCREEN* (LC100041)** — $199
ANA screen, hs-CRP, TNF-alpha, Immunoglobulins, IgA, IgG, IgM

◯ **DIABETES MANAGEMENT PROFILE – COMPREHENSIVE (LC100040)** — $129
Hemoglobin A1C, Glucose, Insulin, Lipid Panel, Glycomark

◯ **DIABETES MANAGEMENT PROFILE – BASIC (LC100039)** — $39
Hemoglobin A1C, Glucose, Insulin

**ADVANCED CARDIAC BIOMARKERS**

◯ **ADVANCED OXIDIZED LDL PANEL* (LC100035)** — $285
This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase, and Oxidized LDL.

◯ **OXIDIZED LDL PANEL* (LC100034)** — $175
This panel looks at vascular inflammatory biomarkers, beginning with the development of metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: Myeloperoxidase and Oxidized LDL.

◯ **OMEGA CHECK™ (LCOMEGA)** — $131.50
Provides valuable information on your risk of developing heart disease, sudden heart attack and cardiac death. The Omega Check™ also includes your AA:EPA ration allowing you to determine and track a major factor in total body inflammation.

LE YOUR HEALTHY REWARDS

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

**HORMONES**

◯ **DHEA-SULFATE (LC004020)** — $61
This test shows if you are taking the proper amount of DHEA.

◯ **MALE BASIC HORMONE PANEL (LC100012)** — $75
DHEA-S, Estradiol, Free and Total Testosterone, PSA

◯ **FEMALE BASIC HORMONE PANEL (LC100013)** — $75
DHEA-S, Estradiol, Free and Total Testosterone, Progesterone

◯ **DIHYDROTESTOSTERONE (DHT)* (LC500142)** — $50
Measures serum concentrations of DHT.

◯ **ESTRADIOL (LC004515)** — $33
For men and women. Determines the proper amount in the body.

◯ **INSULIN FASTING (LC004333)** — $29.90
Can predict those at risk of diabetes, obesity, heart and other diseases.

◯ **PREGNENOLONE* (LC140707)** — $116
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.

◯ **PROGESTERONE (LC004317)** — $55
Primarily for women. Determines the proper amount in the body.

◯ **SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)** — $33
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.

**GENERAL HEALTH**

◯ **VITAMIN D (250H) (LC081950)** — $47
This test is used to rule out vitamin D deficiency.

◯ **FERRITIN (LC004598)** — $28
Ferritin levels reflect your body's iron stores and is also a biomarker for insulin resistance.

◯ **PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322)** — $31
Screening test for prostate disorders and possible cancer.

**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.**

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.

# ORDER LIFESAVING BLOOD TESTS FROM VIRTUALLY ANYWHERE IN THE US!

## TERMS AND CONDITIONS

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

Signature

X

**CUSTOMER NO.**

◯ Male ◯ Female

Name

Date of Birth (required) / /

Address

City

State Zip

Phone

Credit Card No.

Expiration Date /

**Mail your order form to:**

LifeExtension®
National Diagnostics, Inc.
3600 West Commercial Boulevard
Fort Lauderdale, FL 33309

Phone your order to: **1-800-208-3444**
Fax your order to: **1-866-728-1050**

PRODUCTS

## Amino Acids

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

## Blood Pressure & Vascular Support

Advanced Olive Leaf Vascular Support with Celery Seed Extract
Arterial Protect
Blood Pressure Monitor Arm Cuff
Endothelial Defense™ with Pomegranate Complete and CORDIART™
Endothelial Defense™ with GliSODin®
Natural BP Management
NitroVasc with CORDIART™
Pomegranate Complete
Pomegranate Fruit Extract

## Bone Health

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

## Brain Health

Acetyl-L-Carnitine
Acetyl-L-Carnitine Arginate
Blast
Brain Shield® Gastrodin
Cognitex® Basics
Cognitex® with Brain Shield®
Cognitex® with Pregnenolone & Brain Shield®
Cognizin® CDP-Choline Caps
DMAE Bitartrate (dimethylaminoethanol)
Dopa-Mind™
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin Granules
Migra-Eeze™
Neuro-Mag® Magnesium L-Threonate
Neuro-Mag® Magnesium L-Threonate with Calcium and Vitamin D3
Optimized Ashwagandha Extract
Prevagen™
PS (Phosphatidylserine) Caps
Vinpocetine

## Cholesterol Management

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

## Digestion Support

Artichoke Leaf Extract
Carnosoothe with PicroProtect™
Digest RC®
Effervescent Vitamin C - Magnesium Crystals
Enhanced Super Digestive Enzymes
Enhanced Super Digestive Enzymes w/Probiotics
Esophageal Guardian
Extraordinary Enzymes
Fem Dophilus
Fiber-Immune Support
Ginger Force®
Organic Golden Flax Seed
Pancreatin
Regimint
Tranquil Tract™
TruFiber™
WellBetX PGX plus Mulberry

## Energy Management

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

## Eye Health

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

## Fish Oil & Omegas

OMEGA FOUNDATIONS® 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
Organic Golden Flax Seed
OMEGA FOUNDATIONS® Provinal® Purified Omega-7
OMEGA FOUNDATIONS® Vegetarian DHA

## Food

California Estate Extra Virgin Olive Oil
Rich Rewards® Breakfast Blend
Rich Rewards® Breakfast Blend Natural Mocha Flavor
Rich Rewards® Breakfast Blend Natural Vanilla Flavor
Rich Rewards® Breakfast Blend Whole Bean Coffee
Rich Rewards® Decaf Roast
Stevia Sweetener

## Glucose Management

CinSulin® with InSea2® and Crominex® 3+
Mega Benfotiamine
Natural Glucose Absorption Control
Tri Sugar Shield®

## Heart Health

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

## Hormone Balance

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

## Immune Support

AHCC®
Echinacea Extract
Enhanced Zinc Lozenges
i26 Hyperimmune Egg
Immune Modulator with Tinofend®
Immune Protect with PARACTIN®
Immune Senescence Protection Formula™
Kinoko® Gold AHCC
Kyolic® Garlic Formula 102
Kyolic® Garlic Formula 105
Kyolic® Reserve
Lactoferrin (apolactoferrin) Caps
NK Cell Activator™
Optimized Garlic
Optimized Quercetin
Peony Immune
ProBoost Thymic Protein A
Reishi Extract Mushroom Complex
Standardized Cistanche
Ten Mushroom Formula®
Zinc Lozenges

## Inflammation Management

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

## Joint Support

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

## Kidney & Bladder Support

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

## Liver Health & Detoxification

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

## Longevity & Wellness

AMPK Activator
AppleWise Polyphenol Extract
Berry Complete
Blueberry Extract
Blueberry Extract with Pomegranate

CR Mimetic Longevity Formula
DNA Protection Formula
Enhanced Berry Complete with Acai
Essential Daily Nutrients
Grapeseed Extract with Resveratrol & Pterostilbene
Mega Green Tea Extract (decaffeinated)
Mega Green Tea Extract (lightly caffeinated)
Optimized Fucoidan with Maritech® 926
Optimized Resveratrol
Optimized Resveratrol with Nicotinomide Riboside
pTeroPure®
Pycnogenol® French Maritime Pine Bark Extract
Resveratrol with Pterostilbene
RNA (Ribonucleic Acid)
Super Alpha-Lipoic Acid
Super R-Lipoic Acid
X-R Shield

## Men's Health

Mega Lycopene Extract
PalmettoGuard® Saw Palmetto with Beta-Sitosterol
PalmettoGuard® Saw Palmetto/Nettle Root Formula with Beta-Sitosterol
Prelox® Natural Sex for Men®
Super MiraForte with Standardized Lignans
Triple Strength ProstaPollen™
Ultra Natural Prostate

## Minerals

Boron
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

Solarshield® Sunglasses

## Mood & Stress Management

5 HTP
L-Theanine
Natural Stress Relief
SAMe (S-Adenosyl-Methionine)

## Multivitamins

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

## Personal Care

Anti-Aging Rejuvenating Scalp Serum
Biosil
Dr. Proctor's Advanced Hair Formula
Dr. Proctor's Shampoo
European Leg Solution Featuring Certified Diosmin 95
Face Master Platinum Facial Toning System
Hair, Skin & Nail Rejuvenation Formula w/VERISOL®
Hair Suppress Formula
Life Extension Toothpaste
Sinus Cleanser
Venotone
Xyliwhite Mouthwash

## Pet Care

Cat Mix
Dog Mix

## Probiotics

Bifido GI Balance
BroccoMax®
FLORASSIST® Heart Health
FLORASSIST® Oral Hygiene
FLORASSIST® Balance
FLORASSIST® Mood
FLORASSIST® Throat Health
Theralac® Probiotics
TruFlora® Probiotics

## Skin Care

Advanced Anti-Glycation Peptide Serum
Advanced Lightening Cream
Advanced Peptide Hand Therapy
Advanced Triple Peptide Serum
Advanced Under Eye Serum with Stem Cells
Amber Self MicroDermAbrasion
Anti-Aging Face Oil
Anti-Aging Mask
Anti-Aging Rejuvenating Face Cream
Anti-Glycation Serum with Blueberry & Pomegranate Extracts
Antioxidant Facial Mist
Anti-Oxidant Rejuvenating Foot Cream
Anti-Oxidant Rejuvenating Foot Scrub
Anti-Oxidant Rejuvenating Hand Cream
Anti-Redness & Adult Blemish Lotion
Bioflavonoid Cream
Broccoli Sprout Cream
Collagen Boosting Peptide Serum
Corrective Clearing Mask
DNA Repair Cream
Essential Plant Lipids Reparative Serum
Face Rejuvenating Anti-Oxidant Cream
Fine Line-Less
Healing Formula
Healing Mask
Healing Vitamin K Cream
Hyaluronic Facial Moisturizer
Hyaluronic Oil-Free Facial Moisturizer
Hydrating Anti-Oxidant Facial Mist
Hydroderm
Lifting & Tightening Complex
Lycopene Cream
Melatonin Cream
Mild Facial Cleanser
Multi Stem Cell Skin Tightening Complex
Neck Rejuvenating Anti-Oxidant Cream
Pigment Correcting Cream
Rejuvenating Serum
Rejuvenex® Body Lotion
RejuveneX® Factor Firming Serum
Renewing Eye Cream
Resveratrol Anti-Oxidant Serum
Shade Factor
Skin Lightening Serum
Skin Restoring Phytoceramides with Lipowheat®
Skin Stem Cell Serum
Stem Cell Cream with Alpine Rose
Tightening & Firming Neck Cream
Triple-Action Vitamin C Cream
Ultimate MicroDermabrasion
Ultra Eyelash Booster
Ultra Lip Plumper
Ultra Rejuvenex®
Ultra RejuveNight®
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin E-ssential Cream
Youth Serum

## Sleep

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

## Sports Performance

Creatine Capsules
Creatine Whey Glutamine Powder (Vanilla Flavor)
New Zealand Whey Protein Concentrate (Natural Chocolate and Vanilla Flavor)
Tart Cherry Extract
Whey Protein Isolate (Chocolate and Vanilla Flavor)

## Vitamins

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

## Weight Management

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

## Women's Health

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

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| | **A** | | | | | | |
| 01524 | **ACETYL-L-CARNITINE** • 500 mg, 100 veg. caps | 34.00 | 25.50 | 22.50 | | | |
| 01525 | **ACETYL-L-CARNITINE ARGINATE** • 100 veg. caps | 59.00 | 44.25 | 38.24 | | | |
| 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 | | | |
| 01828 | **ADVANCED LIPID CONTROL** • 60 veg. caps | 30.00 | 22.50 | 20.25 | | | |
| 00681 | **AHCC®** • 500 mg, 30 caps | 59.98 | 44.99 | | | | |
| 29727 | **AHCC® (KINOKO® GOLD)** • 500 mg, 60 veg. caps | 74.95 | 52.47 | | | | |
| 00457 | **ALPHA-LIPOIC ACID W/BIOTIN** (Super) • 250 mg, 60 caps | 37.00 | 27.75 | 24.00 | | | |
| 01907 | **AMPK ACTIVATOR** • 90 veg. caps | 48.00 | 36.00 | 33.00 | | | |
| 01440 | **ANTI-ALCOHOL ANTIOXIDANTS W/HEPATOPRO** • 100 caps | 26.00 | 19.50 | 17.25 | | | |
| 01509 | **ANTI-ADIPOCYTE FORMULA W/MERATRIM® & INTEGRA LEAN®** (Advanced) • 60 veg. caps | 39.00 | 29.25 | 27.00 | | | |
| 01625 | **APPLEWISE POLYPHENOL EXTRACT** 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 | 48.00 | 36.00 | 33.00 | | | |
| 01617 | **ARTHROMAX® W/THEAFLAVINS & APRÈSFLEX®** 120 veg. caps | 44.00 | 33.00 | 30.00 | | | |
| 01618 | **ARTHROMAX® ADVANCED W/UC-II® & APRÈSFLEX®** 60 caps | 36.00 | 27.00 | 24.00 | | | |
| 01404 | **ARTHRO-IMMUNE JOINT SUPPORT** • 60 veg. caps | 32.00 | 24.00 | 21.00 | | | |
| 00919 | **ARTICHOKE LEAF EXTRACT** • 500 mg, 180 veg. caps | 30.00 | 22.50 | 21.00 | | | |
| 01533 | **ASCORBYL PALMITATE** • 500 mg, 100 veg. caps | 22.50 | 16.88 | 15.00 | | | |
| 00888 | **ASHWAGANDHA EXTRACT** (Optimized) • 60 veg. caps | 10.00 | 7.50 | 6.75 | | | |
| 01805 | **ASIAN ENERGY BOOST** • 90 veg. caps | 24.00 | 18.00 | 16.50 | | | |
| 01066 | **ASPIRIN** • 81 mg, 300 enteric coated tablets | 6.00 | 4.50 | 4.00 | | | |
| 01923 | **ASTAXANTHIN WITH PHOSPHOLIPIDS** • 4 mg, 30 softgels | 16.00 | 12.00 | 10.50 | | | |
| | **B** | | | | | | |
| 00920 | **BENFOTIAMINE W/ THIAMINE** • 100 mg, 120 veg. caps | 19.95 | 14.96 | 13.95 | | | |
| 00925 | **BENFOTIAMINE** (Mega) • 250 mg, 120 veg. caps | 30.00 | 22.50 | 20.25 | | | |
| 01206 | **BERRY COMPLETE** • 30 veg. caps | 21.00 | 15.75 | 14.00 | | | |
| 01496 | **BERRY COMPLETE W/ACAI** (Enhanced) • 60 veg. caps | 29.00 | 21.75 | 19.50 | | | |
| 00664 | **BETA-CAROTENE** • 25,000 IU, 100 softgels | 11.25 | 8.44 | | | | |
| 01622 | **BIFIDO GI BALANCE** • 60 veg. caps | 20.00 | 15.00 | 13.50 | | | |
| 01873 | **BILBERRY EXTRACT** • 100 mg, 90 veg. caps | 36.00 | 27.00 | 24.00 | | | |
| 01512 | **BIOACTIVE MILK PEPTIDES** • 30 caps | 18.00 | 13.50 | 12.00 | | | |
| 01631 | **BIO-COLLAGEN W/PATENTED UC-II®** • 40 mg, 60 small caps | 36.00 | 27.00 | 24.00 | | | |
| *01006 | **BIOSIL™** • 5 mg, 30 veg. caps | 18.95 | 15.16 | | | | |
| *01007 | **BIOSIL™** • 1 fl oz | 31.99 | 25.59 | | | | |
| 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 | 26.95 | 20.21 | | | | |
| 70000 | **BLOOD PRESSURE MONITOR (ACCUFIT™)** • med/lg cuff | 79.99 | 49.99 | | | | |
| 70004 | **BLOOD PRESSURE MONITOR** • Digital wrist cuff | 69.95 | 52.46 | | | | |

**SUBTOTAL OF COLUMN 1**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 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 | | | |
| 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 | | | |
| 01802 | **BRAIN SHIELD® GASTRODIN** • 300 mg, 60 veg. caps | 33.00 | 24.75 | 22.50 | | | |
| 01253 | **BRANCHED CHAIN AMINO ACIDS** • 90 caps | 19.50 | 14.63 | 12.75 | | | |
| 01942 | **BREAST HEALTH FORMULA** • 60 caps | 34.00 | 25.50 | 22.50 | | | |
| 00893 | **BRITE EYES III** • 2 vials, 5 ml each | 34.00 | 25.50 | 24.00 | | | |
| 26576 | **BROCCO MAX®** • 60 veg. caps | 26.95 | 20.21 | | | | |
| 01203 | **BROMELAIN** (Specially-coated) 500 mg, 60 enteric coated tablets | 21.00 | 15.75 | 14.25 | | | |
| | **C** | | | | | | |
| 01653 | **CALCIUM CITRATE W/VITAMIN D** • 300 caps | 24.00 | 18.00 | 15.94 | | | |
| 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 | | | |
| 00916 | **CARNITINE W/GLYCOCARN®** (Optimized) • 60 veg. caps | 36.00 | 27.00 | 24.00 | | | |
| 01532 | **L-CARNITINE** • 500 mg, 30 veg. caps | 15.00 | 11.25 | 9.90 | | | |
| 01258 | **CARNOSOOTHE W/PICROPROTECT™** • 60 veg. caps | 30.00 | 22.50 | 20.25 | | | |
| 01829 | **CARNOSINE** • 500 mg, 60 veg. caps | 36.00 | 27.00 | 24.00 | | | |
| 01687 | **CARNOSINE** (Super) • 500 mg, 90 veg. caps | 66.00 | 49.50 | 45.00 | | | |
| 01932 | **CAT MIX** • 100 grams powder | 14.00 | 10.50 | 8.25 | | | |
| 01899 | **CHILDREN'S FORMULA LIFE EXTENSION MIX™** 100 chewable tablets | 20.00 | 15.00 | 13.50 | | | |
| 00550 | **CHLORELLA** • 500 mg, 200 tablets | 23.50 | 17.63 | | | | |
| 01571 | **CHLOROPHYLLIN** • 100 mg, 100 veg. caps | 24.00 | 18.00 | 15.00 | | | |
| 01359 | **CHO-LESS™** • 90 capsules | 35.00 | 26.25 | | | | |
| 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 | | | |
| 01906 | **CISTANCHE** (Standardized) • 30 veg. caps | 20.00 | 15.00 | 12.00 | | | |
| 01818 | **CITRIMAX®** (Super) • 180 veg. caps | 40.00 | 30.00 | 28.50 | | | |
| 00818 | **CLA BLEND W/SESAME LIGNANS** (Super) 1,000 mg, 120 softgels | 36.00 | 27.00 | 24.75 | 19.75 | | |
| 00819 | **CLA BLEND W/GUARANA & SESAME** (Super) 1,000 mg, 120 softgels | 42.00 | 31.50 | 28.75 | | | |
| 01896 | **COGNITEX® W/BRAIN SHIELD®** • 90 softgels | 60.00 | 45.00 | 39.00 | 36.00 | | |
| 01897 | **COGNITEX® W/PREGNENOLONE & BRAIN SHIELD®** 90 softgels | 62.00 | 46.50 | 39.75 | 37.50 | | |
| 01421 | **COGNITEX® BASICS** • 60 softgels | 38.00 | 28.50 | 26.25 | 24.00 | | |

**SUBTOTAL OF COLUMN 2**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 01659 | **COGNIZIN® CDP CHOLINE CAPS** • 250 mg, 60 veg. caps | 36.00 | 27.00 | 25.50 | | | |
| 01945 | **COMPLETE B-COMPLEX** (BioActive) • 60 veg. caps | 12.00 | 9.00 | 8.00 | | | |
| 02098 | **COMPREHENSIVE NUTRIENT PACKS ADVANCED** • 30 packs | 90.00 | 67.50 | 61.50 | | | |
| 01949 | **COQ10 w/*d*-LIMONENE** (Super-Absorbable) 50 mg, 60 softgels | 25.00 | 18.75 | 16.50 | 15.00 | | |
| 01948 | **COQ10 w/*d*-LIMONENE** (Super-Absorbable) 100 mg, 100 softgels | 46.00 | 34.50 | 28.00 | 26.25 | | |
| 01929 | **COQ10** (Super ubiquinol) • 100 mg, 60 softgels | 56.00 | 42.00 | 36.00 | 33.00 | | |
| 01733 | **COQ10 w/BIOPQQ®** (Super ubiquinol) • 100 mg, 30 softgels | 54.00 | 40.50 | 33.00 | 30.00 | | |
| 01426 | **COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super ubiquinol) • 100 mg, 60 softgels | 62.00 | 46.50 | 39.00 | 36.00 | | |
| 01425 | **COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super ubiquinol) • 50 mg, 100 softgels | 58.00 | 43.50 | 34.50 | 31.50 | | |
| 01427 | **COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super ubiquinol) • 50 mg, 30 softgels | 20.00 | 15.00 | 12.00 | | | |
| 01431 | **COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super ubiquinol) • 200 mg, 30 softgels | 62.00 | 46.50 | 39.00 | 36.00 | | |
| 00862 | **CRAN-MAX®** • 500 mg, 60 veg. caps | 17.50 | 13.13 | 11.25 | | | |
| 01424 | **CRAN-MAX® WITH ELLIROSE™** (Optimized) • 60 veg. caps | 18.00 | 13.50 | 12.00 | | | |
| 01529 | **CREATINE CAPSULES** • 120 veg. caps | 10.95 | 8.21 | 6.94 | | | |
| 01746 | **CREATINE WHEY GLUTAMINE POWDER** • 454 grams (vanilla) | 30.00 | 22.50 | 20.25 | | | |
| 01429 | **CR MIMETIC LONGEVITY FORMULA** • 60 veg. caps | 39.00 | 29.25 | 27.00 | | | |
| 00407 | **CURCUMIN®** (Super Bio) • 400 mg, 60 veg. caps | 38.00 | 28.50 | 26.25 | | | |
| 01924 | **CURCUMIN® W/GINGER & TURMERONES** (Advanced Bio) 30 softgels | 30.00 | 22.50 | 20.25 | | | |
| 01804 | **CYTOKINE SUPPRESS™ W/EGCG** • 30 veg. caps | 30.00 | 22.50 | 20.25 | | | |
| | **COSMESIS** | | | | | | |
| 80157 | **ADVANCED ANTI-GLYCATION PEPTIDE SERUM** • 1 oz | 53.00 | 39.75 | 34.50 | | | |
| 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 oz | 65.00 | 48.75 | 42.75 | | | |
| 80140 | **ADVANCED UNDER EYE SERUM W/STEM CELLS** • .33 oz | 49.00 | 36.75 | 31.50 | | | |
| 80139 | **AMBER SELF MICRODERMABRASION** • 2 oz | 49.00 | 36.75 | 31.50 | | | |
| 80158 | **ANTI-AGING FACE OIL** • 1 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 oz | 46.00 | 34.50 | 29.25 | | | |
| 80134 | **ANTI-GLYCATION SERUM W/BLUEBERRY & POMEGRANATE EXTRACTS** • 1 oz | 33.00 | 24.75 | 23.51 | | | |
| 80133 | **ANTIOXIDANT FACIAL MIST** • 2 oz | 32.00 | 24.00 | 22.80 | | | |
| 80127 | **ANTIOXIDANT REJUVENATING FOOT CREAM** • 2 oz | 45.00 | 33.75 | 32.10 | | | |
| 80128 | **ANTIOXIDANT REJUVENATING FOOT SCRUB** • 2 oz | 59.00 | 44.25 | 38.94 | | | |
| 80117 | **ANTIOXIDANT REJUVENATING HAND CREAM** • 2 oz | 64.00 | 48.00 | 43.12 | | | |
| 80105 | **ANTI-REDNESS & ADULT BLEMISH LOTION** • 1 oz | 74.50 | 55.88 | 49.17 | | | |
| 80147 | **BIOFLAVONOID CREAM** • 1 oz | 46.00 | 34.50 | 29.25 | | | |
| 80144 | **BROCCOLI SPROUT CREAM** • 1 oz | 46.00 | 34.50 | 29.25 | | | |
| 80156 | **COLLAGEN BOOSTING PEPTIDE SERUM** • 1 oz | 59.00 | 44.25 | 39.00 | | | |
| 80120 | **CORRECTIVE CLEARING MASK** • 2 oz | 64.50 | 48.38 | 42.57 | | | |
| 80141 | **DNA REPAIR CREAM** • 1 oz | 49.00 | 36.75 | 31.50 | | | |

**SUBTOTAL OF COLUMN 3**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 80108 | **ESSENTIAL PLANT LIPIDS REPARATIVE SERUM** • 1 oz | 74.95 | 56.21 | 49.46 | | | |
| 80123 | **FACE REJUVENATING ANTIOXIDANT CREAM** • 2 oz | 69.50 | 52.13 | 45.87 | | | |
| 80107 | **FINE LINE-LESS** • 1 oz | 74.50 | 55.88 | 49.17 | | | |
| 80131 | **HAIR SUPPRESS FORMULA** • 4 oz | 59.00 | 44.25 | 38.94 | | | |
| 80137 | **HEALING FORMULA ALL-IN-ONE CREAM** • 1 oz | 53.00 | 39.75 | 34.07 | | | |
| 80115 | **HEALING MASK** • 2 oz | 64.50 | 48.38 | 42.57 | | | |
| 80102 | **HEALING VITAMIN K CREAM** • 1 oz | 79.50 | 59.63 | 52.47 | | | |
| 80109 | **HYALURONIC FACIAL MOISTURIZER** • 1 oz | 58.00 | 43.50 | 38.28 | | | |
| 80110 | **HYALURONIC OIL-FREE FACIAL MOISTURIZER** • 1 oz | 58.00 | 43.50 | 38.28 | | | |
| 80138 | **HYDRATING ANTIOXIDANT FACE MIST** • 4 oz | 39.95 | 29.96 | 28.50 | | | |
| 80103 | **LIFTING & TIGHTENING COMPLEX** • 1 oz | 74.50 | 55.88 | 49.17 | | | |
| 80146 | **LYCOPENE CREAM** • 1 oz | 28.00 | 21.00 | 19.05 | | | |
| 80135 | **MELATONIN CREAM** • 1 oz | 33.00 | 24.75 | 20.33 | | | |
| 80114 | **MILD FACIAL CLEANSER** • 8 fl. oz | 59.00 | 44.25 | 38.94 | | | |
| 80159 | **MULTI STEM CELL SKIN TIGHTENING COMPLEX** • 1 oz | 59.00 | 44.25 | 39.00 | | | |
| 80122 | **NECK REJUVENATING ANTIOXIDANT CREAM** • 2 oz | 64.00 | 48.00 | 42.24 | | | |
| 80111 | **PIGMENT CORRECTING CREAM** • 1/2 oz | 74.00 | 55.50 | 48.84 | | | |
| 80106 | **REJUVENATING SERUM** • 1 oz | 74.50 | 55.88 | 49.17 | | | |
| 80150 | **RENEWING EYE CREAM** • 1/2 oz | 65.00 | 48.75 | 42.75 | | | |
| 80142 | **RESVERATROL ANTI-OXIDANT SERUM** • 1 oz | 46.00 | 34.50 | 29.25 | | | |
| 80112 | **SKIN LIGHTENING SERUM** • 1/2 oz | 85.00 | 63.75 | 56.10 | | | |
| 80130 | **SKIN STEM CELL SERUM** • 1 oz | 74.00 | 55.50 | 51.75 | | | |
| 80143 | **STEM CELL CREAM W/ALPINE ROSE** • 1 oz | 66.00 | 49.50 | 43.50 | | | |
| 80148 | **TIGHTENING & FIRMING NECK CREAM** • 2 oz | 39.00 | 29.25 | 26.25 | | | |
| 80161 | **TRIPLE ACTION VITAMIN C CREAM** • 1 oz jar | 59.00 | 44.25 | 39.00 | | | |
| 80162 | **ULTIMATE MICRODERMABRASION** • 8 fl. oz | 39.00 | 29.25 | 26.25 | | | |
| 80160 | **ULTRA EYELASH BOOSTER** • 0.25 oz (2 units $39) | 59.00 | 44.25 | | | | |
| 80116 | **ULTRA LIP PLUMPER** • 1/3 oz | 64.00 | 48.00 | 42.24 | | | |
| 80101 | **ULTRA WRINKLE RELAXER** • 1 oz | 89.95 | 67.46 | 59.82 | | | |
| 80113 | **UNDER EYE REFINING SERUM** • 1/2 oz | 74.50 | 55.88 | 49.17 | | | |
| 80104 | **UNDER EYE RESCUE CREAM** • 1/2 oz | 74.50 | 55.88 | 49.17 | | | |
| 80129 | **VITAMIN C SERUM** • 1 oz | 85.00 | 63.75 | 56.10 | | | |
| 80136 | **VITAMIN D LOTION** • 4 oz | 36.00 | 27.00 | 25.25 | | | |
| 80145 | **VITAMIN E-ESSENTIAL CREAM** • 1 oz | 28.00 | 21.00 | 19.50 | | | |
| 80149 | **YOUTH SERUM** • 1 oz | 65.00 | 48.75 | 42.75 | | | |
| | **D** | | | | | | |
| 01912 | **DAILY C+ CITRUS FLAVOR** • 30 stick packs | 21.00 | 15.75 | 14.25 | | | |
| 00658 | **7-KETO® DHEA METABOLITE** • 25 mg, 100 caps | 28.00 | 21.00 | 18.00 | | | |
| 01479 | **7-KETO® DHEA METABOLITE** • 100 mg, 60 veg. caps | 40.00 | 30.00 | 27.00 | | | |
| 01640 | **DHA** (Vegetarian) • 30 veg. softgels | 20.00 | 15.00 | 13.50 | | | |
| 00607 | **DHEA** • 25 mg, 100 tablets (Dissolve in mouth) | 14.00 | 10.50 | 8.81 | | | |
| 01478 | **DHEA COMPLETE** • 60 veg. caps | 48.00 | 36.00 | 32.40 | | | |
| 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 | | | |

**SUBTOTAL OF COLUMN 4**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 01689 | **DHEA** • 100 mg, 60 veg. caps | 24.00 | 18.00 | 16.50 | | | |
| 01358 | **DIGEST RC®** • 30 tablets | 19.95 | 14.96 | 12.75 | | | |
| 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 | | | |
| 01570 | **DNA PROTECTION FORMULA** • 60 veg. caps | 34.00 | 25.50 | 24.00 | | | |
| 01931 | **DOG MIX** • 100 grams powder | 18.00 | 13.50 | 11.25 | | | |
| 02006 | **DOPA-MIND™** • 60 veg. tabs | 48.00 | 36.00 | 32.00 | | | |
| 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 | | | |
| | **E** | | | | | | |
| 01528 | **ECHINACEA EXTRACT** • 250 mg, 60 veg. caps | 14.35 | 10.76 | 9.38 | | | |
| 01997 | **ENDOTHELIAL DEFENSE™ w/POMEGRANATE COMPLETE AND CORDIART™** • 60 softgels | 68.00 | 51.00 | 46.50 | | | |
| 00997 | **ENDOTHELIAL DEFENSE™ w/GLISODIN®** • 60 veg. caps | 54.00 | 40.50 | 36.00 | | | |
| 01937 | **EPA/DHA** (Mega) • 120 softgels | 20.00 | 15.00 | 13.50 | | | |
| 01737 | **ESOPHAGEAL GUARDIAN** (Berry flavor) • 60 chewable tablets | 36.00 | 27.00 | 24.00 | | | |
| 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 | | | |
| | **F** | | | | | | |
| *01054 | **FACE MASTER® PLATINUM** • Facial Toning System | 199.00 | 199.00 | | | | |
| 00965 | **FAST-ACTING JOINT FORMULA** • 30 caps | 39.00 | 29.25 | 27.00 | | | |
| 01717 | **FAST-C® W/DIHYDROQUERCETIN** • 120 veg. tabs | 26.00 | 19.50 | 18.00 | | | |
| 20053 | **FEM DOPHILUS®** • 30 caps | 25.95 | 19.46 | | | | |
| 20055 | **FEM DOPHILUS®** • 60 caps | 39.95 | 29.96 | | | | |
| 01064 | **FEMMENESSENCE MACAPAUSE®** • 120 veg. caps | 34.99 | 26.24 | | | | |
| 02007 | **FIBER-IMMUNE SUPPORT** (Apple Cinnamon) • 235 grams | 34.00 | 25.50 | 23.50 | | | |
| 00718 | **FIBRINOGEN RESIST™** • 30 veg. caps | 49.00 | 36.75 | 33.00 | | | |
| 01749 | **FLAX SEED** (Organic golden) • 14 oz | 11.67 | 8.75 | | | | |
| 01821 | **FLORASSIST® HEART HEALTH** • 60 veg. caps | 32.00 | 24.00 | 21.00 | | | |
| 02019 | **FLORASSIST® ORAL HYGIENE** • 30 lozenges | 18.00 | 13.50 | 12.75 | | | |
| 01825 | **FLORASSIST® BALANCE** • 30 liquid veg. caps | 32.00 | 24.00 | 21.00 | | | |
| 02000 | **FLORASSIST® MOOD** • 60 caps | 33.00 | 24.75 | 22.50 | | | |
| 01920 | **FLORASSIST® THROAT HEALTH** • 30 lozenges | 20.00 | 15.00 | 13.50 | | | |
| 01913 | **FOLATE HIGH POTENCY** (Optimized) • 5,000 mcg, 30 veg. tablets | 25.00 | 18.75 | 16.50 | | | |
| 01939 | **FOLATE** (Optimized) • 1,000 mcg, 100 veg. tablets | 19.00 | 14.25 | 12.75 | | | |
| 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 | | | |
| | **G** | | | | | | |
| 00559 | **GAMMA E TOCOPHEROL/TOCOTRIENOLS** • 60 softgels | 42.00 | 31.50 | 27.75 | | | |
| 00759 | **GAMMA E TOCOPHEROL W/SESAME LIGNANS** • 60 softgels | 32.00 | 24.00 | 21.75 | | | |
| 01394 | **GARLIC** (Optimized) • 200 veg. caps | 24.95 | 18.71 | 15.75 | | | |

**SUBTOTAL OF COLUMN 5**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| **01122 | **GINGER FORCE®** • 60 liquid caps | 34.95 | 26.21 | | | | |
| 01658 | **GINKGO BILOBA CERTIFIED EXTRACT™** 120 mg, 365 veg. caps | 46.00 | 34.50 | 31.50 | | | |
| 00756 | **GLA WITH SESAME LIGNANS** (Mega) • 60 softgels | 19.50 | 14.63 | 13.50 | | | |
| 00345 | **(L-) GLUTAMINE CAPSULES** • 500 mg, 100 veg. caps | 14.95 | 11.21 | 10.13 | | | |
| 00141 | **(L-) GLUTAMINE POWDER** • 100 grams | 22.00 | 16.50 | 15.00 | | | |
| 00522 | **GLUCOSAMINE/CHONDROITIN CAPSULES** • 100 caps | 38.00 | 28.50 | 24.00 | | | |
| 01541 | **GLUTATHIONE, CYSTEINE & C** • 100 veg. caps | 20.00 | 15.00 | 13.50 | | | |
| 01669 | **GLYCINE** • 1,000 mg, 100 veg. caps | 12.00 | 9.00 | 8.10 | | | |
| 01411 | **GRAPE SEED EXTRACT W/RESVERATROL & PTEROSTILBENE** 100 mg, 60 veg. caps | 36.00 | 27.00 | 25.50 | | | |
| 01620 | **GREEN COFFEE EXTRACT COFFEEGENIC®** 400 mg, 90 veg. caps | 32.00 | 24.00 | 21.00 | | | |
| 00953 | **GREEN TEA EXTRACT** (Mega) • lightly caffeinated, 100 veg. caps | 30.00 | 22.50 | 18.00 | | | |
| 00954 | **GREEN TEA EXTRACT** (Mega) • decaffeinated, 100 veg. caps | 30.00 | 22.50 | 18.00 | | | |
| | **H** | | | | | | |
| 01074 | **5 HTP** • 100 mg, 60 caps | 27.95 | 20.96 | | | | |
| **02002 | **HAIR, SKIN & NAIL REJUVENATION FORM W/VERISON®** 90 tabs | 32.00 | 24.00 | 22.00 | | | |
| 01738 | **HCA** (Garnicia) • 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 | | | |
| 01527 | **HUPERZINE A** • 200 mcg, 60 veg. caps | 40.00 | 30.00 | 27.00 | | | |
| 00661 | **HYDRODERM®** • 1 oz | 79.95 | 59.96 | 49.00 | | | |
| | **I** | | | | | | |
| *01060 | **I26 HYPERIMMUNE EGG** • 140 grams powder | 54.99 | 46.75 | | | | |
| 01704 | **IMMUNE MODULATOR W/TINOFEND®** • 60 veg. caps | 17.00 | 12.75 | 11.25 | | | |
| 00955 | **IMMUNE PROTECT W/PARACTIN®** • 30 veg. caps | 29.50 | 22.13 | 19.91 | | | |
| 02005 | **IMMUNE SENESCENCE PROTECTION FORMULA™** • 60 veg. tabs | 40.00 | 30.00 | 27.00 | | | |
| 01049 | **INNERPOWER™** • 530 grams powder | 42.00 | 31.50 | | | | |
| 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 | | | |
| 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 | | | |
| | **J, K, L** | | | | | | |
| 00056 | **JARRO-DOPHILUS EPS®** • 60 veg. caps | 22.95 | 17.21 | | | | |
| 01834 | **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** • 60 softgels | 33.95 | 25.46 | | | | |
| 00316 | **KYOLIC® GARLIC FORMULA 102** • 200 veg. caps | 27.45 | 20.59 | | | | |
| 00214 | **KYOLIC® GARLIC FORMULA 105** • 200 caps | 28.45 | 21.34 | | | | |
| 00789 | **KYOLIC® RESERVE** • 600 mg, 120 caps | 28.95 | 21.71 | | | | |
| 01681 | **LACTOFERRIN** • 60 caps | 52.00 | 39.00 | 36.00 | | | |
| 00020 | **LECITHIN** • 16 oz granules | 18.00 | 13.50 | 12.00 | | | |
| 02055 | **LIFE EXTENSION MIX™** • 315 tablets | 80.00 | 60.00 | 52.00 | 43.75 | | |
| 02057 | **LIFE EXTENSION MIX™ W/EXTRA NIACIN** • 315 tablets | 80.00 | 60.00 | 52.00 | 43.75 | | |
| 02054 | **LIFE EXTENSION MIX™** • 490 caps | 90.00 | 67.50 | 58.00 | 47.50 | | |

**SUBTOTAL OF COLUMN 6**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 02056 | **LIFE EXTENSION MIX™ POWDER** • 14.81 oz | 80.00 | 60.00 | 52.00 | 43.75 | | |
| 02065 | **LIFE EXTENSION MIX™** • 315 tablets w/o copper | 80.00 | 60.00 | 52.00 | 43.75 | | |
| 02064 | **LIFE EXTENSION MIX™** • 490 caps w/o copper | 90.00 | 67.50 | 58.00 | 47.50 | | |
| 02066 | **LIFE EXTENSION MIX™ POWDER** • 14.81 oz w/o copper | 80.00 | 60.00 | 52.00 | 43.75 | | |
| 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 | | | |
| | **M** | | | | | | |
| 01992 | **MACUGUARD® OCULAR SUPPORT** • 60 softgels | 25.00 | 18.75 | 17.50 | | | |
| 01993 | **MACUGUARD® OCULAR SUPPORT w/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 | 9.00 | 6.75 | 5.63 | | | |
| 01908 | **MEDITERRANEAN TRIM WITH SINETROL™-XPUR** 60 veg. caps | 18.00 | 13.50 | 12.00 | | | |
| 01668 | **MELATONIN** • 300 mcg, 100 veg. caps | 5.75 | 4.31 | 3.75 | | | |
| 01083 | **MELATONIN** • 500 mcg, 200 veg. caps | 18.00 | 13.50 | 12.00 | | | |
| 00329 | **MELATONIN** • 1 mg, 60 caps | 5.00 | 3.75 | 3.47 | | | |
| 00330 | **MELATONIN** • 3 mg, 60 veg. caps | 8.00 | 6.00 | 5.16 | | | |
| 00331 | **MELATONIN** • 10 mg, 60 veg. caps | 28.00 | 21.00 | 18.00 | | | |
| 00332 | **MELATONIN** • 3 mg, 60 veg. lozenges | 8.00 | 6.00 | 5.16 | | | |
| 01734 | **MELATONIN** (Fast-Acting Liquid) • 2 fl. oz (Citrus-Vanilla) | 12.00 | 9.00 | 8.25 | | | |
| 01787 | **MELATONIN TIMED RELEASE** • 300 mcg, 100 veg. tabs | 12.00 | 9.00 | 8.25 | | | |
| 01788 | **MELATONIN TIMED RELEASE** • 750 mcg, 60 veg. tablets | 8.00 | 6.00 | 5.25 | | | |
| 01786 | **MELATONIN TIMED RELEASE** • 3 mg, 60 veg. tabs | 12.00 | 9.00 | 8.25 | | | |
| 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 | 29.50 | 22.13 | 19.75 | | | |
| 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/BIOPQQ®** • 30 caps | 44.00 | 33.00 | 30.00 | | | |
| 01868 | **MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ®** • 120 caps | 72.00 | 54.00 | 48.00 | | | |
| 00065 | **MK-7** • 90 mcg, 60 softgels | 28.00 | 21.00 | 18.75 | | | |
| 00451 | **MSM** (Methylsulfonylmethane) • 1,000 mg, 100 caps | 14.00 | 10.50 | 8.96 | | | |
| | **N** | | | | | | |
| 01534 | **N-ACETYL-L-CYSTEINE** • 600 mg, 60 veg. caps | 14.00 | 10.50 | 10.13 | | | |
| 01904 | **NAD+ CELL REGENERATOR™** • 100 mg, 30 veg. caps | 34.00 | 25.50 | 19.50 | | | |
| 00066 | **NATTOKINASE** • 60 softgels | 25.50 | 19.13 | | | | |
| 01807 | **NATURAL APPETITE SUPPRESS** (Advanced) • 60 veg. caps | 38.00 | 28.50 | 25.50 | | | |
| 00984 | **NATURAL BP MANAGEMENT** • 60 tablets | 44.00 | 33.00 | 30.00 | | | |
| 01892 | **NATURAL ESTROGEN** • 60 veg. tabs | 38.00 | 28.50 | 25.50 | | | |
| 01626 | **NATURAL SEX FOR WOMEN® 50+** (Advanced) • 90 veg. caps | 59.00 | 44.25 | 34.00 | | | |
| 01444 | **NATURAL SLEEP®** • 60 veg. caps | 13.00 | 9.75 | 7.50 | | | |
| 01551 | **NATURAL SLEEP® w/ MELATONIN** (Enhanced) • 30 caps | 22.00 | 16.50 | 15.00 | | | |

**SUBTOTAL OF COLUMN 7**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 01511 | **NATURAL SLEEP® W/O MELATONIN** (Enhanced) • 30 caps | 20.00 | 15.00 | 13.50 | | | |
| 01445 | **NATURAL SLEEP® MELATONIN** • 5 mg, 60 veg. caps | 18.00 | 13.50 | 12.00 | | | |
| 00987 | **NATURAL STRESS RELIEF** • 30 veg. caps | 28.00 | 21.00 | 18.00 | | | |
| 30741 | **NERVIA®** • 90 softgels | 53.95 | 40.46 | | | | |
| 01603 | **NEURO-MAG® MAGNESIUM L-THREONATE** • 90 veg. caps | 40.00 | 30.00 | 27.00 | | | |
| 01602 | **NEURO-MAG® MAGNESIUM L-THREONATE w/CALCIUM & VITAMIN D3** • 25 grams • Lemon flavor | 40.00 | 30.00 | 27.00 | | | |
| 01990 | **NITROVASC w/CORDIART™** • 30 veg. caps | 18.00 | 13.50 | 12.00 | | | |
| 01903 | **NK CELL ACTIVATOR™** • 30 veg. tablets | 45.00 | 33.75 | 31.50 | | | |
| 00373 | **NO-FLUSH NIACIN** • 800 mg, 100 caps | 19.00 | 14.25 | 12.75 | | | |
| | **O** | | | | | | |
| 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 small softgels | 32.00 | 24.00 | 21.00 | 17.25 | | |
| 01991 | **ONCE-DAILY HEALTH BOOSTER** • 60 softgels | 54.00 | 40.50 | 38.00 | | | |
| 02001 | **ONE-PER-DAY** • 60 tablets | 22.00 | 16.50 | 15.00 | | | |
| 01328 | **ONLY TRACE MINERALS** • 90 veg. caps | 15.00 | 11.25 | 9.38 | | | |
| | **P** | | | | | | |
| 01789 | **PALMETTOGUARD® SAW PALMETTO W/BETA-SITOSTEROL** 30 softgels | 15.00 | 11.25 | 10.50 | 9.00 | | |
| 01790 | **PALMETTOGUARD® SUPER SAW PALMETTO/ NETTLE ROOT W/BETA-SITOSTEROL** • 60 softgels | 28.00 | 21.00 | 19.50 | 18.00 | | |
| 01323 | **PEAK ATP® WITH GLYCOCARN®** • 60 veg. caps | 54.00 | 40.50 | 37.50 | | | |
| *00342 | **PECTA SOL-C® MODIFIED CITRUS PECTIN** • 454 grams powder | 109.95 | 93.46 | | | | |
| *01080 | **PECTA SOL-C® MODIFIED CITRUS PECTIN** • 270 veg. caps | 79.95 | 67.96 | | | | |
| 01811 | **PEONY IMMUNE** • 60 veg. caps | 36.00 | 27.00 | 24.00 | | | |
| 00673 | **PGX® PLUS MULBERRY** (WellBetX®) • 180 veg. caps | 34.95 | 26.21 | | | | |
| 01676 | **PHOSPHATIDYLSERINE CAPS** • 100 mg, 100 veg. caps | 54.00 | 40.50 | 36.00 | | | |
| 01953 | **POMEGRANATE COMPLETE** • 30 softgels | 24.00 | 18.00 | 15.75 | | | |
| 00956 | **POMEGRANATE FRUIT EXTRACT** • 30 veg. caps | 19.50 | 14.63 | 13.16 | | | |
| 01500 | **PQQ CAPS W/BIOPQQ®** • 10 mg, 30 veg. caps | 24.00 | 18.00 | 13.50 | 12.00 | | |
| 01647 | **PQQ CAPS W/BIOPQQ®** • 20 mg, 30 veg. caps | 40.00 | 30.00 | 24.00 | 21.00 | | |
| 00302 | **PREGNENOLONE** • 50 mg, 100 caps | 26.00 | 19.50 | 16.50 | | | |
| 00700 | **PREGNENOLONE** • 100 mg, 100 caps | 30.00 | 22.50 | 20.25 | | | |
| **01373 | **PRELOX® NATURAL SEX FOR MEN®** • 60 tablets | 52.00 | 39.00 | 36.00 | | | |
| 01576 | **PREVAGEN®** • 30 caps | 60.00 | 45.00 | | | | |
| *01577 | **PREVAGEN® ES** • 30 caps | 70.00 | 60.00 | | | | |
| 00525 | **PROBOOST™ THYMIC PROTEIN A** • 30 packets | 66.60 | 49.95 | | | | |
| 01441 | **PROGESTA-CARE®** • 4 oz cream | 36.39 | 27.29 | 25.72 | | | |

**SUBTOTAL OF COLUMN 8**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 01928 | **PROSTATE FORMULA** (Ultra NAT) • 60 softgels | 38.00 | 28.50 | 26.25 | 24.00 | | |
| 01909 | **PROSTAPOLLEN™** (Triple strength) • 30 softgels | 28.00 | 21.00 | 18.75 | | | |
| 01742 | **PROTEIN-ISOLATE** (Whey) Vanilla • 403 grams | 30.00 | 22.50 | 20.25 | | | |
| 01743 | **PROTEIN-ISOLATE** (Whey) Chocolate • 437 grams | 30.00 | 22.50 | 20.25 | | | |
| 01770 | **PROTEIN CONCENTRATE** (New Zealand Whey) Vanilla 500 grams | 30.00 | 22.50 | 19.95 | | | |
| 01771 | **PROTEIN CONCENTRATE** (New Zealand Whey) Chocolate 640 grams | 30.00 | 22.50 | 19.95 | | | |
| 01812 | **PROVINAL® PURIFIED OMEGA-7** • 30 softgels | 27.00 | 20.25 | 18.00 | | | |
| 01508 | **PTEROPURE®** Pterostilbene• 50 mg, 60 veg. caps | 32.00 | 24.00 | 22.50 | | | |
| 01209 | **PUMPKIN SEED EXTRACT** (Water-soluble) • 60 veg. caps | 20.00 | 15.00 | 13.50 | | | |
| 01637 | **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 | | | |
| | **Q, R** | | | | | | |
| 01309 | **QUERCETIN** (Optimized) • 250 mg, 60 veg. caps | 22.00 | 16.50 | 15.00 | | | |
| 01030 | **RED YEAST RICE** (Bluebonnet) • 600 mg, 60 veg. caps | 17.60 | 13.20 | | | | |
| 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 oz | 24.00 | 18.00 | 14.85 | 12.75 | | |
| 01621 | **REJUVENEX® FACTOR FIRMING SERUM** • 1.7 oz | 65.00 | 48.75 | 37.50 | | | |
| 01220 | **REJUVENEX®** (Ultra) • 2 oz | 52.00 | 39.00 | 33.00 | 29.25 | | |
| 00676 | **REJUVENIGHT®** (Ultra) • 2 oz | 39.95 | 29.96 | 27.00 | | | |
| 01410 | **RESVERATROL W/PTEROSTILBENE** • 100 mg, 60 veg. caps | 36.00 | 27.00 | 24.00 | | | |
| 02031 | **RESVERATROL W/NICOTINAMIDE RIBOSIDE** (Optimized) • 30 veg. caps | 42.00 | 31.50 | 27.00 | | | |
| 02030 | **RESVERATROL** (Optimized) • 60 veg. caps | 46.00 | 34.50 | 31.00 | | | |
| 00889 | **RHODIOLA EXTRACT** • 250 mg, 60 veg. caps | 14.00 | 10.50 | 9.00 | | | |
| 01900 | **RIBOGEN™ FRENCH OAK WOOD EXTRACT** 200 mg, 30 veg. caps | 36.00 | 27.00 | 24.75 | | | |
| 00972 | **(D) RIBOSE POWDER** • 150 grams | 27.50 | 20.63 | 18.56 | | | |
| 01473 | **(D) RIBOSE TABLETS** • 100 veg. tabs | 32.00 | 24.00 | 21.00 | | | |
| 01609 | **RICH REWARDS® BREAKFAST GROUND COFFEE** • 12 oz. bag | 13.00 | 9.75 | | | | |
| 01730 | **RICH REWARDS® BREAKFAST BLEND GROUND COFFEE** Natural Mocha • 12 oz. bag | 15.00 | 11.25 | 10.50 | | | |
| 01729 | **RICH REWARDS® BREAKFAST BLEND GROUND COFFEE** Natural Vanilla • 12 oz. bag | 15.00 | 11.25 | 10.50 | | | |
| 01612 | **RICH REWARDS® BREAKFAST BLEND WHOLE BEAN COFFEE** 12 oz. bag | 13.00 | 9.75 | | | | |
| 01610 | **RICH REWARDS® DECAFFEINATED ROAST GROUND COFFEE** 12 oz. bag | 14.00 | 10.50 | | | | |
| 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 | | | |
| | **S** | | | | | | |
| 01432 | **SAFFRON W/SATIEREAL®** (Optimized) • 60 veg. caps | 36.00 | 27.00 | 24.00 | | | |
| 01935 | **SAMe** (S-ADENOSYL-METHIONINE) 200 mg, 30 enteric coated tablets | 25.00 | 18.75 | 16.50 | | | |
| 01933 | **SAMe** (S-ADENOSYL-METHIONINE) 400 mg, 30 enteric coated tablets | 36.00 | 27.00 | 24.00 | | | |
| 01934 | **SAMe** (S-ADENOSYL-METHIONINE) 400 mg, 60 enteric coated tablets | 66.00 | 49.50 | 45.00 | | | |

**SUBTOTAL OF COLUMN 9**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 01740 | **SEA-IODINE™** • 1,000 mcg, 60 veg. caps | 8.00 | 6.00 | 5.40 | | | |
| 00046 | **SELENIUM** • 2 fl. oz dropper | 11.95 | 8.96 | | | | |
| 01879 | **SE-METHYL L-SELENOCYSTEINE** • 200 mcg, 90 veg. caps | 11.00 | 8.25 | 7.50 | | | |
| 00318 | **SERRAFLAZYME** • 100 tablets | 18.00 | 13.50 | 12.00 | | | |
| 01938 | **SHADE FACTOR** • 120 veg. caps | 44.00 | 33.00 | 30.00 | | | |
| 01884 | **SILYMARIN** • 100 mg, 90 veg. caps | 14.00 | 10.50 | 9.50 | | | |
| 01249 | **SINUS CLEANSER** • 4 oz. bottle | 25.00 | 18.75 | | | | |
| 01596 | **SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT®** 30 liquid veg. caps | 25.00 | 18.75 | 17.25 | | | |
| 00961 | **SODZYME® w/GLISODIN® & WOLFBERRY** • 90 veg. caps | 28.00 | 21.00 | 18.00 | | | |
| 00657 | **SOLARSHIELD® SUNGLASSES** • Smoke color | 12.99 | 9.74 | 8.63 | | | |
| 01097 | **SOY EXTRACT** (Ultra) • 150 veg. caps | 87.00 | 65.25 | 58.50 | | | |
| 00432 | **STEVIA™** (Better) • 100 packets, 1 gram each | 9.95 | 7.46 | | | | |
| 00438 | **STEVIA™ ORGANIC LIQUID SWEETENER** (Better) • 2 oz | 11.00 | 8.25 | | | | |
| 01476 | **STRONTIUM** • 750 mg, 90 veg. caps | 20.00 | 15.00 | 13.50 | | | |
| 01649 | **SUPER ABSORBABLE SOY ISOFLAVONES** • 60 veg. caps | 28.00 | 21.00 | 18.75 | | | |
| 01778 | **SUPER SELENIUM COMPLEX** • 200 mcg, 100 veg. caps | 14.00 | 10.50 | 9.00 | 8.25 | | |
| | **T** | | | | | | |
| 02023 | **TART CHERRY EXTRACT W/STANDARDIZED CHERRYPURE®** 60 veg. caps | 20.00 | 15.00 | 14.00 | | | |
| 01827 | **TAURINE** • 1,000 mg, 90 veg. caps | 13.00 | 9.75 | 9.00 | | | |
| 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 | 39.95 | 33.96 | | | | |
| 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 (Mint) tube | 9.50 | 7.13 | 6.50 | | | |
| 01917 | **TRANQUIL TRACT™** • 60 veg. caps | 52.00 | 39.00 | 34.50 | | | |
| 01468 | **TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT** 60 veg. caps | 24.00 | 18.00 | 16.50 | | | |
| 01469 | **TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT w/RESVERATROL** • 60 veg. caps | 32.00 | 24.00 | 22.20 | | | |
| 02003 | **TRIPLE ACTION THYROID** • 60 veg. caps | 36.00 | 27.00 | 24.00 | | | |
| 01803 | **TRI SUGAR SHIELD®** • 60 veg. caps | 36.00 | 27.00 | 24.00 | | | |
| 01386 | **TRUFIBER™** • 180 grams | 32.95 | 24.71 | | | | |
| 01389 | **TRUFLORA® PROBIOTICS** • 32 veg. caps | 42.95 | 32.21 | | | | |
| 01722 | **L-TRYPTOPHAN** • 500 mg, 90 veg. caps | 33.00 | 24.75 | 22.50 | | | |
| 01721 | **TRYPTOPHAN PLUS** (Optimized) • 90 veg. caps | 32.00 | 24.00 | 21.75 | | | |
| 02016 | **TWO-PER-DAY** • 60 tablets | 10.50 | 7.88 | 7.13 | | | |
| 02015 | **TWO-PER-DAY** • 120 tablets | 20.00 | 15.00 | 13.50 | | | |
| 02014 | **TWO-PER-DAY** • 120 caps | 22.00 | 16.50 | 15.00 | | | |
| 00326 | **L-TYROSINE** • 500 mg, 100 tablets | 12.98 | 9.74 | | | | |

**SUBTOTAL OF COLUMN 10**

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| | **U, V** | | | | | | |
| 01921 | **URIC ACID CONTROL** • 60 veg. caps | 24.00 | 18.00 | 16.50 | | | |
| 00213 | **VANADYL SULFATE** • 7.5 mg, 100 veg. tablets | 15.00 | 11.25 | 9.38 | | | |
| 00408 | **VENOTONE** • 60 caps | 18.95 | 14.21 | 12.00 | | | |
| 01327 | **VINPOCETINE** • 10 mg, 100 veg. tablets | 18.00 | 13.50 | 10.50 | | | |
| 00372 | **VITAMIN B3 NIACIN** • 500 mg, 100 caps | 7.65 | 5.74 | 4.99 | | | |
| 00098 | **VITAMIN B5** • 500 mg, 100 caps (Pantothenic Acid) | 10.50 | 7.88 | 7.04 | | | |
| 01535 | **VITAMIN B6** • 250 mg, 100 veg. caps | 12.50 | 9.38 | 8.25 | | | |
| 00361 | **VITAMIN B12** • 500 mcg, 100 lozenges | 8.75 | 6.56 | 5.44 | | | |
| 01634 | **VITAMIN C w/DIHYDROQUERCETIN** 1,000 mg, 60 veg. tablets | 10.00 | 7.50 | 6.75 | | | |
| 00927 | **VITAMIN C w/DIHYDROQUERCETIN** 1,000 mg, 250 veg. tablets | 25.50 | 19.13 | 17.44 | | | |
| 00084 | **VITAMIN C POWDER** (BUFFERED) • 454 grams | 23.95 | 17.96 | 16.50 | | | |
| 01736 | **VITAMIN C-MAGNESIUM CRYSTALS** (EFFERVESCENT) 180 grams | 20.00 | 15.00 | 13.50 | | | |
| 01732 | **VITAMIN D3** • 2,000 IU, 1 fl. oz, Mint flavor | 28.00 | 21.00 | 18.75 | | | |
| 01753 | **VITAMIN D3** • 1,000 IU, 90 softgels | 7.00 | 5.25 | 4.50 | | | |
| 01751 | **VITAMIN D3** • 1,000 IU, 250 softgels | 12.50 | 9.38 | 8.44 | | | |
| 01713 | **VITAMIN D3** • 5,000 IU, 60 softgels | 10.00 | 7.50 | 6.50 | | | |
| 01718 | **VITAMIN D3** • 7,000 IU, 60 softgels | 14.00 | 10.50 | 9.45 | | | |
| 01758 | **VITAMIN D3 W/SEA-IODINE™** • 5,000 IU, 60 caps | 14.00 | 10.50 | 9.38 | | | |
| 00864 | **VITAMIN D3 LIQUID EMULSION** • 2,000 IU, 1 fl. oz | 28.00 | 21.00 | 18.75 | | | |
| 01840 | **VITAMINS D AND K W/SEA-IODINE™** • 60 caps | 24.00 | 18.00 | 16.50 | | | |
| 01863 | **VITAMIN E** (Natural) • 400 IU, 90 softgels | 28.00 | 21.00 | 19.50 | 18.00 | | |
| 01936 | **VITAMIN K2** (Low dose) • 45 mcg, 90 softgels | 18.00 | 13.50 | 12.00 | | | |
| | **W** | | | | | | |
| 01902 | **WAIST-LINE CONTROL™** • 120 veg. caps | 42.00 | 31.50 | 28.50 | | | |
| | **X, Y** | | | | | | |
| 01919 | **X-R SHIELD** • 90 veg. caps | 15.00 | 11.25 | 9.75 | | | |
| 00409 | **XYLIWHITE™ MOUTHWASH** • 16 oz | 10.00 | 7.50 | | | | |
| | **Z** | | | | | | |
| 01813 | **ZINC HIGH POTENCY** • 50 mg, 90 veg. caps | 7.95 | 5.96 | 5.25 | | | |
| 01561 | **ZINC LOZENGES** • 60 veg. lozenges | 9.00 | 6.75 | 6.00 | | | |
| 01961 | **ZINC LOZENGES** (Enhanced) • 30 veg. lozenges | 12.00 | 9.00 | 6.00 | | | |
| **01051 | **ZYFLAMEND® WHOLE BODY** • 120 liquid veg. caps | 72.95 | 54.71 | | | | |
| | **BOOKS** | | | | | | |
| 34002 | **THE 30-DAY HEART TUNE-UP** by Steven Masley, MD • 2016 | 17.59 | 13.19 | | | | |
| 33999 | **THE MENOPAUSE CURE** by Jill D. Davey & Sergey Dzugan, MD • 2016 | 17.32 | 12.99 | | | | |
| 33998 | **THE RIGHT TO TRY** by Darcy Olsen • 2016 | 26.99 | 20.24 | | | | |
| 33840 | **THE CRWAY® TO GREAT GLUCOSE CONTROL CD** by Paul McGlothin and Meredith Averill • 2016 | 189.00 | 189.00 | | | | |
| 33890 | **FORTIFY YOUR LIFE** by Tieraona Low Dog, MD • 2016 | 28.89 | 21.67 | | | | |
| 33885 | **THE BLUE ZONES SOLUTION** by Dan Buettner • 2015 | 26.00 | 19.50 | | | | |
| 33880 | **OUTSTANDING HEALTH:** THE 6 ESSENTIAL KEYS TO MAXIMIZE YOUR ENERGY AND WELL BEING by Michael Galitzer, MD & Larry Trivieri Jr. • 2015 | 24.95 | 18.71 | | | | |
| | **SUBTOTAL OF COLUMN 11** | | | | | | |

| ITEM No. | PRODUCT | Retail Each $ | YOUR PRICE 1 Unit Each | 4 Unit Each | 10 Unit Each | QTY | Total |
|---|---|---|---|---|---|---|---|
| 33878 | **TESTOSTERONE REPLACEMENT THERAPY** by Dr. John Crisler • 2015 | 19.99 | 14.99 | | | | |
| 33877 | **THE TRUTH ABOUT MEN AND SEX** by Abraham Morgentaler, MD, FACS • 2015 | 16.99 | 12.74 | | | | |
| 33876 | ***TOX*-SICK** • by Suzanne Somers • 2015 | 26.00 | 19.50 | | | | |
| 33875 | **DOCTORED: THE DISILLUSIONMENT OF AN AMERICAN PHYSICIAN** • by Sandeep Jauhar • 2015 | 26.00 | 19.50 | | | | |
| 33874 | **MISSING MICROBES** • by Martin J. Blaser, MD • 2014 | 28.00 | 21.00 | | | | |
| 33873 | **EATING ON THE WILD SIDE** • by Jo Robinson • 2014 | 16.00 | 12.00 | | | | |
| 33872 | **GET SERIOUS** • by Brett Osborn, MD • 2014 | 24.95 | 18.71 | | | | |
| 33868 | **TOXIN TOXOUT:** GETTING HARMFUL CHEMICALS OUT OF OUR BODIES AND OUR WORLD • by Bruce Lourie and Rick Smith • 2014 | 25.99 | 19.49 | | | | |
| 33867 | **THE COMPLETE MEDITERRANEAN DIET** by Michael Ozner, MD • 2014 | 19.95 | 14.96 | | | | |
| 33869 | **UNLEASH THE POWER OF THE FEMALE BRAIN** by Daniel Amen, MD • 2014 | 16.00 | 12.00 | | | | |
| 33870 | **MAGNIFICENT MAGNESIUM** by Dennis Goodman, MD • 2014 | 14.95 | 11.21 | | | | |
| DPT05 | **DISEASE PREVENTION AND TREATMENT, EXPANDED FIFTH EDITION** (Hardcover) • 2014 | 69.95 | 39.95 | 36.00 | | | |
| 33865 | **THE RESTORATION OF THE HUMAN BODY [IN 7 PARTS]** by Sergey A. Dzugan, MD, PhD • 2014 | 29.95 | 22.46 | | | | |
| 33862 | **I'M TOO YOUNG FOR THIS** • by Suzanne Somers • 2013 | 26.00 | 19.50 | | | | |
| 33835 | **PHARMOCRACY** • by William Faloon • 2011 | 24.00 | 9.60 | 8.00 | | | |
| 33958 | **THE VITAMIN D SOLUTION** by Michael F. Holick, PhD, MD (Paperback) • 2013 | 16.00 | 12.00 | | | | |
| 33838 | **YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY** by Gary Goldfaden, MD • 2012 | 26.00 | 15.00 | | | | |
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| 33805 | **MIAMI MEDITERRANEAN DIET WITH 300 RECIPES** by Michael D. Ozner, MD, FACC, FAHA (Hardcover) • 2008 | 24.95 | 16.25 | | | | |
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| 33803 | **WHAT YOUR DOCTOR MAY NOT TELL YOU ABOUT DIABETES** by Steven V. Joyal, MD • 2008 | 14.99 | 10.49 | | | | |
| | **SUBTOTAL OF COLUMN 12** | | | | | | |

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**References**

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7. *Microbiology*. 2007 Oct;153(Pt 10):3563-71.

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