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# LifeExtension® Magazine

VOLUME TWENTY TWO / NUMBER TEN • October 2016

## REPORTS



### 32 PROJECT TO CURE AGING

The **Life Extension Foundation®** is launching a research initiative aimed at reversing biological senescence. The primary aim is to initiate clinical studies whereby pro-youth plasma constituents will be infused into elderly humans with the objective of activating systemic rejuvenation.

### 48 NATURAL COMPOUNDS TO REMOVE AGING CELLS

Scientists are aggressively researching new drugs to remove damaged cells from our body to make room for vital new cells. These old, poorly functioning cells clog the body and accelerate aging and disease. Two nutrients are demonstrating the ability to remove many senile cells, making room for new cells and reducing pro-inflammatory molecules.

### 58 CONTROL AFTER-MEAL BLOOD SUGAR SPIKES

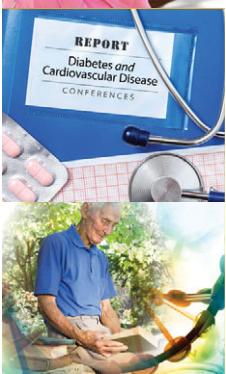
After-meal blood sugar spikes present a significant mortality risk factor. An abundance of evidence points to three natural substances—**mulberry leaf extract, sorghum, and phloridzin**—that have been shown to help control excess blood glucose levels.

### 70 DIABETES/CARDIOVASCULAR DISEASE CONFERENCES

The lifetime risk of type II diabetes is now estimated to be about **40%** for an American. About **80%** of diabetics die from heart attack or stroke. Two recent conferences explore the connection between diabetes and heart disease.

### 79 UNDERSTANDING THE GENETICS OF CENTENARIANS

The **Albert Einstein College of Medicine** has discovered specific genes responsible for longevity. In addition, they are overseeing a clinical trial on the anti-aging benefits of the drug **metformin**. The results of these studies may lead to this anti-diabetic drug being approved to better control pathological aging.



## DEPARTMENTS



### 7 AS WE SEE IT: HOW OBVIOUS CURES ARE OVERLOOKED

Systemic age reversal has been demonstrated in the laboratory animal model. Scientists have developed protocols that translate these findings into human clinical trials. One factor holding back these advancements is a lack of funding. Once physicians are able to induce meaningful age reversal, degenerative illnesses that kill **6,000 Americans daily** may be postponed, if not eliminated.

### 15 IN THE NEWS

Google's anti-aging mission; Mark Zuckerberg's search for new cures; metformin lowers mortality; low vitamin D linked to thyroiditis; and more.

### 87 AUTHOR INTERVIEW: DR. GEO ESPINOSA: THRIVE DON'T ONLY SURVIVE

In his new book, *Thrive Don't Only Survive: Dr. Geo's Guide to Living Your Best Life Before & After Prostate Cancer*, urologist Dr. Geo Espinosa provides a lifestyle guide to "create an inhospitable environment for cancer" to help men avoid the risk of prostate cancer.



### 95 HEALTHY EATING: HEALTHY TREATS FROM THE MIDDLE EAST

Salma Hage's book *The Middle Eastern Vegetarian Cookbook* provides a wide variety of recipes that embody the best of the Mediterranean diet. Here, we sample some of the most delicious foods from her latest cookbook.



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<sup>+</sup>Colony forming units at time of manufacture.

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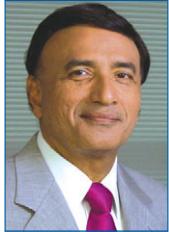
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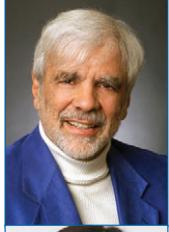
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# How Obvious Cures Are Overlooked



BY WILLIAM FALOON

Seafarers were ravaged by **scurvy** until **vitamin C** was discovered to cure it.

History books imply that once sailors started consuming lemons or limes, scurvy disappeared.

That is not the way it happened.

**Citrus** was found to cure scurvy by Portuguese sailors in **1497**. It was not until **1747** that a Scottish physician conducted a human study proving this.<sup>1</sup>

In **1799** all Royal Navy ships on foreign service were ordered to provide lemon juice—more than **50 years after** it was scientifically proven.<sup>1</sup>



The British were in no hurry to disseminate these findings as it gave them the upper hand in sea battles. By consuming lemon juice during voyages, British sailors stayed healthy while their enemy counterparts suffered scurvy's sickening, lethal impact.

By the **1870s**, however, the "citrus cure" was discredited by British authorities for surprising reasons. For the next 60 years, scurvy continued to kill. This included men on Robert Scott's **1911** expedition to the **South Pole**, and Dr. Scott was a Royal Navy surgeon!<sup>1</sup>

Scurvy afflicted people until **vitamin C** was isolated in **1932**.<sup>2</sup> It thus took over 400 years to be able to eliminate **scurvy**—long after citrus was "proven" to work in a controlled **human** study.

The cure for scurvy was discovered, forgotten, rediscovered, and forgotten again. This is analogous to what goes on today. Thousands of peer-reviewed published studies document how humans can protect against pathological aging.

Much of this data is ignored as if it does not exist. Our critics claim that nothing should be tried unless it's "approved" by our bureaucratic overlords.

The **400-year delay** in eradicating scurvy was ludicrous. Yet far more humans perish today because research findings are sadly overlooked.

## AS WE SEE IT

When a news release questions the value of a particular therapy, the media rushes to create headlines that seldom reflect reality. As long as people focus on isolated opinions while ignoring the totality of evidence, medical progress will be impeded.

An example of this occurred across a **400-year** span as a result of failure to use properly-stored citrus, which made it lose its **vitamin C** potency. This was one of several reasons why “experts” repudiated findings showing that fresh citrus cured scurvy.

The absurdity continues today. News headlines often blare that there is insufficient proof to supplement with higher-dose **vitamin D**.<sup>3,4</sup> This nutrient was long ago demonstrated to help prevent falls and fractures.<sup>5-8</sup> Higher blood levels of **vitamin D** are also associated with reduced **cancer** incidence.<sup>9-19</sup>

The documentation supporting vitamin D is robust, and you’d think there would be widespread use of this low-cost nutrient.

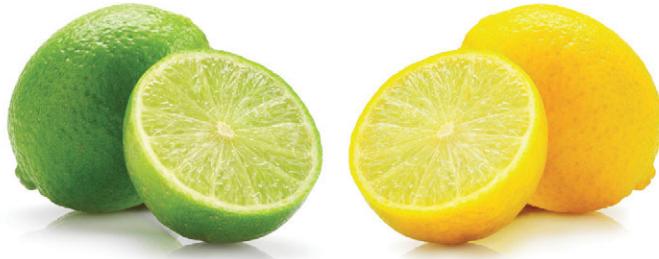
Instead, the blood of most people today is dangerously low in vitamin D, despite compelling evidence that vitamin D **insufficiency** contributes to many diseases.<sup>20-31</sup>



### Scurvy and Aging

- 1497:** Citrus shown to cure scurvy
- 1747:** Dr. James Lind proves citrus cures scurvy
- 1870:** Citrus cure officially discredited
- 1911:** Dr. Robert Scott loses crew to scurvy
- 1932:** Vitamin C proven to cure scurvy

### Millions of Deaths After Cure Discovered



A correlation between **scurvy** and **vitamin D** is that there was never a downside for sailors to consume **citrus**, even while experts questioned its efficacy. Likewise, for **vitamin D**, whereby supplementing with **5,000 to 8,000 IU** daily is safe for most aging individuals, yet “experts” constantly debate what the “optimal” dose is.

### Aspirin and Cancer

Most cancer patients should take a low-dose **aspirin** tablet daily. Studies show aspirin has multiple anti-cancer properties including helping to prevent **metastasis**.<sup>32-36</sup>

We long ago suggested that most **cancer** patients take a low-dose **aspirin** tablet daily based on a lot of impressive research.<sup>35,37-40</sup> I’ve yet to hear a cancer patient tell me their **oncologist** recommended aspirin. We’ve observed this same problem for other drugs such as **metformin**<sup>41-53</sup> and **cimetidine**.<sup>54-56</sup>

Rather than berate overworked physicians who are inundated with bureaucracy—we advocate for patient empowerment. This was difficult in the past, but it can be easy today. If you enter terms like “**metformin and cancer**” into Google, you’ll see some compelling research supporting the drug’s probable efficacy. That does not equate to absolute proof, but with over **1,600** Americans dying each day of cancer,<sup>57</sup> potentially effective adjuvant therapies should be given more consideration.

Interestingly, the reason why **infantile scurvy** was predominant among wealthy families is that poor families could not afford **pasteurized** milk. They had to rely on breast feeding.

Pasteurization (heating) destroys the **vitamin C** naturally contained in cow's milk. Scurvy killed thousands of infants before vitamin C was discovered.

Vitamin C quickly breaks down in the presence of light, heat and air. It is absent from most preserved foods that have been cooked or dried. It is rapidly oxidized by copper ions, which may be one reason sailors, with their copper cooking vats, were particularly susceptible to vitamin deficiency.

Interestingly, our bodies are quite adept at conserving vitamin C in response to deficient intakes. It can take 6 months for scurvy to develop in healthy people after vitamin C is removed from the diet. It was long ago discovered that lemons and oranges were particularly effective in curing scurvy.

### Today's Urgent Priority

Educated consumers have access to many validated methods (healthy diets, hormones, nutrients, etc.) to guard against premature aging and degenerative illness.

Today's priority should be to rapidly initiate **human age-reversal** studies. Failure to recognize "aging" as a treatable disorder is the major impediment stifling meaningful medical progress.

What excites us is that systemic age reversal has been demonstrated in the laboratory animal model.<sup>58-63</sup> Physicians and scientists have developed protocols that translate these animal findings into clinical research protocols.

Holding back these critical studies is a lack of funding. Once physicians are able to induce meaningful **age reversal**, degenerative illnesses that kill 6,000 Americans daily will be postponed, if not eliminated—just as scurvy is today.

This month's issue describes an initiative that we call the **Project to Cure Aging**. It involves raising funds to identify and validate age-reversal technologies and then rapidly translating them into medical practice.

You might think that if there are "obvious" ways to reverse human aging, then these would be utilized today. Yet all one has to do is look at how long it took the medical

establishment to cure **scurvy** to understand why technology not only moves too slow, but sometimes falls backwards.

### How Scurvy Cure was Lost

A series of accidents combined with misguided theories led to citrus being discredited in the **1870s**. Over the next 60 years, scurvy returned to torment not just Polar explorers, but thousands of infants born to wealthy families in Europe and America.<sup>1</sup>

### How Scurvy Kills

The classic first symptom of scurvy is inflamed, swollen gums. As the disease gains ground the gums become spongy and turn a purplish color, the teeth loosen and gum pain is severe.<sup>1</sup>

Spots start to appear on the legs and pain is felt in old wounds and bruises.

Edema (swelling with internal fluid) causes the legs and arms to become swollen and blacken behind the joints. At this point, the victim becomes incapacitated and dies a slow death as internal blood vessels start leaking because there is not enough **vitamin C** to maintain vascular structural integrity.

Scurvy severely and systemically destroys the body, yet the cure is so simple. Scurvy is caused by a deficiency in **vitamin C**.<sup>64</sup> Humans need to obtain their vitamin C from outside sources (food, juice, supplements) because they cannot synthesize it internally like most mammals do.

Scurvy is rapidly cured by restoring vitamin C.

## AS WE SEE IT

### Confusing Limes for Lemons

After citrus was proven to cure scurvy and initially accepted by the medical authorities, the British mandated that sailors consume one ounce of **lemon juice** each day when at sea for over 2 weeks.

Back then, however, there was confusion between limes and lemons. Many thought lemon juice was the same as lime juice. There is less vitamin C in lime juice.

Scurvy had been the leading killer of sailors on long ocean voyages. By the mid-1800s, transportation advances were reducing the need for a scurvy preventative. Steam power shortened travel times, so that it was rare for sailors other than whalers to be months at sea without fresh food.

In 1860, the British began to replace lemon juice with an ineffective substitute—West Indian limes. One motive for this was political, i.e. it was better to buy from British plantations than to import lemons from Europe. There was confusion about what constituted a lemon or lime. Both “lemon” and “lime” were used interchangeably to describe “citrus.”



### Human Age-Reversal Research

British sailors figured how to conquer **scurvy**, but then science went into reverse. From a medical history perspective, this is often a rule rather than the exception.

Be it **cardiopulmonary resuscitation** or inoculation against **smallpox**, effective means were discovered only to have the technology fall backwards or be seriously delayed.

One of the most intriguing possibilities for reversing human aging lies in infusing the plasma components found in **young blood** into older humans.<sup>58,65-67</sup>

Animal research using a similar technique (parabiosis) has con-

sistently demonstrated age reversal.<sup>58,68,69</sup> Parabiosis research peaked around **1972**, but was then largely abandoned.<sup>70</sup> The animal research picked up again after **2010** and even more compelling findings were discovered showing system-wide reversal of biological aging.<sup>71-78</sup>

There are physician-scientists that have ready-to-implement protocols to test if meaningful age reversal can be induced in older humans using young plasma transfer techniques. The impediment is lack of **funding** to launch their projects.

The article on page 32 of this month's edition describes the **Project to Cure Aging**, which is the first attempt in medical history to discover a range of methods to induce biological age reversal in maturing humans.

This research should move forward without delay. We don't want the next generation writing that scientists figured out how to reverse aging in **2016**, but that delays in launching human studies caused us all to perish.

For longer life,

A handwritten signature in black ink, appearing to read "William Faloon".

William Faloon

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## Delay in Curing Scurvy

Before the **1930s**, physicians were stymied because they had no idea that it was the **vitamin C** in citrus that was responsible for its curative powers.

An erroneous theory emerged back then that it was the **acidity** of citrus that cured scurvy. Since limes were more acidic, limes started being used in place of lemons. It was later found that limes have only about **25%** the scurvy fighting power of lemons.

The lime juice being served to sailors in the mid-1800s was not fresh. It spent long periods in tanks open to the air and was pumped through copper tubing. Both of these processing methods caused the vitamin C to oxidize. Later experiments found this oxidized lime juice had no anti-scurvy powers, which was one reason why the "citrus cure" for scurvy was erroneously discredited in the **1870s**.

So by the 1870s, most British ships that sailed were without scurvy protection. Only speed and improved nutrition on land were preventing sailors from getting sick.

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A photograph of a middle-aged couple dancing joyfully outdoors under a clear blue sky. The man is wearing a white t-shirt and khaki shorts, and the woman is wearing a light-colored long-sleeved top and beige pants.

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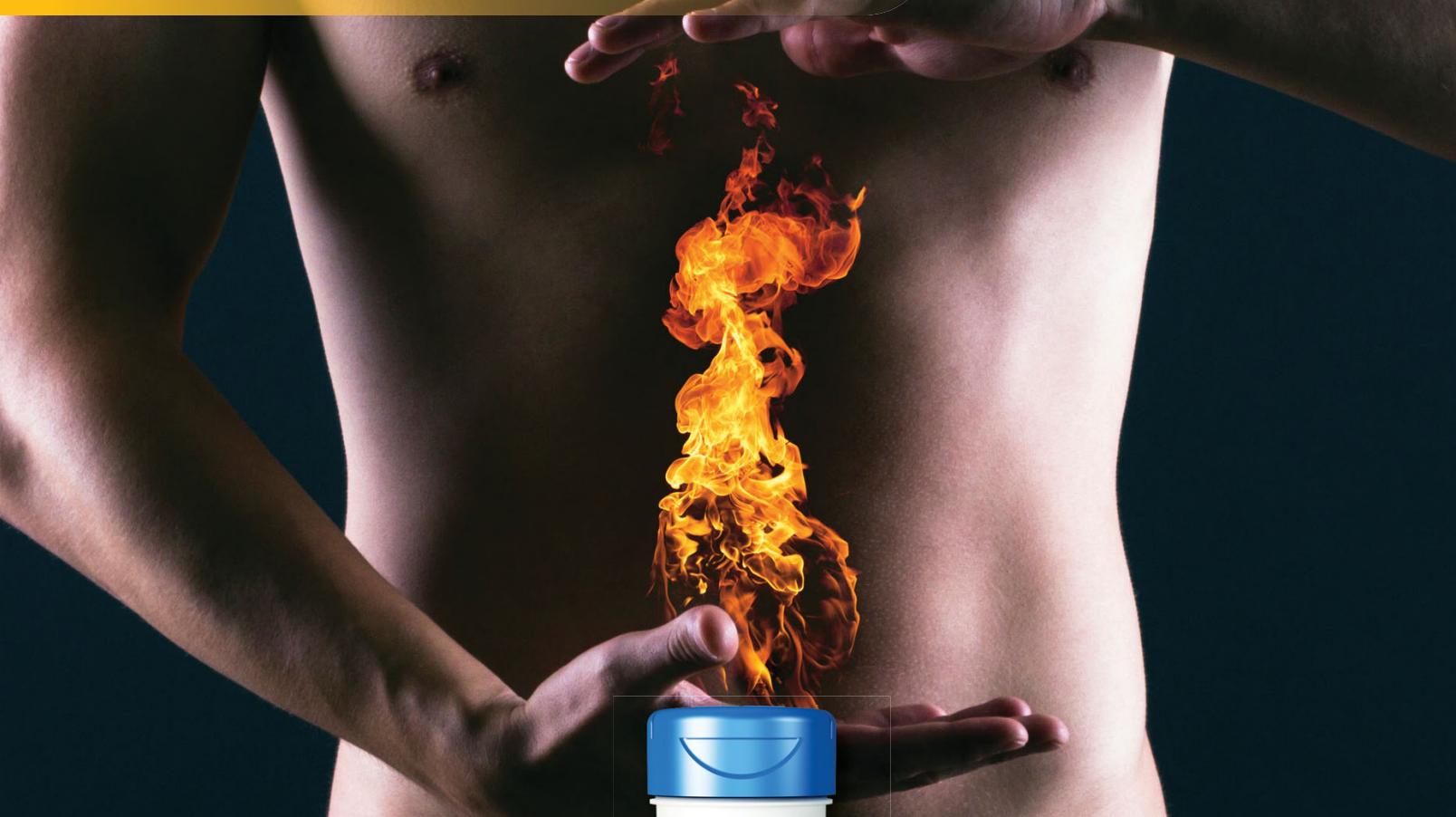
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## Details Emerge on New Google Anti-Aging Biotech

Internet search giant Google established Calico in 2013 as an independent research and development biotech company, but little information about the endeavor has been forthcoming. Calico's new website sheds some light on their general plans in the field of **anti-aging** research.\*

Calico's site says their mission is to "harness advanced technologies" to increase scientific understanding of how biology controls lifespan. They say they will "***use that knowledge to devise interventions that enable people to lead longer and healthier lives,***" and they believe this will require "***an unprecedented level of interdisciplinary effort and a long-term focus for which funding is already in place.***"

Although details remain scarce, it's also been announced that Cynthia Kenyon, an oncology professor from the University of California, San Francisco, has been promoted to vice president of aging research. Given Google's very deep pockets, their potential for making major contributions to the anti-aging field seems promising.

**Editor's Note:** Calico says their vice president of business development, Jonathan Lewis, will be in charge of supporting "the company's growth through partnerships and collaborations," which would seem to indicate an encouraging willingness to work with other biotech companies.

\*Available at: <http://goo.gl/gBRxi4>. Accessed June 27, 2016.

## Facebook Founder's Ambitious Plan to Eradicate Disease

Mark Zuckerberg, the CEO and founder of Facebook, has announced a wildly ambitious proposal to fund medical research with an eye toward finding **cures** for and methods to prevent major diseases.\*

The plan is part of the Internet giant's Chan-Zuckerberg Initiative, which he established with his pediatrician wife, Priscilla Chan.

In a statement to investors, Zuckerberg said, "While helping to connect the world will always be the most important thing that I do, there are more global challenges that I also feel a responsibility to help solve... Things like helping to cure **all** disease by the end of the century."

In his original announcement trumpeting the creation of the initiative, Zuckerberg expressed dismay at the fact that, according to him, 50 times more money is spent on medical treatments than on medical research. His response is a pledge to contribute **99%** of his Facebook shares within his lifetime to a wide range of causes including medical advancement.

***"We have a real shot at preventing, curing or managing (most or all diseases) in the next 100 years,"*** Zuckerberg said.

**Editor's Note:** "Today, most people die from five things," Mark Zuckerberg has stated, "heart disease, cancer, stroke, neurodegenerative and infectious diseases. And we can make faster progress on these and other problems."

\*Anita Balakrishnan, CNBC.com, April 27.



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## Aspirin Use Related to Decreased Risk of Bile Duct Cancer

In the journal *Hepatology*, Mayo Clinic researchers reported findings from a study that compared 2,395 bile duct cancer patients with 4,769 controls matched for age and other factors.\* Jonggi Choi, MD, and colleagues calculated a **2.7-fold** to **3.6-fold** lower risk of bile duct cancer (cholangiocarcinoma) among aspirin users compared with the risk for nonusers. **Aspirin** users had a **65%** lower risk of intrahepatic bile duct cancer, a **66%** lower risk of perihilar bile duct cancer and a **71%** lower risk of distal disease. It was also shown that the presence of cirrhosis and other factors affected the risk of the three subtypes in different ways.

"Until now, there has been little evidence of a potential role for aspirin in the prevention of bile duct cancer," noted coauthor Roongruedee Chaiteerakij, MD, PhD. "Our study provides the first evidence for this."

Bile duct cancer is a particularly lethal malignancy.

**Editor's Note:** "Chronic persistent inflammation is one of the key elements that promote cancer of the bile ducts, and well-known risk factors for bile duct cancer have all been shown to increase the risk for bile duct cancer by inducing chronic inflammation of the ducts," Dr. Choi observed. "Aspirin is an anti-inflammatory agent and may reduce the risk of bile duct cancer by reducing inflammation through inhibition of the cyclooxygenase enzyme. Previous studies have shown that aspirin also blocks additional biological pathways that promote cancer development."

\**Hepatology*. 2016 Mar 3.



## Metformin Beats Sulfonylurea Drugs at Lowering Mortality among Diabetics

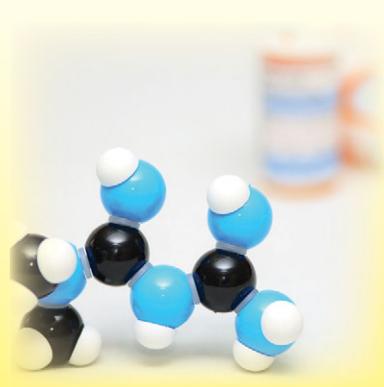
A meta-analysis that included a total of over 1.4 million subjects found a lower risk of dying from cardiovascular disease in patients using **metformin** compared to those treated with another class of diabetes drugs known as sulfonylureas.\*

Researchers analyzed data from 204 studies (179 trials and 25 observational studies) that included men and women treated with metformin, sulfonylureas and other drugs. The investigators examined cardiovascular and other effects associated with the different therapies.

Metformin as well as sulfonylureas were found to be more effective at reducing blood glucose levels than DPP-4 inhibitors. Another type of drug known as SGLT-2 inhibitors was associated with fungal infections in **10%** of users, however, the drugs supported patients' weight loss efforts. In contrast, sulfonylurea drugs were associated with weight gain. Compared with the use of sulfonylureas, metformin was associated with a **30% to 40%** lower risk of dying from cardiovascular disease.

**Editor's Note:** "Metformin looks like a clear winner," announced co-primary investigator Nisa Maruthur, MD, MHS, who is an assistant professor of medicine at Johns Hopkins University School of Medicine. "This is likely the biggest bit of evidence to guide treatment of type II diabetes for the next two to three years."

\**Ann Intern Med*. 2016 Jun 7;164(11):740-51.



## Vitamin D Supplementation Shows Promise for Hashimoto's Thyroiditis

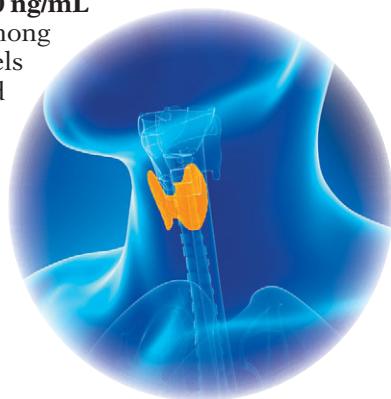
The *Hellenic Journal of Nuclear Medicine* reported finding an association between low serum **vitamin D** levels and a marker of the autoimmune disease known as Hashimoto's thyroiditis.\*

The study included 218 Hashimoto's thyroiditis patients with normal thyroid-stimulating hormone levels. Subjects in the study lived on Crete, an island in Greece that provides the abundant sunlight needed for vitamin D formation. Blood tests measured serum **25-hydroxyvitamin D** and other values. Hashimoto's thyroiditis diagnosis was determined by elevated levels of the antibodies antithyroid peroxidase and/or antithyroglobulin, as well as ultrasound results.

Deficient serum vitamin D levels of less than **30 ng/mL** were detected in **85.3%** of the participants. Among deficient subjects, antithyroid peroxidase levels were significantly higher than levels measured in the sufficient group. However, supplementation with **1,200 to 4,000 IU** vitamin D3 daily by the deficient group for four months resulted in a **20.3% decrease** in anti-thyroid peroxidase antibody by the end of the study.

**Editor's Note:** In Hashimoto's thyroiditis, the thyroid gland is attacked by the immune system, which can lead to hypothyroidism. The condition is the most common cause of hypothyroidism in the US.

\**Hell J Nucl Med*. 2015 Sep-Dec;18(3):222-7.





## Multivitamins Protect Breast Cancer Patients from Neuropathy

Researchers from Roswell Park Cancer Institute and SWOG presented findings at the American Association for Cancer Research meeting, which found that regularly taking a multivitamin prior to breast cancer diagnosis may reduce the risk of chemotherapy-induced peripheral neuropathy in patients treated with taxane-based chemotherapy drugs.\*

Gary Zirpoli, PhD, and colleagues analyzed data collected from 1,125 breast cancer patients enrolled in a National Cancer Institute group trial to determine whether use of dietary supplements was related to the presence of chemotherapy-induced peripheral neuropathy.

The use of individual supplements didn't appear to offer any help. However, patients who regularly took a **multivitamin** prior to diagnosis were significantly less likely to experience symptoms than those who did not.

**Editor's Note:** "Because development of chemotherapy-induced neuropathy is difficult to predict and symptoms can remain long after treatment has concluded, identifying preventive measures has the potential to greatly enhance quality of life for a substantial number of breast cancer survivors," says Dr. Zirpoli.

\*American Association for Cancer Research. 2016, April 16-20.

## Vitamin D and Metformin – Complementary Chemopreventive Properties

Considerable evidence links both **vitamin D** and **metformin** to reduced cancer risk as well as better patient outcomes.<sup>1-6</sup> Now, emerging research suggests that in combination, these two safe and well-studied compounds may be even more effective against cancer than either alone.<sup>7</sup>

In 2015, Dr. Hong-Xia Li and colleagues from Lanzhou University in China published compelling evidence of a synergistic growth-inhibitory effect of metformin and vitamin D on prostate cancer cells.<sup>7</sup>

Metformin is thought to exert anticancer effects through several pathways. One of these is by suppressing cancer cell proliferation via increased phosphorylation of **AMPK** and subsequent inhibition of the mTOR/S6K pathway, which influences protein synthesis and cell growth.<sup>7,8</sup>

Metformin also appears to downregulate the expression of some matrix metalloproteinases,<sup>9</sup> enzymes that can contribute to cancer growth and spread.<sup>10,11</sup> (Interestingly, recent studies suggest that vitamin E, particularly its gamma-tocotrienol form, can also downregulate expression of certain matrix metalloproteinases, raising the possibility that metformin and vitamin E may provide additive or complementary benefits in cancer.<sup>12,13</sup>)

Vitamin D promotes healthy cell differentiation, a process by which immature cells develop into specific types of cells with specialized functions. Tumors containing poorly differentiated cancer cells tend to be more aggressive than those with well-differentiated cells.<sup>14,15</sup>

Dr. Li and his team observed that incubating androgen-insensitive prostate cancer cells with metformin reduced their growth by **28%** while vitamin D3 slowed the cancer cells' growth by nearly **45%**. But when the prostate cancer cells were incubated with a combination of metformin and vitamin D3, growth inhibition reached an impressive **86%.**<sup>7</sup>

This research followed up on similar findings from an earlier study by this same laboratory. In the earlier study, mice and rats were given colon cancer-promoting chemicals, and combined treatment with metformin and vitamin D3 suppressed the development of precancerous lesions and tumors more effectively than either compound alone.<sup>16</sup>

Other scientists have observed similar synergistic effects of vitamin D3 and metformin in bladder and breast cancer cells.<sup>17,18</sup>

This mounting evidence suggests combined metformin and vitamin D3, both of which have an established safety record,<sup>19-22</sup> could represent a powerful tool in the fight against cancer. By undermining cancer cell viability by different mechanisms, metformin together with vitamin D3 fulfills a key criterion of conventional chemotherapeutic drug combinations.<sup>7</sup> Additionally, research indicates that certain forms of vitamin E may have anticancer properties complementary to those of vitamin D and metformin.<sup>12-13,23</sup>

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# IN THE NEWS



## Internet Entrepreneur to Give \$10 Million to Research

The German Internet mogul Michael Greve has announced his intention to contribute \$5 million over the next five years via his Forever Healthy Foundation to Aubrey de Grey's SENS Research Foundation (SENS).\*

SENS is a nonprofit group dedicated to promoting new approaches to the way medical science traditionally researches and treats age-related disease. Additionally, Greve's company KIZOO Technology Ventures will commit \$5 million to seed investments for startups that aim to bring rejuvenation biotechnology treatments to market.

Greve said, "I think we should have more people contribute to the step-by-step creation of cures for the root causes of all age-related diseases. And we should have a whole rejuvenation industry based on the SENS treatment model including the self-accelerating feedback-loop of success stories and amazing opportunities for scientists, entrepreneurs, and VC investors. This will truly accelerate both research and therapies. I have decided to lead by example and make this \$10 million commitment."

**Editor's Note:** The initial donation from the Forever Healthy Foundation will benefit such projects as the study of pharmacological and/or enzymatic cleavage of glucosepane crosslinks led by Dr. David Spiegel at Yale University, as well as allotropic expression of mitochondrial genes led by Dr. Matthew O'Connor at the SENS Research Foundation, and the SENS Research Foundation's Education Program led by Greg Chin.

\*Available at: [www.sens.org/outreach/press-releases/michael-greve-commits-10-million](http://www.sens.org/outreach/press-releases/michael-greve-commits-10-million). Accessed July 18, 2016.

## Improved Survival in Multiple Myeloma Patients

In a study announced at the American Society of Clinical Oncology annual meeting on June 5, 2016,<sup>1</sup> the recently approved drug **Darzalex™** demonstrated substantial efficacy in improving survival rates in end-stage multiple myeloma patients.<sup>2-4</sup>

Darzalex™ was incorporated as a part of a multiple drug combination therapy for those whose cancer had responded poorly to existing treatments. The newly tested protocol adds Darzalex™ into the currently existing practice of a two-drug combination therapy of the proteasome-inhibitor bortezomib and the side-effect counteractant dexamethasone.

In the 498-patient study, subjects whose multiple myeloma had not formerly responded to a median of two standard therapies were enrolled. Treatment consisted of Darzalex™ in a three-drug combination group, with the control group being the standard two-drug combination protocol. Patients treated with the three-drug combination that included Darzalex™ showed a **61% decrease** in the incidence of disease progression or death over the control group after a median follow up of 7.4 months.<sup>4</sup>

Additionally, the proportion of patients with a reduction in malignancies was markedly higher in the group that incorporated Darzalex™ into its treatment regimen. The Darzalex™ group showed an overall response rate of **83%** while the control group demonstrated a **63%** overall response rate.<sup>4</sup>

Despite the documented effectiveness of the drug in combination therapy, the costliness of the regimen appears to make it unattainable to most as a first-line treatment. The price to undergo the first years' therapy using the three-drug protocol is **\$180,000**, and insurance companies may refuse to pay for this because they can claim it's still "experimental."<sup>5</sup>

—By Chase Falcon

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## Heartburn Medications Age Blood Vessels, Study Finds

A new study has found another mechanism that may account for reported negative health effects of over-the-counter heartburn drugs.\*

Studies have linked longtime use of these types of medications, known as **proton pump inhibitors**, with such maladies as dementia, heart disease, and kidney disease. This research established correlation without identifying a possible cause. But now, a study led by Dr. John P. Cooke at Houston Methodist Research Institute, Texas, has found that prolonged use of proton pump inhibitors may lead to premature aging of the endothelial cells that line the interior of blood vessels. Results also showed that proton pump inhibitors interfere with the ability of lysosomes—organelles that take out the body's biological trash—to do their job, which also contributes to premature cell aging.

**Editor's Note:** Says Dr. John P. Cooke, "Unless otherwise indicated, physicians should consider proton pump inhibitors only for short-term use for relief of symptoms of GERD."

\* *Circ Res*. 2016 Jun 10;118(12):e36-42.

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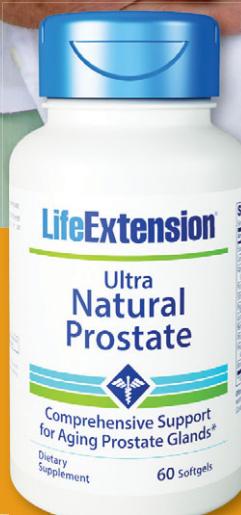
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\* *Alzheimers Dis.* 2015;49(4):971-90.

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# Combining **CoQ10** and **Selenium** *Reduces* Cardiovascular Mortality

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An important study out of Sweden has surprised researchers who found that *combining CoQ10 with selenium* can dramatically reduce cardiovascular mortality.<sup>1</sup>

This nutrient combination has also been found to improve heart function,<sup>1,2</sup> improve quality of life,<sup>2,3</sup> reduce the number of days a patient stays in the hospital,<sup>3</sup> lower cardiovascular mortality risk by **49%**, and even provide protection *years* after the subjects stopped taking the supplements.<sup>4</sup>

Cardiovascular disease is the leading cause of death both globally and in the US.<sup>5,6</sup> It kills more than **17 million** people worldwide every year<sup>5</sup>—more than all forms of cancer combined.<sup>7</sup>

The exciting news is that supplementing with **CoQ10** and **selenium** could be an important life-saving combination for protecting against cardiovascular mortality.

## Slashing Cardiovascular Mortality

CoQ10 and selenium are both involved in the management of cellular energy. Each compound works to influence energy production and utilization of this energy by organs throughout the body.<sup>8</sup> Studies now show that CoQ10 and selenium have effects that help protect against tissue-damaging oxidative stress.<sup>8-10</sup>

Researchers from Sweden conducted a double-blind, placebo-controlled study that included 443 healthy adults between 70 and 88 years old.<sup>1</sup> The participants received either a placebo or a combination of **200 mg** a day of CoQ10 and **200 mcg** a day of selenium tablets.

During an extensive follow up time of 5.2 years, **12.6%** of the placebo recipients had died of cardiovascular disease, compared to only **5.9%** in the supplement group, which is an impressive and significant difference.<sup>1</sup>

Those taking the combination of CoQ10 and selenium also had significantly better scores on cardiac function compared to those taking the placebo, as determined by an *echocardiogram*. In addition, levels of a biomarker for heart failure called **NT-proBNP** (“N-terminal pro-brain natriuretic protein”) were significantly reduced,<sup>1</sup> which is a favorable finding that indicates reduced cardiovascular disease risk.<sup>11</sup>

This initial study established that supplementing with these two nutrients could cut the cardiovascular death rate by more than **50%**, while improving heart function and significantly reducing the risk of further cardiovascular disease in the survivors.

The same research team conducted a number of follow-up studies that demonstrated the unique cardiovascular benefits of combined CoQ10 and selenium.

Let's take a look at these studies.



## Quality of Life

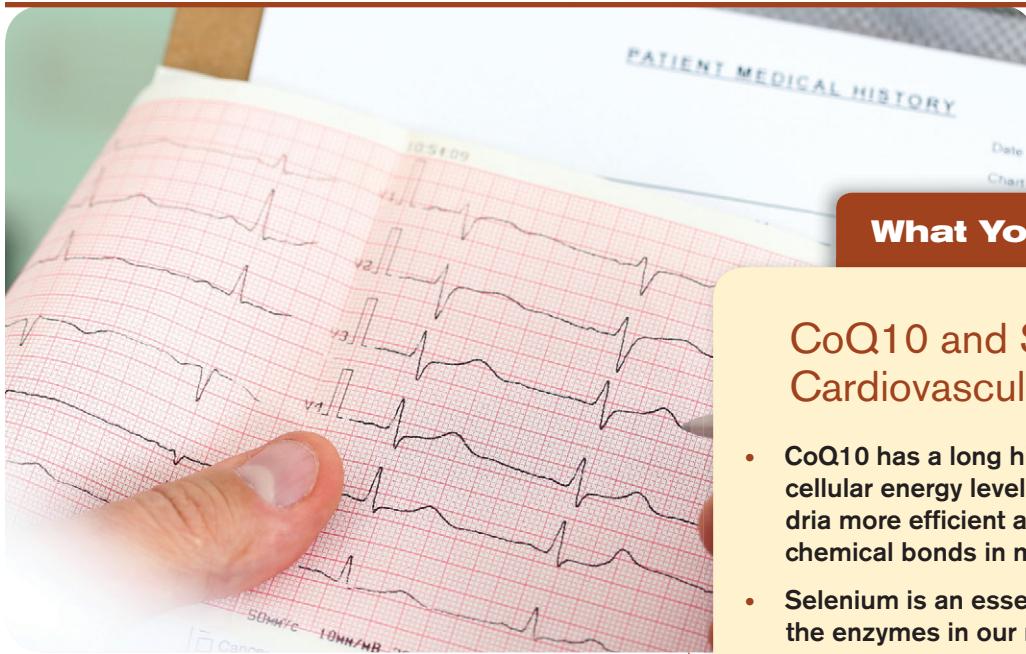
The goal in extending lifespan is to not just live *longer*, but to live *better*. In fact, most aging individuals will tell you that their quality of life is more important than simply extending lifespan.

CoQ10 and selenium can beneficially impact both.<sup>3</sup>

For this follow-up analysis from the initial Swedish study, when subjects were matched by age, gender, and baseline heart function, the difference was clear. While quality of life scores declined in all subjects (as it does in so many people as they age), the decline was *significantly less sharp* in the supplemented CoQ10/selenium group than in the placebo group.<sup>3</sup>

In addition, over the 4-year period, the people in the supplemented group spent **246 fewer** days in the hospital than those in the placebo group. Considering the risks posed by being in the hospital—including medical errors, infections, pneumonia, and more—spending fewer days in the hospital could do more than improve quality of life; it could be a potential lifesaving benefit in and of itself.<sup>3</sup>





## What You Need to Know

### CoQ10 and Selenium Reduce Cardiovascular Mortality

- CoQ10 has a long history of use in boosting cellular energy levels and making mitochondria more efficient at releasing energy from chemical bonds in molecules from food.
- Selenium is an essential cofactor for many of the enzymes in our natural cellular free radical scavenging systems.
- Studies now show that CoQ10 and selenium have effects that help protect against tissue-damaging oxidative stress.
- A series of new human studies from Europe shows that the combination of CoQ10 and selenium supplements reduce heart disease risk and improve quality of life.

### Long-Term Benefits

A further analysis from the initial Swedish study reveals perhaps the most surprising finding from this major study which was that CoQ10 and selenium were still effective at reducing cardiovascular deaths **10 years** after the start of the study.<sup>4</sup> This means that CoQ10 and selenium continued to extend their life-saving benefits years after the participants stopped taking the supplements!

At the ten-year mark, the risk of dying from any cardiovascular cause (heart attack, stroke, congestive heart failure, and others) was **49%** lower in those who had originally received supplementation, compared with those who had not.<sup>4</sup> This effect was evenly divided across the various forms of heart disease, including ischemic heart disease and in those with diabetes. Both men and women in the study experienced the same degree of protection.

All told, the data from this landmark study demonstrate that **4 years** of supplementation with CoQ10 and selenium reduces the risk of dying from heart disease, reduces the risk of developing heart disease to begin with, and helps preserve the quality of life in the process.

### Why CoQ10 and Selenium Work Together

The reason the combination of CoQ10 and selenium has such a profound impact on cardiovascular disease is because of the way they work together to reduce **oxidative stress**, which is known to play a major role in accelerating aging and disease—including the development of cardiovascular disease.<sup>8-10,12-14</sup>

Unfortunately, oxidative stress is created by everyday processes such as breathing and eating. For example, when **mitochondria** convert molecules from the food we eat into energy the cells can use, it creates an enormous amount of oxidative stress, making them vulnerable to damage.<sup>15</sup> With time, mitochondria lose their ability to efficiently manage energy transfer through the flow of electrons.<sup>16,17</sup>

While we can't avoid oxidative stress, we can take proactive steps to combat it. That's where CoQ10 comes in.

CoQ10 reduces the oxidative stress, minimizes the damage to fragile mitochondria, and helps generate new mitochondria.<sup>18-20</sup> All of this adds up to a more "fuel-efficient" body that is better equipped to carry out its necessary functions. This is especially important for the heart, which requires a tremendous amount of energy in order to function properly.

The problem is that natural levels of CoQ10 begin to fall as early as age 20, and by the time we reach 80, CoQ10 levels can be reduced by as much as **50%** compared with early in life.<sup>4</sup> This is why CoQ10 supplementation is so strongly recommended for older adults.<sup>21,22</sup>

Selenium may better our bodies' ability to produce and accumulate CoQ10.<sup>4</sup> Studies show that animals deficient in selenium make only about **67%** of the amount of CoQ10 that animals with sufficient selenium generate, and they also have trouble accumulating the CoQ10 that they do make.<sup>23</sup> It has now been shown that a vital selenocysteine-containing enzyme called **thioredoxin reductase** actively recycles exhausted CoQ10 (**ubiquinone**) molecules and turns them into active, oxidative stress-fighting **ubiquinol** molecules. In other words, selenium *improves* the efficacy of CoQ10.<sup>24</sup>

But just as we need ample selenium to produce and accumulate CoQ10, we also need ample CoQ10 to make the selenocysteine-containing enzymes.<sup>4</sup> Thus, there appears to be an important reciprocal relationship between CoQ10 and selenium.

Utilizing this combination of nutrients is especially important for aging individuals, whose CoQ10 and selenium levels fall so rapidly. And as the initial and follow-up Swedish studies have so clearly shown, using both supplements together provides powerful protection against cardiovascular disease.

### Not All CoQ10 is the Same

In a confusing feature of biochemical terminology, "CoQ10" may in fact refer to at least two quite different molecular forms. **Ubiquinone** is the more familiar term, and is the form in which many supplements are sold. But ubiquinone is the less-active form of the compound because it already exists in its "oxidized" state, which means it contributes little to preventing the oxidation of other molecules.<sup>25</sup>

**Ubiquinol**, on the other hand, is in the chemically "reduced" state, and is therefore capable of being oxidized by other molecules, which in turn relieves them of oxidative stress. Selenium is capable of converting ubiquinone into ubiquinol, which is how it recycles the active CoQ10 molecule.<sup>24</sup>

Studies also show that **ubiquinol** is better absorbed from the human gastrointestinal tract, and is therefore more effective than the ubiquinone form at improving cellular energy function.<sup>25-27</sup>

Many readers of this magazine have been getting at least the equivalent of **200 mg** of **ubiquinone** CoQ10 in each **100 mg** capsule of **ubiquinol**<sup>28,29</sup> they take. A properly formulated multi-nutrient supplement usually provides **200 mcg** of **selenium** in each daily dose.

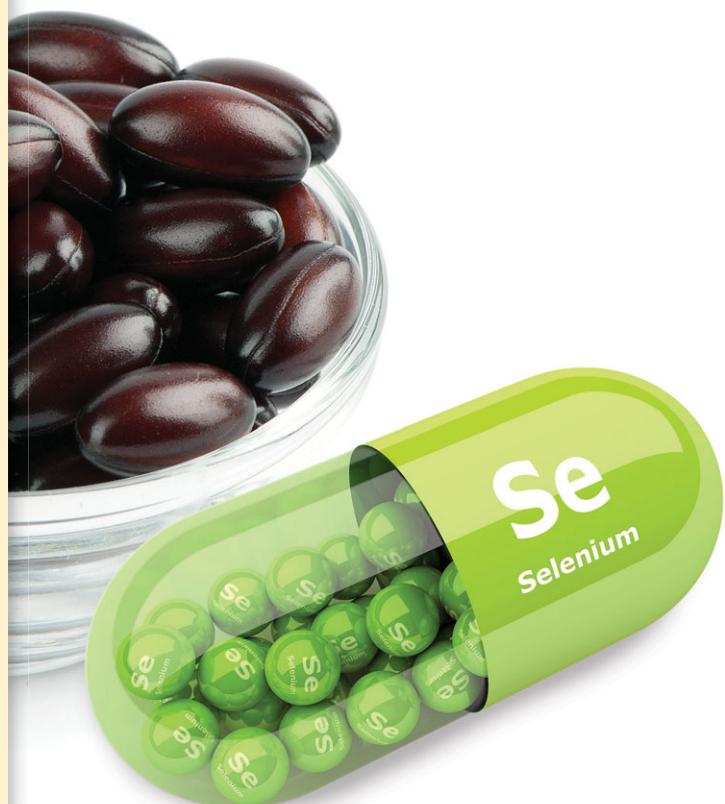
### Summary

We have long known that supplementation with CoQ10 is an effective means of making our mitochondrial energy-releasing processes operate more efficiently and with less stress to cellular structures. And selenium plays an important role in powering enzyme systems that clean up the damage caused by oxidative stress.

A large European study has now demonstrated that CoQ10 and selenium supplements work together to enhance cellular function in ways that translate directly into improved human health. Compared to placebo recipients, aging adults who supplemented with the nutrient combination experienced lower rates of cardiovascular death, fewer days in hospitals, and improved quality of life—and those benefits far outlasted the duration of the supplement period.

In fact, the studies presented make for a compelling argument that the dual **CoQ10** plus **selenium** regimen may provide significant protection against the number one cause of death.

Long-time readers of **Life Extension Magazine®** have mostly been obtaining these potencies of **CoQ10** and **selenium** as part of their daily supplement program. It's refreshing to see that the benefits of these nutrients may exceed original findings that evaluated them in isolation rather than in combination. ●

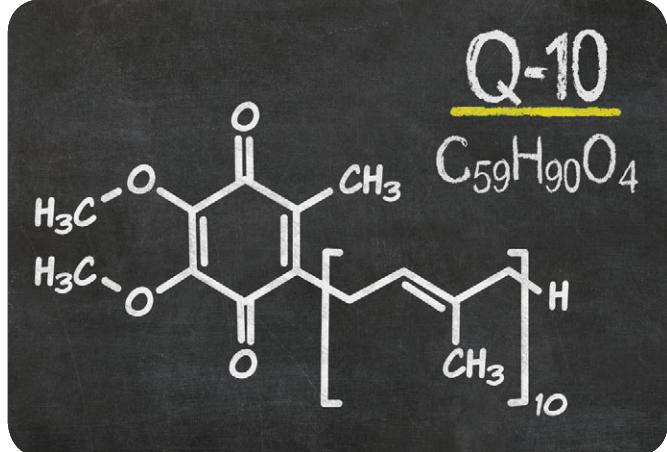


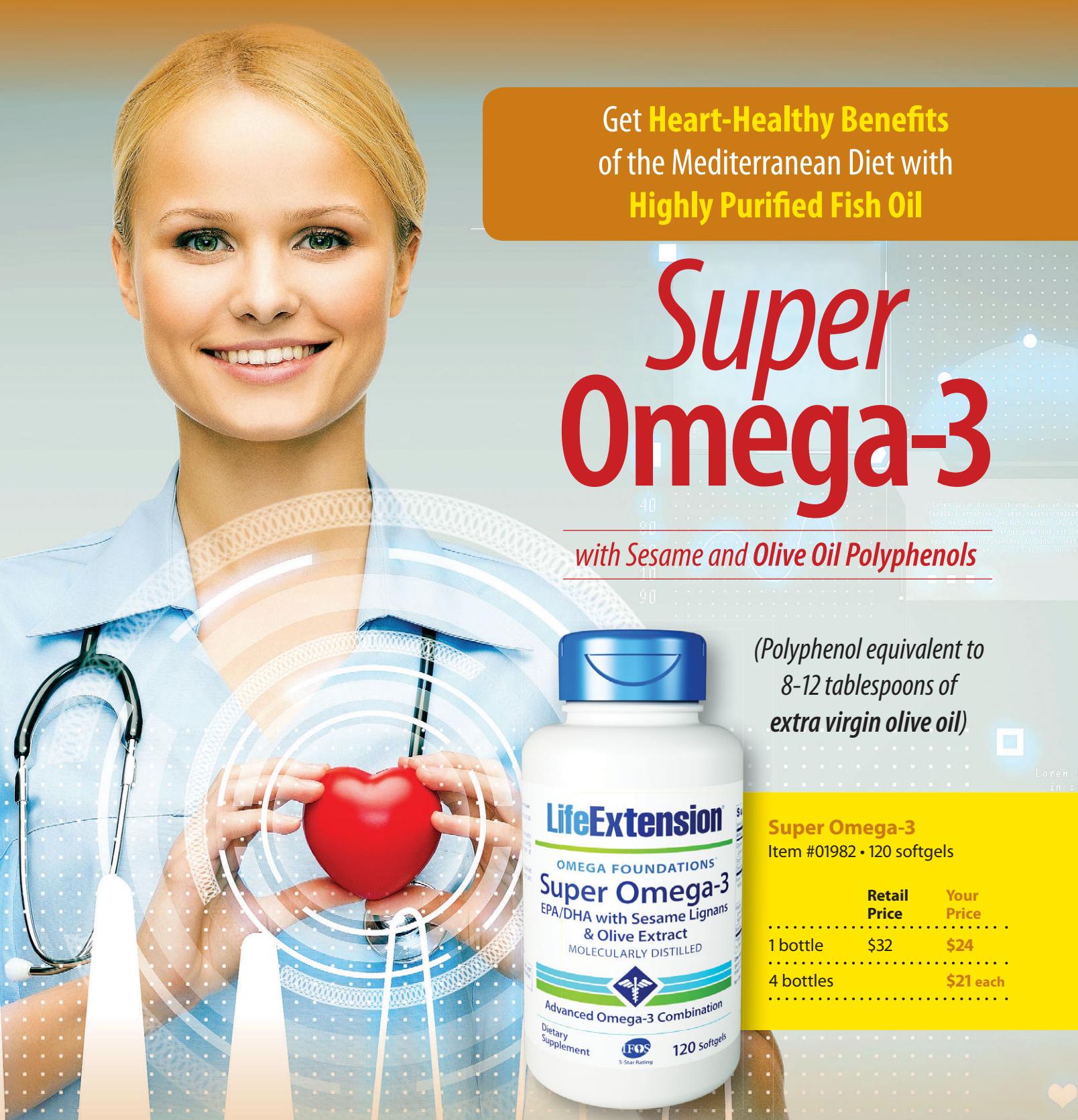


If you have any questions on the scientific content of this article, please call a Life Extension® Wellness Specialist at 1-866-864-3027.

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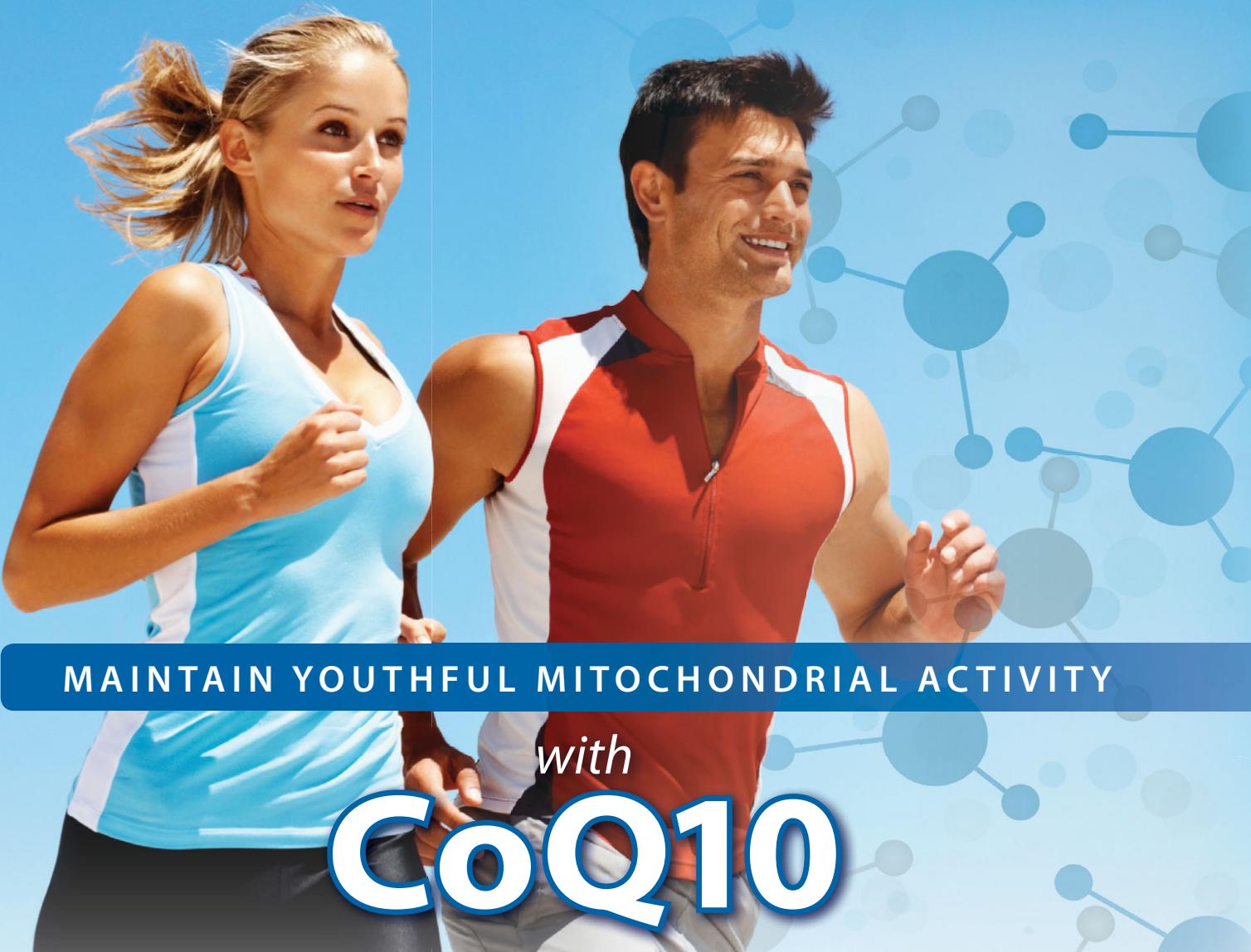
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Supportive but not conclusive research shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease.

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MAINTAIN YOUTHFUL MITOCHONDRIAL ACTIVITY  
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**CoQ10**

Super Ubiquinol CoQ10 combines the energy-activating power of *shilajit* into a formula that's more potent than a stand-alone CoQ10.

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- Shilajit works with CoQ10 to increase cellular energy.

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Non-GMO



To order Super Ubiquinol CoQ10, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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



# Does your multivitamin measure up? Two-Per-Day beats Centrum® in 10 ways!

## Are You Getting The Maximum Potency From Your Daily Vitamin?

Life Extension®'s **Two-Per-Day** formulas are the highest potency multivitamins on the market. Compared to **Centrum® Silver® Adults 50+**, **Two-Per-Day** provides:

**Centrum®  
Can't  
Compete**

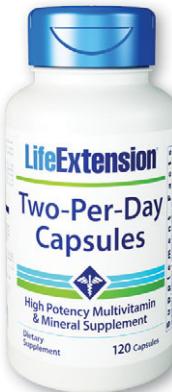
- 50 times more vitamin B1
- 12 times more vitamin B12
- 25 times more vitamin B6
- 10 times more biotin
- 10 times more selenium
- 8 times more vitamin C
- 2 times more vitamin D
- 2 times as much vitamin E
- 2.5 times as much vitamin B3
- 2.7 times as much zinc

Life Extension®'s **Two-Per-Day** contains superior forms of nutrients such as **5-MTHF** that is up to **7 times more bioavailable** than **folic acid**. These more **bioavailable** nutrients provide the body with greater biological **activity**, which is especially important as people age.

## Two-Per-Day Capsules

Item #02014 • 120 capsules (2-month supply)

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## Two-Per-Day Tablets

Item #02015 • 120 tablets (2-month supply)

	Retail Price	Your Price
1 bottle	\$20	<b>\$15</b>
4 bottles		<b>\$13.50 each</b>



Non-GMO

Contains soybeans.

**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. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

For the complete list of ingredients, trademarks, cautions, references, dosage and use, please visit [www.LifeExtension.com](http://www.LifeExtension.com). Two-Per-Day provides a small amount of gamma tocopherols as part of natural mixed tocopherols, which include natural vitamin E. NIAGEN® is a registered trademark of ChromaDex, Inc., Patents see: [www.ChromaDexPatents.com](http://www.ChromaDexPatents.com).

To order Life Extension Two-Per-Day Tablets or Two-Per-Day Capsules,  
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# Super Selenium Supports HEART and BRAIN HEALTH



## Linked to Longevity

Selenium's longevity power comes from its ability to offer powerful protection throughout the body, including heart support, brain support, and healthy cell division.<sup>1,2</sup>

**Super Selenium Complex** has three different forms of selenium—each of which uniquely acts along a different pathway to support healthy cell division.

- Sodium selenite
- L-selenomethionine
- Selenium-Methyl L-Selenocysteine

### References

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

### Super Selenium Complex

Item #01778 • 100 vegetarian capsules

Retail Price	Your Price
1 bottle	\$14
4 bottles	\$9 each



Each bottle provides a supply that lasts more than three months.

Non-GMO

SelenoPure™ is a trademark of Nutrition 21.

Caution: If you are taking anticoagulant or antiplatelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

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

PROJECT TO CURE AGING





# Project to Cure Aging

**Microsoft** may be the most successful business to ever exist.

**Bill Gates** is credited with Microsoft's success. Less known is a person behind much of Microsoft's meteoric growth after Gates relinquished operational control.

His name is **Steve Ballmer** and his performance at **Microsoft** is unmatched by a number of financial precedents.



**Steve Ballmer, Business Genius**  
Est. Net Worth: \$25 Billion  
Microsoft CEO (2000-2014)  
Graduate: Harvard University

Despite Ballmer's achievements, he was not without flaws. He dismissed what would become the world's most popular product (the **iPhone**) because of its cost and lack of keyboard. After its launch in **2007** Ballmer famously said:

*"There's no chance that the iPhone is going to get any significant market share."*

Ballmer was not alone. Many in Silicon Valley predicted the **iPhone** could not work from a **technical** standpoint and if it did, it would fail in the marketplace.

Contrary to expert opinion, the **iPhone** became the most sought after consumer product of all time. The maker of the iPhone (Apple) grew to become one of the most valuable companies on Earth.

In describing a premise behind the **iPhone** concept, Steve Jobs famously said:

*"A lot of times, people don't know what they want until you show it to them."*

So what does all this have to do with **curing aging**?

First off, most medical "experts" don't think it can be done. In addition, much of the public questions whether they want to see aging vanquished.

None of this cynicism is deterring the **Life Extension Foundation**® from pursuing **research** aimed at inducing meaningful and systemic reversal of **biological aging** processes.

From a humanitarian standpoint, control over degenerative aging will represent a **biomedical renaissance**. For those interested in monetary gain, the potential in discovering ways to reverse biological aging may be substantial.

This article describes how **Life Extension Foundation** and others have joined to launch a new company called **Age Reversal Therapeutics, Inc.**

Unparalleled Track Record of Biomedical Innovation

## **Life Extension Foundation**®

Formally Established 1977

- **1981** First to introduce **DHEA** to delay systemic aging
- **1983** First to introduce **Aspirin** to prevent heart attack
- **1983** First to introduce **CoQ10** to reverse heart failure
- **1986** First to introduce **Deprenyl** to delay brain aging
- **1992** First to introduce **Melatonin** to improve immunity

More than **190** pioneering achievements

[LEF.org/track](http://LEF.org/track)

## **Historic Example of Lethal Delay**

- **1928:** Alexander Fleming discovers penicillin
- **1929:** Penicillin's antibiotic properties published
- **1946:** Penicillin made widely available

Millions died after antibiotics were discovered

**Same scenario exists today regarding age-reversal technology**

## The Aging Cure Company

**Age Reversal Therapeutics, Inc.**, has been established to rapidly transform already developed medical technologies into the human clinical arena.

Our objective is to leave no scientist unfunded whose technology is far enough advanced to safely test in senescent individuals, many of whom have volunteered to participate in this unprecedented endeavor.

The initial goal of **Age Reversal Therapeutics, Inc.**, is to fill missing biological gaps that confine humans to frustratingly short lifespans. Even modest success may enable people today to regain some of their lost functional vitality.

A key objective of **Age Reversal Therapeutics** is to engineer cellular DNA so there will be no upper-limit threshold whereby maturing humans will be deprived of youthful health and well-being.

### KEY POINTS:

**There is an Urgent Need for Human Age-Reversal Studies**

**Even Modest Success Can Spare Medicare from Insolvency**

**Decades of Healthy Life Could be Added to Human Longevity**

Much of the public erroneously thinks that innovations enjoyed today would have eventually been developed because the technology was “obvious.”

Even a cursory historic review reveals how flawed this naïve supposition is. The reality is that most areas of discovery initiate, stop, start, and go backwards again until the technology advances sufficiently to gain widespread acceptance.

Delays happen because of physical limitations, inability of inventors to persevere, and oppression by whatever “authority” of their day existed.

### “Without Einstein, We Would All Be Lost”

We take for granted modern conveniences that could not exist if Albert Einstein’s mastery of the physical universe had been repressed.

Most people view **GPS** (global positioning navigation) as something that would have been invented by someone because the benefits are so apparent. Yet without Einstein’s theory of relativity, GPS devices would not function.

To appreciate this, GPS requires rapid communication with orbiting satellites that measure time in **a few billionths of a second**. Without Einstein’s relativity theory, “we would all be lost” according to a **Wall Street Journal** article commemorating Einstein’s contributions to modern innovation that Einstein himself could not have predicted.

Einstein’s theories were not initially greeted with wild enthusiasm. Skeptics and critics abounded, and the general public perceived little value in Einstein’s mathematical measurements of time and space.

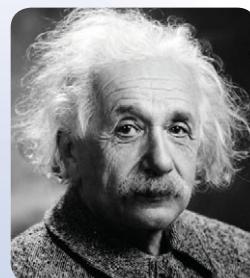
A century after Einstein’s initial discoveries, mankind continues to gather valuable apples from the scientific trees he planted.

But what if Einstein had been born a few decades later? His likely fate would have been death in a Nazi concentration camp. Einstein’s early work was done in Germany before he migrated to the United States to escape religious persecution.

As mentioned in the beginning of this article, “authorities” exert tremendous influence over the velocity of innovation.

### The Wall Street Journal:

**“Without Albert Einstein, We’d All Be Lost.”**



Do you like your GPS?  
Thank Einstein’s general theory of relativity,  
an astonishing feat of the human mind.

- GPS requires rapid communication with orbiting satellites that measure time in a **few billionths** of a second.
- Without Albert Einstein’s theory of relativity, GPS devices would not function.
- Einstein has made contributions to modern innovations that he could not have predicted.
- Today’s scientists may be able to reverse aging, but are repressed by lack of funding.
- It is imperative that we fill this lethal funding gap.

## How Society Treats Visionaries

"On June 15, 1591, in the spectacular closing of the infamous North Berwick witch trials, Euphemia Maclean was burned alive on Castle Hill in Edinburgh by the order of King James VI because, among other things, she had secretly tried to assuage the pains of labor.

In the 16th century, pain relief during labor was considered to be witchcraft. It was believed that there was a physiological advantage to pain during labor."

*-New England Journal of Medicine, August 6, 2009*

## We Already Know a Lot About Biological Aging

When I incorporated **Life Extension Foundation** in **1977**, theories about how we age were in a primitive state. So much so that we did not attract our first contributor until **1980** when **Saul Kent** started a publication called **Anti-Aging News**.

Back then, some people were interested in reading about ways to possibly slow aging. Few wanted to contribute to **research** because, quite frankly, there was insufficient knowledge to expect an advance in the laboratory would transform into clinical reality.

As decades of research findings have accumulated, scientists now understand many of the molecular processes that cause our health to degenerate with chronological age. This was a crucial first step towards our goal of eradicating aging.

Uncovering factors involved in degenerative aging is critical because it's difficult (but not impossible) to cure something if you don't know what biological systems to target.

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

Stem cell deactivation	Endothelial dysfunction
Telomere attrition	Gene expression
Inflammation	Glycation
AMPK inactivity	DNA repair
Lipofuscin deposition	Loss of protein synthesis
Immune senescence	Mitochondrial dysfunction

**Smallpox** and **cholera** are examples of diseases that were eradicated in certain parts of the world (by inoculation and sanitation) despite not knowing the underlying pathologic organism, or even if microorganisms caused disease.

With fundamental understandings of what causes us to adversely age, we can zero in on specific targets that can halt and in all probability reverse degenerative processes.

## Smallpox and Aging

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



Edward Jenner



Louis Pasteur

## Immune Senescence: A Universal Killer

If one is fortunate to make it to advanced age in relatively good health, their most dangerous vulnerability is a deteriorating **immune system**.

A senescent immune system not only fails to protect against microbes and malignancies, but initiates a chronic **inflammatory** state that slowly destroys tissues.

It's shocking to read of Olympic gold medal winners who perish as a result of a degenerative disorder in their older years. **Johnny Weissmuller** was an Olympic swimming champion who later appeared in movies as the original **Tarzan**. When I read an obituary as to how he died, it was another wakeup call that world-class physical abilities in youth mean little as we age past 65 years.

Ditto for **Jack LaLanne** who remained in remarkable shape into his 90s before succumbing to **pneumonia**, likely caused by a worn out immune system.

We know a lot about immune senescence today. To eradicate this plague that impacts most aging persons, we believe human studies must be expediently initiated. One area we need to assess is if **plasma constituents** from **young donors** will have a meaningful rejuvenating effect in **elderly humans**.

Once the concept of young plasma transfer is validated, we expect that more efficient means of utilizing this **age reversal** process will rapidly emerge. We have preliminary evidence of this already.

# nature

the international weekly journal of science

January 21, 2015

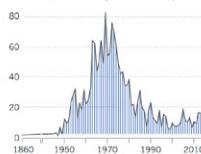
*"In the heart, brain, muscle and almost every other tissue examined, the blood of young mice seems to bring new life to ageing organs, making old mice stronger, smarter and healthier."*

## Share and share alike

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

### Publications on parabiosis

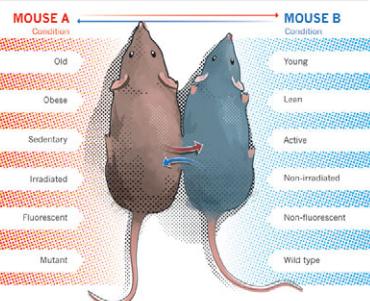
Parabiosis gained popularity during the 1960s and 1970s, but eventually fell out of wide practice.



January 21, 2015 • International Weekly Journal of Science

### A simple surgery

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



## Life Extension Funds \$10 million Annually of Biomedical Research

**Howard Chang, MD, PhD** at the **Stanford School of Medicine** is seeking to alter the epigenetic expression of stem cells to prevent age-related diseases, and to regenerate tissue.



**Orn Adalsteinsson, PhD** has been leading a clinical trial treating cancer victims with a combination of immunotherapy, glucose deprivation, and low-dose chemotherapy, which could defeat cancer by the combination of three very different treatments.



**James Shorter, PhD** at the **University of Pennsylvania Medical School** is using heat shock proteins to disperse the protein aggregates that cause Alzheimer's Disease and Parkinson's Disease, with the hope of reversing neurodegeneration.

**Catherine Baldwin, CEO** of **Suspended Animation, Inc.**, is supervising a team of researchers seeking optimal pharmaceutical and hypothermic techniques to reduce cell death due to acute ischemia. Such techniques could improve survival for victims of heart attack, stroke, or trauma as well as improve viability of transplantable organs.

**Victoria Belancio, PhD**, at **Tulane Medical School** is finding ways to inhibit genetic instability so as to prevent cancer and age-related diseases.



**Aschwin de Wolf** at **Advanced Neural Biosciences** is developing pharmaceutical strategies to reduce cell damage and reperfusion injury in stroke and cardiac arrest.



**Steven B. Harris, MD**, is president and director of research at **Critical Care Research**, a company that grew out of 21st Century Medicine in Rancho Cucamonga, CA. Dr. Harris spearheads hypothermia and resuscitation research using a pulmonary liquid ventilation technology.



Scientific Research Currently Funded By  
**LifeExtension**  
Foundation

**Dipnarine Maharaj, MD** of the **South Florida Bone Marrow/Stem Cell Institute** is conducting, and plans to conduct, clinical trials that use stem cells to impede cancer and reverse aging-associated diseases.



**Robert Reis, PhD** at **University of Arkansas Medical Sciences**, has discovered means to extend the lifespan of nematode worms tenfold, and has demonstrated that such metabolic changes reduce aging in mouse heart muscle. He seeks similar benefits for humans.



**Vincent Chung, MD** at the **City of Hope** will be conducting clinical trials with metformin and natural compounds for treatment of pancreatic cancer, which is the fourth leading cause of cancer death, having a five-year survival rate of 19%.



Nearly 900,000 Americans a year die from organ failure—a staggering 36% of total deaths. **Stasis Foundation** is developing a system to safely store donated organs, stem cells, tissues, and organisms at optimal temperatures to enable better tissue-type matched transplants and long term restorative viability.



**Xi Zhao-Wilson, PhD, MBA**, Chairman of **Biomarker Pharmaceuticals**, coordinates the use of bioinformatics to find pathological molecular pathways which can be intercepted to cure certain chronic diseases and degenerative disorders.



**Gregory Fahy, PhD**, Chief Scientific Officer of **21st Century Medicine**, is applying his skills as a cryobiologist to greatly extend the time cells, tissues, and organs can be preserved. Over 30% of deaths in the United States could be substantially postponed if the demand for transplantable organs did not greatly exceed the supply.

## Funding Requirements

Each year, **Life Extension Foundation** provides about **\$10 million** of funding to a broad spectrum of researchers seeking ways to eliminate aging and involuntary death.

More funding is required to support what are now several different projects that have significant potential to exert age-reversal effects in humans.

The costs of conducting these research initiatives is remarkably modest, yet at this time, no other charities are stepping up to provide support.

A company has been formed called **Age Reversal Therapeutics, Inc.**, that aims to raise **\$25 million** from accredited investors who appreciate the enormous value this research may yield, not just in financial terms, but by radically extending healthy human lifespans.

We expect the initial funding will cover 2-3 years of projected research and development expenses and the costs of acquiring and commercializing potentially innovative age-reversing therapeutic technologies. As far as whether there will be a market for these age-reversal technologies, we've had a steady stream of requests seeking personal access even before we initiate the first clinical trial.

The Telegraph  
Science

## World's first anti-ageing drug could see humans live to 120

Pensioners could be as healthy as 50 year olds in the future if tests on metformin perform as well as expected. CREDIT: ALAMY

By Sarah Knpton, SCIENCE EDITOR  
29 NOVEMBER 2015 • 6:00PM

**T**he world's first anti-ageing drug will be tested on humans next year in trials which could see diseases like Alzheimer's and Parkinson's consigned to distant memory.

### Elderly Humans Clamor for Anti-Aging Drug

The front page of the April 24, 2016, edition of the **Wall Street Journal** described a virtual **stampede** of seniors seeking to enroll in a study to see if a single **drug** can postpone or reverse pathologic aging processes.

What these naïve masses are seeking access to is **metformin**. This drug was first recommended to our supporters in the **March 1995** edition of **Life Extension Magazine®**.

The **AMPK-activating** properties of metformin (and other compounds) has generated consistent findings in the scientific literature as conferring protection against degenerative aging.

The headline news stories about metformin enabling humans to live to **120 years**, however, are false. We at **Life Extension** believe this because our group has been using metformin to slow aging processes for decades.

While **AMPK activators** like metformin remain a priority to stave off premature degeneration, far more needs to be done to systemically reverse biological aging.

What this media frenzy shows is that the public is rebelling against the notion of degenerative aging and today's limited lifespans. Rather than wait for **senescence** to slowly take its toll, elderly Americans are desperately trying to enter an FDA-approved clinical study where they may become experimental test subjects.

Just imagine what will happen when an **age-reversal** therapy is proven to work!

DOW JONES, A NEWS CORP COMPANY • DIA ▲ 18472.17 -0.01% Nasdaq ▲ 5139.81 0.58% U.S. 10 Yr ▲ 20/32 Yield 1.500% Crude Oil ▼ 41.89 -2.40% Euro ▲ 1.1071 0.10%

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A-HED

## Fountain of Youth? Drug Trial Has Seniors Scrambling to Prove They're Worthy

Drug study brings out the competition; 100 push-ups a day!

By JENNIFER LEVITZ April 24, 2016 6:26 p.m. ET

What if there were a way to stave off the ravages of age? Dr. Nir Barzilai, director of the Institute for Aging Research at Albert Einstein College of Medicine, is working on it.

With word leaking out, seniors from all over the country are racing to Barzilai and his colleagues to get in on the action—with many writing to prove

### Life Extension® Magazine

Recommended **metformin** as an anti-aging drug in the **March 1995** issue.

Sections The Washington Post Share

THE HUMAN UPGRADE

## TECH TITANS' LATEST PROJECT: DEFY DEATH

For centuries, explorers have searched the world for the fountain of youth. Today's billionaires believe they can create it, using technology and data.

The Washington Post

Achenblog By Joel Achenbach December 3, 2015 • Follow @JoelAchenbach

## A Harvard professor says he can cure aging, but is that a good idea?

A 605 Save My List

At the gene-editing summit, you can't miss George Church. He's the big guy with the bushy beard and wavy hair, someone who looks like he stepped out of an 18th century painting of "natural philosophers." Church, who is 61, is among several hundred scientists, policymakers and thinkers on hand to discuss the powerful technology known as CRISPR, a new method for editing genes. The technique was



Forbes  
magazine,  
May 2016

### Year 2015: The Age-Reversal Renaissance Began

In 1449, Johannes Gutenberg invented the **printing press**. This was the most significant single advance mankind ever achieved. Printed books helped Europe to escape the suffocating ignorance of the **Dark Ages**.

Printed books enabled **knowledge** to be stored and conveyed from one generation to the next. Gutenberg's invention helped transport humanity into what can be called a modern age of science and reason.

An even more significant human advance emerged in **2015**. That year may go down in medical history as a pivotal shift in human thinking, i.e., a rebellion against natural aging.

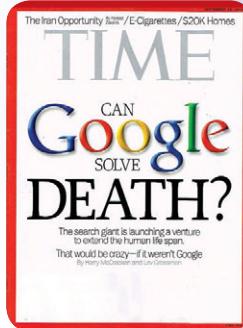
Billionaires are writing checks to researchers for the purpose of finding ways to meaningfully extend healthy human lifespans. Multiple media reports beginning in 2015 describe scientific research initiatives being taken by wealthy individuals to make age reversal a reality in their own lifetime.

We view each of these news accounts with exhilaration. That's because whoever discovers a validated method to **reverse aging** even to a small degree will likely open a floodgate of societal resources and consumer demand. The race to develop better rejuvenation technologies should result in human longevity research being prioritized above everything else.

In Renaissance Europe, the arrival of mechanical printing introduced the era of **mass communication**. This historic invention permanently altered the structure of society.

An array of **biomedical advances** is transforming human longevity potential into an era when upper-limit lifespans may not be predetermined by genetic limitations.

### Calico's Plans to Fund Aging Research



"Harness advanced technologies...use that knowledge to devise interventions that enable people to lead longer and healthier lives."

**THE DAILY BEAST** POLITICS ENTERTAINMENT WORLD U.S. NEWS TECH + HEALTH BEASTSTYLE VIDEO

YEAR IN REVIEW 12.04.15 1:00 AM ET

**The Year We Decided to Live Forever**

CHARLOTTE LYTTON

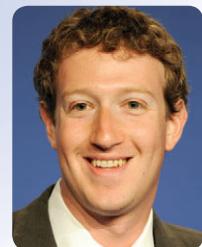
In 2015, tech billionaires pursued anti-aging and cheating death like never before. Silicon Valley came up with a lot of things this year, like creating an on-demand pot-to-front-door service, and devising a sparkly way of destroying enemies by shipping them glitter—but one thing it's still working on is figuring out how humans can live forever. Research into surpassing life expectancy norms has become the pet project of tech billionaires, with entrepreneurs from Mark Zuckerberg to Sergey Brin writing out million-dollar checks to fund their quest.

### Facebook Founder: Eradicate Disease in next 100 Years

Mark Zuckerberg pledges 99% of his Facebook shares to curing diseases

-CNBC, April 27, 2016

"We have a real shot at preventing, curing or managing (most or all diseases) in the next 100 years," Zuckerberg said.



## Self-Experimentation

Do you think scientists who observe beneficial effects that occur before their eyes in the animal model will sit back while their own bodies suffer the ravages of aging? The answer is a resounding no!

An increasing number of enlightened individuals have embarked on aggressive experimental programs to meaningfully reverse aging in their own bodies.

Some of the world's most prestigious scientists and a growing body of educated individuals are engaged in **self-experimentation** as a way to bypass the bureaucratic delays that hinder biomedical advances.

None of this self-experimentation would be occurring if we were not so close to an age reversal breakthrough.

## How We Plan to Accelerate Progress

We think there are an enormous number of people that want to see human age reversal become a reality and invest in that goal. They have expressed interests in contributing towards meaningful research in the past, but I've rejected much of this because, up until recently, there was no reasonable clinical study we could initiate that might result in systemic **age reversal**.

Age Reversal Therapeutics, Inc., could have been set up as a company that solicited money from people of all economic classes. We chose instead to limit it only to those who would not deprive themselves of basic necessities for what must be viewed as a speculative endeavor.

In as much as age reversal is a common goal of thousands of people reading this article, I view it as a shared personal obligation for all to participate who are financially able do so.

We expect there will be tangible benefits to being part of the initial investor group in **Age Reversal Therapeutics, Inc.**, a company that seeks to identify, develop, and bring to market technologies to spare humans the horrific mental and physical consequences of degenerative aging.

If just 250 of the thousands of accredited persons reading this invest a mere \$100,000, **Age Reversal Therapeutics, Inc.**, will have raised the minimum it needs to initiate and complete several different projects that all have real-world potential to rapidly gain some degree of control over biological aging.

## Healthy Longevity More Valuable Than Greater Wealth

**Steve Jobs** often talked about the foolishness of mankind as it relates to competing to be the wealthiest individual in a **cemetery**. Steve Jobs was not personally motivated to conquer aging, but he sure waged a long and costly battle against the **pancreatic cancer** that

## How We Plan to Change Aging Research

- **Age Reversal Therapeutics, Inc.**, funded by longevity enthusiasts
- **\$25 million** initial capital raised from accredited investors
- Age Reversal Therapeutics supports human age-reversal projects
- Disbursements of investor funds made on strict milestone basis
- Break down bureaucratic impediments
- Keep scientists in laboratories instead of having to raise more funds
- Use proceeds from age-reversal therapies to fund more research
- Surplus **profits** returned to investors

## Raising \$25 million

(Accredited investors Only)

### FUNDING HUMAN AGE-REVERSAL RESEARCH

$$\begin{aligned} 100 \times \$250,000 &= \$25 \text{ Million} \\ 250 \times \$100,000 &= \$25 \text{ Million} \\ 500 \times \$50,000 &= \$25 \text{ Million} \\ 1000 \times \$25,000 &= \$25 \text{ Million} \end{aligned}$$

This is a collaborative effort for accredited investors who want to personally benefit from age-reversal research and provide the gift of life to humanity.

## Young Blood Transfer Research Goes Mainstream

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

"By working together, we hope to translate our data from animal studies to humans..."

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

– March 4, 2015



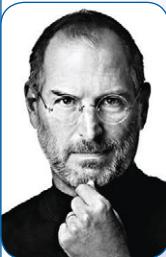
killed him at an early age (his widow is worth an estimated **\$17 billion**).

Jobs touted novel **accomplishments** as being more important than adding more dollars to a wealthy person's investment portfolio.

Those who participate in the unprecedented endeavor of reversing biological aging will indeed be contributing to potential accomplishments of momentous proportions. This includes young blood donors, older study subjects and investors/contributors who enable this research to happen.

The next page describes the accredited investor requirements to invest in these emerging technologies. I'll conclude this article with a quote that is often attributed to Steve Jobs, but was written by Apple for a "think different" campaign they launched based on their arduous development of the iPhone:

### The Crazy Ones



Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them.

About the only thing you can't do is ignore them, because they can change things. They push the human race forward.

And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do.

—(Apple Computer, "Think different," campaign)

### How Biomedical Research is Typically Funded

- Scientists seek out grants or venture capital
- Many studies fail or never commence due to bureaucratic or financial obstacles
- Proposed human studies will infuse pro-youth plasma components into elderly people with the objective of inducing meaningful age reversal.
- If funding is not forthcoming, this rejuvenation research will be seriously delayed.

### How Long Before Aging Is Reversible?

Smallpox described in Egypt	<b>1200 BC</b>
Jenner's vaccine demonstrated	<b>1796 AD</b>
Universal vaccination (England)	<b>1840 AD</b>
Worldwide eradication of smallpox	<b>1979 AD</b>
Elimination of pathologic aging	<b>???? AD</b>

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

### Leading Institutions Uncover Rejuvenating Power of Young Blood

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

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

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

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

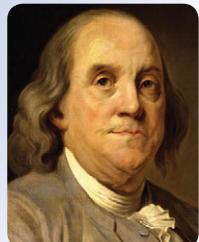
2. *Science*. 2014;344:630-4.

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

### Ben Franklin's Foresight

Benjamin Franklin wrote in a 1780 letter:

"All diseases may by sure means be prevented or cured, not excepting that of old age, and our lives lengthened at pleasure even beyond the (current) standard..."



# Age Reversal Therapeutics, Inc.

## Executive Summary

For the first time in history, scientific advances have made it possible to achieve new levels of understanding in how the human body ages.

The costs to the economy of an aging population are significant. Imagine the savings that would occur if the population stayed healthier and youthfully fit decades longer!

A therapy to reverse biological aging would slash the massive costs associated with the current state of elderly care. If older people are rejuvenated, there would be huge reductions in societal costs for doctor visits, nursing home care, hospitalizations, surgeries and pharmaceuticals. Most importantly, the pain and suffering inflicted on individuals and their families would be reduced as people live healthier longer.

Today, many scientists around the world are focusing on various disorders, such as heart disease, cancer, diabetes and Alzheimer's. Evidence suggests that a healthy diet and lifestyle can reduce the risk of some of these diseases, but the fact remains, the risk of all these diseases increases dramatically with aging.

If we could find a way to reverse the deleterious effects of aging on the body, disease rates would decline, along with the unsustainable costs associated with them.

## The Company Vision

Age Reversal Therapeutics, Inc., is focused on developing and marketing effective interventions in aging, reversing debilitating age-related processes and diseases, and repairing accumulated damage associated with the elderly.

Although a "cure" for aging seems impossible, a cure for scurvy did not occur until sailors started bringing citrus fruits during long sea voyages. The discovery of vitamin C eliminated scurvy.

Aging is more complex and multifactorial. Our goal nonetheless is to bring forth the discoveries that can lead us toward elimination of aging as we know it.

Aging is our focus and the word Cure has special meaning:

- **C** (collaboration between scientists)
- **U** (understanding the mechanisms of aging)
- **R** (research funding)
- **E** (expedite development of promising therapies)

Age Reversal Therapeutics plans to develop interventions in-house, partner with other expert groups and provide late-stage funding to companies with validated age-reversal models that can be rapidly transitioned into the clinical arena.

To achieve these goals, Age Reversal Therapeutics plans to enter into partnerships and acquire licensing and marketing rights in select intellectual property in order to advance the company's main mission.

**Age Reversal Therapeutics, Inc.**, has obtained the rights to AgingPortfolio.org, a database for age-related studies. Numerous people enter this website monthly to access scientific data relating to published cancer and aging technical data, to find out which scientists are involved with various studies, and what funding has been provided to specific types of projects.

AgingPortfolio.org, is expected to become a key to advancing the science of anti-aging research at a faster pace.

## How Conventional Funding Is Raised

- Investment Bankers/Brokers take 7-10% in fees and commissions to raise public funding.
- So \$25 million raised conventionally yields circa \$22.8 million to company.
- Age Reversal Therapeutics, Inc., is seeking to raise funds from accredited investors who have a personal interest in the technology, thereby eliminating investment banker fees and commissions.
- Virtually all capital raised will be available to fund scientists.
- Investors will be first to learn results from human age-reversal trials.

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

—Nature, Jan 21, 2015

Upon completion of a planned \$25 million offering, **Age Reversal Therapeutics, Inc.**, plans to advance funding to acquire rights specifically aimed at human age reversal. Success and future outcome predictions will be measurable with a results-ranking that will be designed to propel anti-aging science.

**Age Reversal Therapeutics, Inc.**, also plans to participate in human age-reversal research. The company's founders are in discussion with scientific groups engaged in innovative research in studies involving immunology, stem cell biology, young plasma transfer, growth factor technology, and other disciplines. These projects may have a dramatic impact in reversing the deleterious impact of senescence. These projects will all require funding, management, development and commercialization that **Age Reversal Therapeutics** intends to provide.

The ultimate goal of **Age Reversal Therapeutics, Inc.**, is to redefine aging as a lifetime of good health, without physical and mental decline.

### The Immediate Goal

Age Reversal Therapeutics has identified several areas of research where significant rejuvenating effects have occurred in the laboratory model. These kinds of technologies need to be expeditiously verified in older human populations.

The founders of Age Reversal Therapeutics are appalled by the 6,000 Americans who perish every day from degenerative disorders.

In recognition of this catastrophic loss of human life and the horrific suffering that often precedes senescent-induced death, Age Reversal Therapeutics will seek to break down bureaucratic barriers that stifle advancement of therapies that may reverse biological aging and its associated morbidity and mortality.

The company's plans are to obtain financial positions in technologies that in some cases require relatively small amounts of capital to transform the theoretical technology into probable clinical reality.

### Strategy to Fund Research

1. Researchers have promising ideas and need funds.
2. Longevity enthusiasts want to invest, but there is no efficient way.
3. Age Reversal Therapeutics, Inc., has been established to fund the scientists.

In the process of developing proprietary age reversal therapies, Age Reversal Therapeutics may earn substantial revenue. More importantly, transforming older people into younger biological beings is likely to spark a firestorm of interest across a huge swath of the economy. The optimal desired result will be a gargantuan transformation of financial and human resources that prioritize **age-reversal research** over other areas of the commercial spectrum.

An example of this transformative shift in priority is Professor Chris Toumazou, a distinguished electrical engineer whose inventions range from microchips in your cell phone to rapid-fire genomic sequencing. As it relates to how industry currently prioritizes the consumer electronics, Profesor Toumazou states:

*“...if you could apply just a fraction of that technology to healthcare, you could make major innovations.”*

To prove his point, he has developed a tiny chip that maps your DNA from saliva analogous to what now requires a large laboratory.

Age Reversal Therapeutics wants to deliver a message to commercial interests that society doesn't need better mobile phones or Band-Aid remedies for degenerative illness. The big money is likely to come from therapies that reverse pathological aging whereby the entire world becomes your customer.

Someone has to take the first step and deliver a validated age-reversal technology to the consumer marketplace. Age Reversal Therapeutics may be that company that breaks down the upper-limit barrier for healthy human longevity, and spurs others to develop even better technologies.

### Altering Course of Medical History

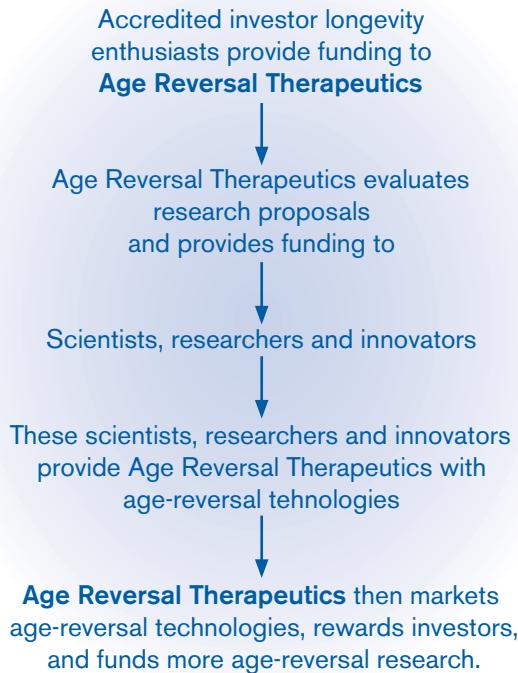
Billions of dollars are now spent developing “drugs” that usually have only limited efficacy in mitigating a specific disease.

Once systemic **age reversal** and its positive consequences are demonstrated in humans, a new paradigm of clinical medical practice is expected to emerge. This will happen as the scientific and investment community wakes up to the fact that finding meaningful treatments for aging may help minimize the most prevalent diseases impacting mankind.

Discoveries of this magnitude are expected to prompt widespread financial interest. This will likely occur as the investment community comes to the realization that the hottest area of consumer demand may be human **age reversal**, and that substantial dollars might be earned by developing even better age reversal therapies.

## THE PLAN

PROJECT TO CURE AGING



According to Ray Kurzweil's law of accelerating returns, once technical feasibility is demonstrated, the science often experiences exponential growth. This occurs as society prioritizes resource allocation in a way that rapidly improves the pioneering discovery.

In the case of Age Reversal Therapeutics, if the technology we have identified is able to prove the technical feasibility of **age reversal**, more commercial and charitable resources are expected to shift their focus to developing superior methods of preventing people from suffering and dying from **old age**.

### Who Can Invest/Contribute to the Aging Cure Project?

Age Reversal Therapeutics is seeking funding via a private placement memorandum. The company can promote itself to the world, but can only accept funds from individuals who are defined as "accredited investors" under US Federal securities laws.

If enough accredited investors provide initial funding, then this age-reversal research and business development project can move forward more rapidly.

If you are an accredited investor and have an interest in investing in Age Reversal Therapeutics, Inc., we encourage you to log on to the following website to review the offering memorandum: [www.AgingCure.com](http://www.AgingCure.com)

There is no guarantee of a financial return. If a profit is ultimately achieved, a share of profits that is not allocated to future growth and development would be available for distribution to investors in the company based on their ownership interest. Note, however, that

amounts that are invested in the company are not tax-deductible charitable donations.

We believe that if there is a great enough interest in this offering, investments in the company may help advance the scientific research in a meaningful way that could very well extend the healthy lifespans of people who undergo treatments that use the technologies Age Reversal Therapeutics hopes to commercialize.

As a personal note, I know a lot of you have a sincere interest in helping to fund this project and believe it provides an exciting investment opportunity.

It is not possible to project what kind of income might be earned by this venture that seeks to rapidly develop human age-reversal technologies. The company's primary focus will be to advance the science.

Please take a moment to read the disclaimers at the end of this article. This article should not be construed as an offer to invest. Any decisions to invest in Age Reversal Therapeutics, Inc., should solely be based on the offering memorandum that can be viewed at: [www.AgingCure.com](http://www.AgingCure.com)

To learn more about **investing** in our human age-reversal endeavor, you can call Age Reversal Therapeutics, Inc.'s Chief Operating Officer Doug Gass toll-free at **1-866-554-7108**, or email him at [Doug@AgingCure.com](mailto:Doug@AgingCure.com).

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IN THE EVENT THAT YOU ARE INTERESTED IN CONSIDERING AN INVESTMENT IN AGE REVERSAL THERAPEUTICS, INC., AND IN THE EVENT THAT WE DETERMINE TO OFFER YOU THE OPPORTUNITY TO PARTICIPATE IN SUCH INVESTMENT, YOU WILL BE PROVIDED WITH A CONFIDENTIAL PRIVATE PLACEMENT MEMORANDUM TOGETHER WITH APPROPRIATE EXHIBITS.

#### Safe Harbor Statement

This article contains statements that involve expectations, plans or intentions (such as those relating to future business or financial results) and other factors included in Age Reversal Therapeutics, Inc. Private Placement Memorandum. These statements are forward-looking and are subject to risks and uncertainties, so actual results may vary materially. You can identify these forward-looking statements by words such as "may," "should," "expect," "anticipate," "believe," "estimate," "intend," "plan" and other similar expressions. Age Reversal Therapeutics, Inc.'s actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors not within the control of the company. The company cautions readers not to place undue reliance on any such forward-looking statements, which speak only as of the date made. The company disclaims any obligation subsequently to revise any forward-looking statements to reflect events or circumstances after the date of such statements or to reflect the occurrence of anticipated or unanticipated events.

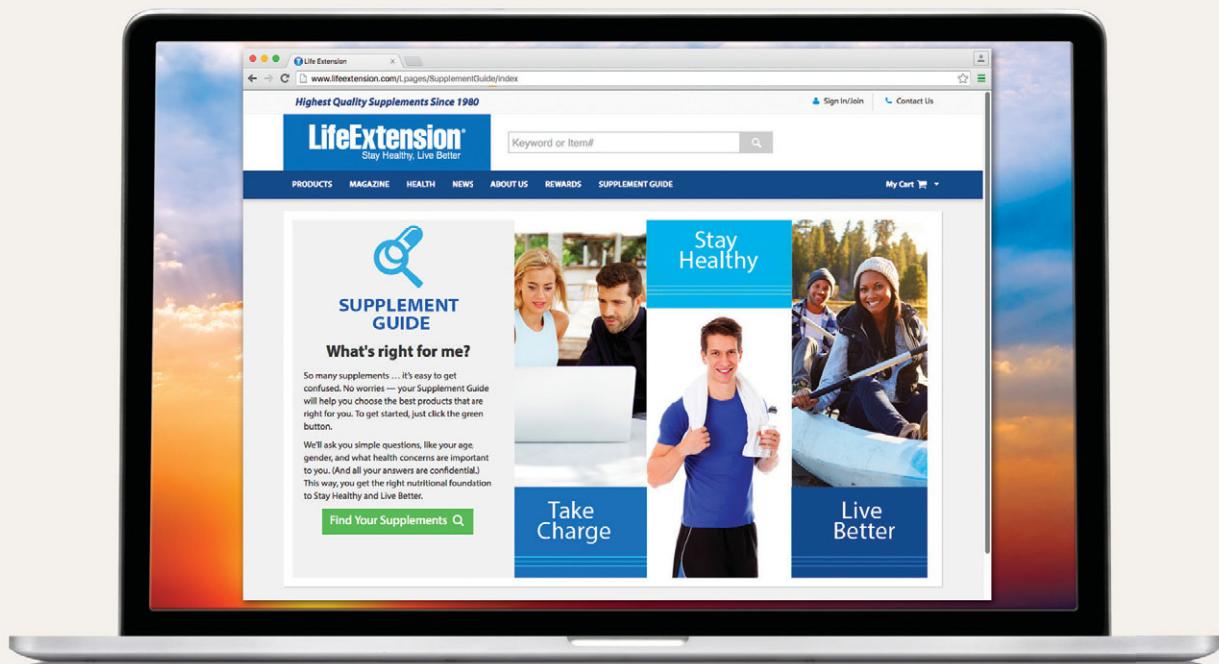
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- The promotion of healthy blood glucose and lipids already within normal range.<sup>3</sup>

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### AMPK Activator

Item #01907 • 90 vegetarian capsules

	Retail Price	Your Price
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To order

**AMPK Activator,**

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### References

1. *Age (Dordr).* 2014 Apr;36(2):641-63.
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# Natural Compounds that Remove Aging Cells

Scientists have recently been focused on a new class of drugs<sup>1</sup> aimed at eliminating aging cells from our bodies.

The goal of these experimental drugs is to eliminate poorly functioning, senile cells that clog our bodies and induce a range of degenerative illnesses.

This form of biological housekeeping frees the body from sluggish, slowly dying cells and allows it to function better with newer, healthier cells. This rejuvenation occurs naturally in our youth but declines with age.

Researchers have discovered that two natural compounds target and discard aging cells from the body, making way for the production of new, healthy cells.

## Targeting Cellular Senescence

Cellular **senescence** is an underlying contributor to accelerated aging and disease.<sup>2</sup>

Aging, or “senile,” cells stop dividing to produce new cells and lose their ability to die off, which causes them to build up in the body. These accumulated cells pour out harmful, pro-inflammatory chemicals and other signaling molecules that contribute to aging and increase the risk of most age-related diseases—including cancer.<sup>3-5</sup>

Ridding the body of these aging cells to make way for fresh new cells is an important target for slowing aging and reducing disease risk.<sup>6</sup> This is the goal of pharmaceutical researchers as they develop new drugs to purge senile cells from aging bodies.

But senescence is a double-edged sword. While it is harmful in healthy cells, senescence is *desirable* in **tumor cells** because it halts their out-of-control replication. By definition, cancer cells have become “immortal,” and continue to replicate without forming useful structures. By “turning back on” the senescence process, cancer cells can be made “mortal” again and eventually die off. In fact, deliberately triggering senescence in malignant cells represents a new approach to fighting cancer.<sup>6</sup>

The idea that we can use natural substances to *selectively target cellular senescence* has opened a promising new door in the fight against cancer and aging.<sup>6</sup>

Studies have used drugs and synthetic biological products capable of clearing away accumulated aging



cells in aging tissues. In animals, these compounds have produced dramatic results, such as delaying the onset of aging, slowing existing age-related changes, and even extending lifespans.<sup>7-9</sup> But in their current state of development, these drugs and other synthetic products are impractical, dangerous, or both, making them entirely unsuitable for use in humans to prevent either aging or cancer.

Researchers have found that two natural compounds, when combined, successfully remove aging cells from the body without harmful side effects.

## Tocotrienols + Quercetin

**Tocotrienols**, the less well-known members of the vitamin E family, are emerging as the ideal **senolytic** nutrient. Studies show that tocotrienols have dual and complementary actions:

- In **cancer cells**, tocotrienols can *stimulate* cellular senescence, shutting down their malignant potential.<sup>6</sup>
- In **healthy tissue**, tocotrienols can *slow* aging changes, promote normal cell division and specialization, and prevent cells from reaching their damaging final aging state.<sup>10-14</sup>

Studies have shown the benefits of combining **tocotrienols** with **quercetin**, a flavonol found in many fruits and vegetables. Quercetin also has dual and complementary actions with regards to aging cells. Like tocotrienols, quercetin can induce senescence and promote cell death in numerous types of cancer cells.<sup>6,15</sup> And, like tocotrienols, quercetin has the opposite effect in healthy cells, delaying senescence in younger cells and rejuvenating older cells to rid them of their abnormal, age-promoting function.<sup>1,6</sup>

Together, these two nutrients sweep the body clear of aging cells, while promoting natural termination of cancer cells.

## Combined Anti-Aging Effects

Several studies have now been performed on the **combination** of tocotrienols and quercetin in slowing, delaying, or even reversing the consequences of senescence—particularly the excessive inflammatory signals that aging cells produce.<sup>16-18</sup>

A key reason why aging cells are so closely tied to aging and disease is because they pour out substances that generate **inflammation** throughout the body.<sup>3,19</sup> In fact, aging cells are now recognized as an important source of the **chronic inflammation** that is known to produce age-related diseases.<sup>16</sup>



## What You Need to Know

Growing evidence from animal models shows that the combination of tocotrienols *plus* quercetin sharply reduces blood levels of pro-inflammatory molecules.<sup>16</sup> By suppressing these damaging factors, tocotrienols and quercetin reduce systemic inflammation in the body.<sup>17,18</sup> Reducing inflammation has the beneficial effect of reducing the overall risk of aging and disease.

### New Approach to Fighting Cancer

As we've seen, cancer cells are essentially "immortal" in part because they have lost the ability to enter senescence, and hence, to stop their out-of-control replication. That means that deliberately *inducing senescence* in cancer cells is a potentially effective method of slowing or stopping a tumor from continuing to grow—or even from developing in the first place.

Mounting evidence has demonstrated that treating **malignant** cells with tocotrienols has several anti-tumor effects, including:

- Inducing **mitochondrial damage**, which starves cancer cells of energy, and
- Inducing **apoptosis**, the normal cell death program that cancer cells lose.<sup>20-24</sup>

### Tocotrienols Combat Aging and Cancer

- The accumulation of non-replicating **aging cells** in healthy tissue promotes aging throughout the body.
- At the same time, cancer cells lose the ability to grow old and stop replicating, leaving them free to multiply endlessly, invading and destroying tissue as they go.
- Tocotrienols, members of the vitamin E family, have recently been shown to exert dualistic actions on healthy and malignant cells, stimulating natural growth and delaying senescence in otherwise healthy cells, but inducing senescence and stopping growth in malignant cells.
- These properties make tocotrienols among the most promising **senolytic** compounds that are readily available.
- Tocotrienols have also been shown to fight type II diabetes, and metabolic syndrome, while also delaying neurodegeneration.

## What Are Aging Cells?

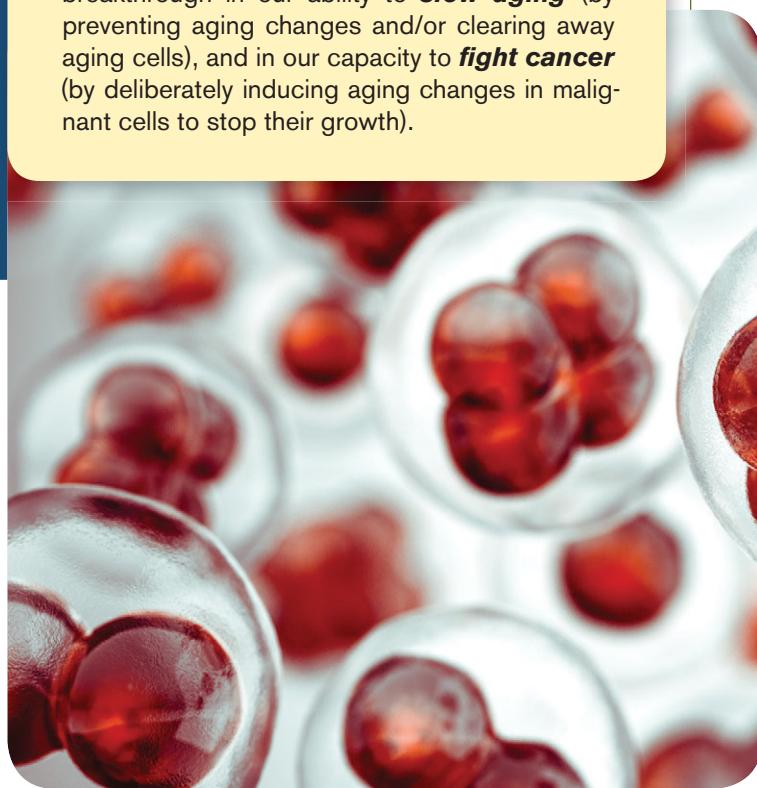
**Cellular senescence** is a natural process by which cells lose their ability to continue to divide. This process is essential for the prevention of cancer because it puts an upper limit on normal cell replications. It is also essential in tissue remodeling which occurs during development of embryos and during wound healing.<sup>9</sup> In both of these special cases, rapid cell replication must be balanced by appropriate growth arrest so that normal structures form.

But **aging cells** remain alive, surviving in tissues without contributing much to the overall health of the organism over time.<sup>9</sup> Worse, aging cells disrupt tissue structures and alter tissue function because of certain molecules that they secrete.<sup>7</sup> Chief among these deleterious signaling molecules are mediators of inflammation (cytokines and other pro-inflammatory molecules).<sup>3,19</sup>

These inflammatory changes spread to other cells in the area, hastening their own decline into an aging state, and further accelerating the overall aging of the organism.<sup>3,19</sup>

Conversely, when cells lose their ability to age, they continue to grow far past their natural limits.<sup>54</sup>

Thus, gaining precise control over the process of cellular senescence would represent a huge breakthrough in our ability to **slow aging** (by preventing aging changes and/or clearing away aging cells), and in our capacity to **fight cancer** (by deliberately inducing aging changes in malignant cells to stop their growth).



What is so remarkable is that these cell-damaging effects are not seen in healthy, non-malignant cells, which means that tocotrienols *selectively* target cancer cells.<sup>21</sup>

In addition to helping prevent the growth and development of tumors, it appears that tocotrienols could also play a role in preventing them from **spreading** to other parts of the body. Studies of cultured cells show that tocotrienols are intimately involved in the regulation of tumor cell invasion and metastases, through their intricate control of **signaling** pathways used by those cells.<sup>25</sup>

One specific member of the tocotrienol family, **gamma tocotrienol**, has its own list of actions against cancer cells. These include blocking the formation of new blood vessels (*angiogenesis*) that is required to feed fast-growing tumors, thereby starving them of their nutrient and oxygen sources,<sup>26,27</sup> and inhibiting the production of the inflammatory molecules that are associated with aging cells and that promote cancer growth.<sup>28</sup>

## Impressive Studies

Laboratory and preclinical studies suggest that tocotrienols may combat senescence-related deterioration. One *in vitro* experiment showed that tocotrienols may reverse premature aging of muscle cells by enhancing their regenerative capacity.<sup>29</sup> Another cell study found that tocotrienols reversed senescence-associated cell cycle arrest, reduced DNA damage, and restored telomerase activity in human connective tissue cells.<sup>30</sup> Several other lab studies have revealed similarly intriguing findings.<sup>6,31</sup> In aged mice, tocotrienols increased mitochondrial function in the brain,<sup>32</sup> and reduced the age-related decline in T-cell function.<sup>33</sup>

The ability of tocotrienols to slow the growth of cancer cells—as well as enhance their ability to die off naturally—has led to impressive results in animal studies of cancer.

One study showed that in mice that had been injected with human colon cancer cells, those being fed tocotrienol-rich plant oil demonstrated a significant inhibition of tumor growth.<sup>34</sup>

But what makes tocotrienols particularly unique is that while they induce senescence in cancer cells, they prevent aging changes in healthy tissues. This ability to selectively target cancer cells while protecting healthy cells was clearly seen in a study utilizing high doses of radiation.



Radiation therapy is often used in the treatment of malignant tissues, with the aim of destroying cancer cells. Unfortunately, this has the obvious side effect of producing radiation damage in healthy tissue as well, which can lead to premature cell senescence, dysfunction, and death—particularly in tissues with normally rapid cell turnover, such as the intestine. It can also lead to potentially life-threatening side effects and considerable misery.

But something remarkable happened when mice were supplemented with tocotrienols (human equivalent dose of **1 gram**) prior to whole-body radiation. Normal intestinal cells sharply increased their expression of life-preserving genes that prevent cell death by apoptosis. In other words, while tocotrienols are **senescence-inducing** in cancer cells, this experiment showed that tocotrienol supplementation **prevented** radiation-induced aging changes in healthy tissue.<sup>35</sup>

Several trials have shown benefits with daily doses of roughly **40–400 mg** of tocotrienols in relation to lipid metabolism,<sup>36–44</sup> brain health,<sup>42</sup> liver health,<sup>43,44</sup> immune system function,<sup>45</sup> and prevention of damage to DNA.<sup>46</sup>



### Tocotrienols: Nature's Original Anti-Aging Compounds

Tocotrienols are members of the vitamin E family of essential nutrients, naturally found in barley, wheat germ, and certain types of grains and nuts.<sup>55</sup> There are four tocotrienols, just as there are four tocopherols, which are the more familiar form of vitamin E, and are similarly labeled alpha, beta, gamma, and delta.<sup>55–57</sup> Early research, however, focused almost exclusively on the tocopherol class, and not the tocotrienol class. In a review of all publications on vitamin E, only about **3%** have examined the utility of tocotrienols.<sup>56</sup>

But tocotrienols are now recognized to be an important part of the spectrum of the eight different forms of vitamin E, particularly for their anti-inflammatory, cholesterol-lowering, and radiation-protecting properties.<sup>56,57</sup>

Now, tocotrienols are being shown to have a still more fundamental role in human health and aging, through their abilities to modulate cellular senescence. This finding may in fact represent tocotrienols' most fundamental natural purpose. One recent study by botanists shows that tocotrienols in the outer layer of seeds reduce metabolic activity in the seed during stressful external conditions.<sup>58</sup> Those conditions resemble the accumulated stress seen in aging, and, if not prevented in the developing plant embryo, lead to death of the seed.

Thus, tocotrienols appear to be one of nature's anti-aging compounds. We are now learning just how applicable their properties are in human aging as well.

## Summary

Tocotrienols, the less well-known members of the vitamin E family, are of great interest to researchers. Recent studies show that tocotrienols have the ability to slow cellular aging in normal tissues, while reducing inflammation. At the same time, in what seems to be a remarkable fashion, tocotrienols may accelerate the destruction of cancer cells.

Tocotrienols, particularly in combination with quercetin, appear capable of removing many aging cells.

Tocotrienols have other anti-aging effects that are proving beneficial in our fight against diabetes, metabolic syndrome, and neuro-degeneration.<sup>42,47-53</sup>

If you have any questions on the scientific content of this article, please call a Life Extension®

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## Practical Suggestions

**Quercetin** is a low-cost dietary supplement that has health-promoting properties in the heart, brain, and other systems.

Doses of **150 mg** per day of **quercetin** have demonstrated benefits and might be a good maintenance dose.

For those who have not taken quercetin before, a prudent course might be to take around **500-800 mg** per day of **quercetin** for three months to help purge accumulated senile cells and then stay with a maintenance dose of **150 mg** each day thereafter.

For **tocotrienols**, use a palm-oil derived source and take around **150 mg** per day for the first three months with a maintenance dose after that of about **100 mg** each day thereafter.

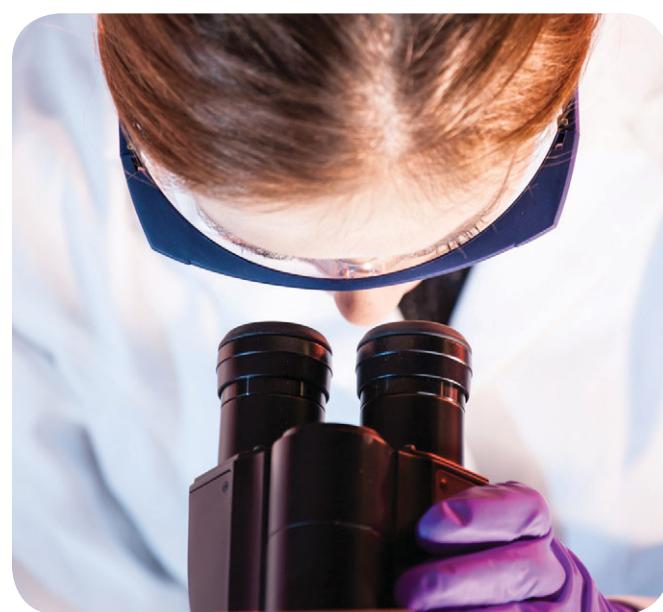
As of the time of this article, the anti-senescence properties of these ingredients have only been demonstrated in cell studies and/or animal models. Research in humans is needed to establish an ideal dosage regimen for these ingredients to combat cellular senescence in humans.

**Note:** If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking tocotrienols or high-dose quercetin.

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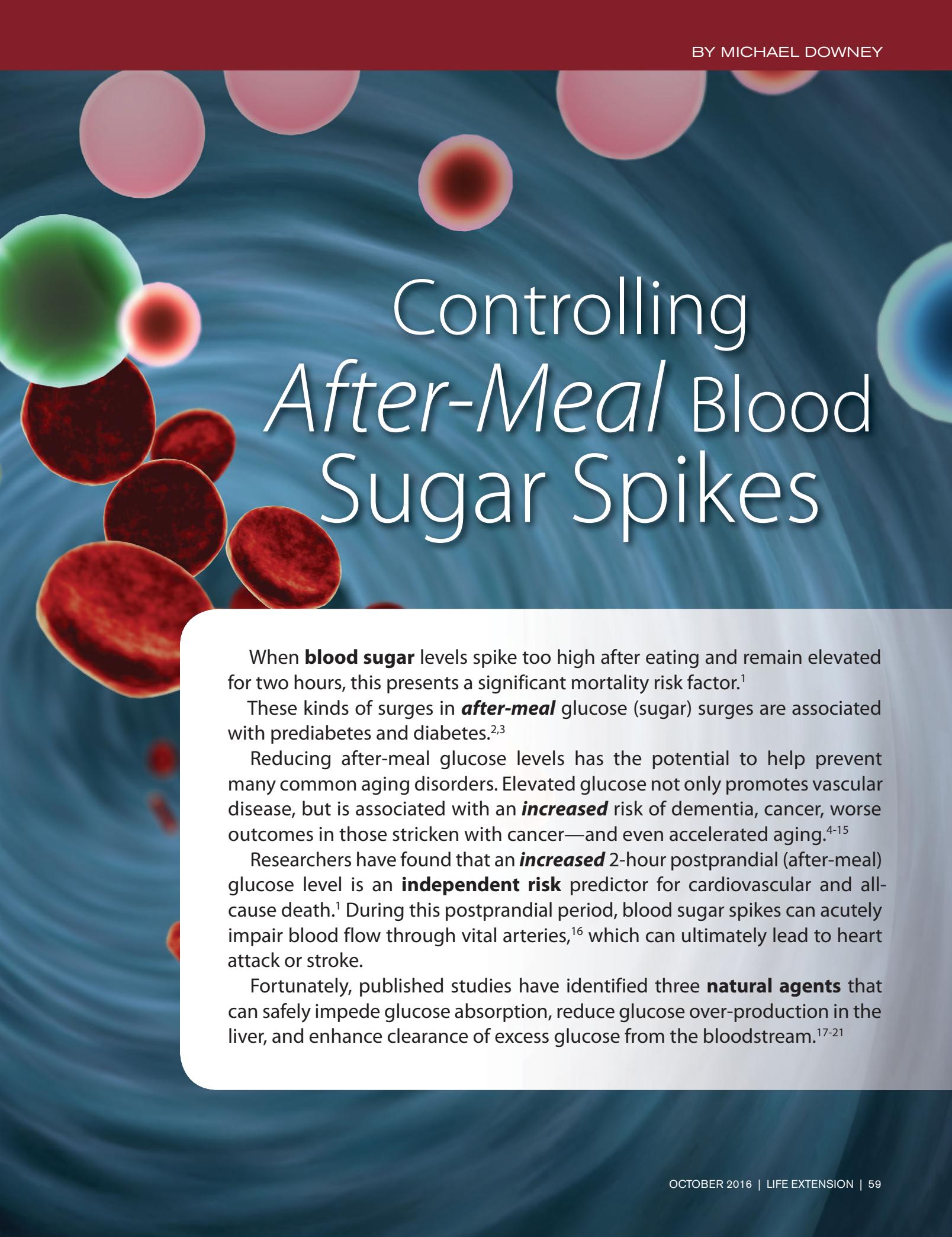
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CONTROLLING AFTER-MEAL BLOOD SUGAR SPIKES





# Controlling After-Meal Blood Sugar Spikes

When **blood sugar** levels spike too high after eating and remain elevated for two hours, this presents a significant mortality risk factor.<sup>1</sup>

These kinds of surges in **after-meal** glucose (sugar) surges are associated with prediabetes and diabetes.<sup>2,3</sup>

Reducing after-meal glucose levels has the potential to help prevent many common aging disorders. Elevated glucose not only promotes vascular disease, but is associated with an **increased** risk of dementia, cancer, worse outcomes in those stricken with cancer—and even accelerated aging.<sup>4-15</sup>

Researchers have found that an **increased** 2-hour postprandial (after-meal) glucose level is an **independent risk** predictor for cardiovascular and all-cause death.<sup>1</sup> During this postprandial period, blood sugar spikes can acutely impair blood flow through vital arteries,<sup>16</sup> which can ultimately lead to heart attack or stroke.

Fortunately, published studies have identified three **natural agents** that can safely impede glucose absorption, reduce glucose over-production in the liver, and enhance clearance of excess glucose from the bloodstream.<sup>17-21</sup>

## Glucose Spikes Boost Heart Attack Risk

**After-meal** surges in blood sugar directly impair the arteries' ability to respond to the heart's demand for an immediate increase in blood flow.<sup>22,23</sup>

This is one reason that **diabetics** have such a high prevalence of cardiovascular disease.<sup>24</sup> But even if you don't have diabetes, a "normal" fasting blood sugar measurement doesn't protect you against the harmful effects of an **after-meal** glucose spike.<sup>22,23,25,26</sup>

People who have normal fasting glucose, but fail a measurement of blood sugar two hours *after* a meal are diagnosed with "**impaired glucose tolerance**." Their risk for cardiovascular disease rises sharply, which correlates with the inability of their arteries to dilate appropriately.<sup>22,27</sup>

In one study, people with impaired glucose tolerance showed a **34%** higher risk of dying from any form of cardiovascular disease, with a specific **28%** greater risk of dying from coronary heart disease.<sup>25</sup>

In other findings, diabetic men with the highest after-lunch blood sugar levels were more than **twice** as likely to have a cardiovascular event, compared with those with lower levels. In women, that figure rose to a **5.5-fold** increase.<sup>28</sup>

Another study found that in nondiabetic people with metabolic syndrome, every increase in **after-meal** blood sugar of **18 mg/dL** raised the risk of cardiovascular death by **26%.**<sup>1</sup>

## Blood Sugar Damages Blood Flow Response

Glucose has a powerful oxidizing effect on the arterial lining—the endothelium—that governs arterial blood flow.<sup>22</sup> Oxidation products interfere with the production and bioavailability of **nitric oxide**, the signaling molecule that triggers arteries to dilate or constrict in response to changes in the heart's demand for blood flow.<sup>29-31</sup>

Worse, oxidation speeds the destruction of existing nitric oxide molecules, further impairing the endothelium's ability to regulate blood flow in major arteries, including the coronaries.<sup>32</sup>

Together, these effects mean that a surge in blood sugar rapidly impairs the arteries' ability to respond to the heart muscle's immediate needs for more blood flow.<sup>29</sup>

Worse, glucose surges raise the levels of "adhesion molecules" that increase the risk for arterial disease.<sup>33</sup>

Clearly, failure to limit after-meal glucose spikes can starve the heart of precious blood flow. This dramatically increases cardiovascular disease risk and death from cardiovascular disease.

## High Blood Sugar's Cancer and Brain Shrinkage Effects

A wealth of published research links both high-normal blood **glucose** and elevated **insulin** to increased risk of **breast cancer**.<sup>34-40</sup> Glucose provides fuel for rapidly dividing cancer cells, while insulin promotes tumor growth through multiple pathways.<sup>34,41</sup>

In one 19-year study, researchers found that participants with impaired fasting glucose of **100 mg/dL** or greater had a **49%** greater risk of cancer death. Those with after-meal glucose above **199 mg/dL** had **52%** increased cancer death risk. The undeniable conclusion is that elevated glucose levels markedly increase an individual's risk of dying from cancer.<sup>42</sup>

Additional to this increased risk of cancer and cancer death, glucose levels deemed "high-normal" result in reduced **brain** volume. In **2012**, researchers published findings on 249 volunteers in their early 60s demonstrating that blood glucose in the high-normal range resulted in significant **brain shrinkage**. This shrinkage occurred in regions of the brain—the hippocampus and amygdala—involved in memory and other critical functions.<sup>43</sup>

These "high" blood sugar levels were below **110 mg/dL**, the World Health Organization's threshold for pre-diabetes. These levels may account for a **6% to 10% decrease** in hippocampus and amygdala brain volume.<sup>43</sup>

Said differently, glucose levels that mainstream medicine accepts as "normal" are in reality quite hazardous.





## Broad-Spectrum Support for Blood Sugar

- Sugar consumption and glucose spikes are associated with epidemic obesity and diabetes levels—but are also associated with rising cardiovascular disease and mortality.<sup>68</sup>
- Mainstream medicine ignores the strong link between blood sugar spikes and cardiovascular risk.
- Acting together, extracts of mulberry leaf, sorghum, and phloridzin can control blood sugar levels, helping to prevent not just metabolic disorders and obesity, but also brain shrinkage, cardiovascular disease, and mortality.

In light of abundant evidence linking high normal blood sugar levels with elevated risks of cardiovascular death, cancer, cancer death, and brain shrinkage, preventive steps to reduce glucose levels are critical.<sup>44</sup> Those who follow strict **calorie restriction** diets avoid problems associated with elevated glucose and insulin. For the rest of us, there are steps we can take before meals to impede deadly glucose surges.

The remainder of this article describes three natural ingredients that function by reducing the amount of extra sugar produced in the liver, inhibiting sugar absorption, and facilitating transport of sugar out of the bloodstream into energy-producing cells.

### Mulberry Leaf Extract

**Mulberry leaf extract**—long used in traditional Chinese medicine to treat a variety of problems, including those involving blood sugar control—strongly supports stable blood glucose levels. And it does so by utilizing several effective mechanisms to inhibit the production and absorption of excess blood glucose levels.

A study reported in the *Journal of Medicinal Food* demonstrated the ability of **mulberry leaf** extract to regulate glucose metabolism. Most people don't realize that the level of glucose in one's blood is not solely caused by the amount of ingested sugars and starches.

Since humans die if glucose levels drop too low, the body has evolved compensatory mechanisms to ensure a steady supply of glucose to the bloodstream, even in times of famine. One of these involves the synthesis of glucose in the liver via a process called **gluconeogenesis**. To give you an idea about how efficient this process is, after 14 hours of fasting, around **47%** of the blood's glucose comes from its synthesis in the liver (gluconeogenesis).<sup>45</sup>

**Mulberry leaf** extract inhibits key molecules that promote **gluconeogenesis**, thus helping to control the amount of glucose that is excessively pumped out of the liver.<sup>21</sup> Inhibiting gluconeogenesis can significantly lower the amount of excess glucose circulating in the bloodstream.<sup>45</sup>



Mulberry has a secondary property that aids in **after-meal** glucose control. A component in **mulberry leaf extract** known as **DNJ** (1-deoxynojirimycin) binds itself to the **alpha-glucosidase** enzyme, which converts starches into glucose. This binding inhibits the processing of starch so that more of it passes through the intestine instead of being **absorbed** into the blood as sugar.<sup>46-48</sup> This mulberry leaf extract mechanism is similar to the way the drug *acarbose* controls blood sugar.

In a clinical study, 24 people with type II diabetes received either **mulberry leaf extract** or the antidiabetic drug **glyburide**, which works by boosting pancreatic production of insulin. Mulberry leaf extract lowered fasting blood sugar by **27%**, from **153 mg/dL** to **111 mg/dL**, while fasting blood sugar in those taking glyburide decreased only **8%**, from **154 mg/dL** to **142 mg/dL**. Also, patients taking mulberry leaf extract saw their **hemoglobin A1c** blood level—a long-term measure of blood sugar levels—fall by **10%**, while those on glyburide showed no decrease.<sup>49</sup>

The same study demonstrated the more direct cardiovascular protection that mulberry leaf extract provides. Volunteers given mulberry leaf extract showed a **12% decrease in total cholesterol** and a **16% decrease in triglycerides**, while the glyburide group experienced no real improvement. Mulberry leaf extract group also saw their protective **HDL** levels increase by a significant **18%**, compared to just **3%** in the glyburide group.<sup>49</sup>

A similar study involved individuals with very high triglycerides, averaging **312 mg/dL**, which is more than double the upper limit of the normal

range. Patients took **12 mg** of **DNJ-rich mulberry leaf extract** three times daily, before meals. After 12 weeks, mean triglyceride levels had fallen to **252 mg/dL**, reduced but still considered dangerous. In **20%** of subjects, however, triglycerides fell to under **150 mg/dL**—a reduction greater than **50%**. There was a significant lowering in small or very low density LDL-cholesterol particles, which are especially dangerous because they are readily oxidized and are strongly associated with atherosclerosis.<sup>50</sup>

Other research demonstrates that mulberry leaf extract enhances insulin sensitivity, shuttling sugar out of the bloodstream and into cells. It accomplishes this by boosting the number of cellular transporters called **GLUT4** and by facilitating their movement to the surface of the cell membrane. Mulberry leaf extract was shown to increase glucose uptake in cells by as much as **54%.**<sup>51</sup> *Metformin* also works, in part, by increasing **GLUT4.**<sup>52</sup>

In an animal study, mulberry leaf was also shown to increase levels of the hormone *adiponectin*, which regulates glucose levels, lowers fat accumulation, and reduces damaging inflammatory mediators.<sup>53</sup>

Mulberry leaf extract clearly improves both metabolic and cardiovascular markers without boosting insulin levels, in contrast to the potentially risk-laden, insulin-boosting drug *glyburide*.

## Sorghum

Scientists have found that sorghum—a grass plant commonly consumed in Egypt about 4,000 years ago and now cultivated in Africa and Asia<sup>54</sup>—powerfully reduces the dangerous glucose spikes that follow a meal.

A controlled human experiment published in *Food & Function* in **2014** found that mean glucose responses were substantially reduced after consuming grain sorghum, particularly at 45-120 minutes after a meal. Mean insulin responses were also reduced at 15-90 minute intervals compared to controls. The authors concluded that, “*Results show whole grain sorghum is a good functional food ingredient for controlling glucose and insulin levels in healthy humans.*”<sup>55</sup>

In **2015**, other researchers found that sorghum has a low glycemic index and low glycemic load and that “...*sorghum-based foods may help in decreasing post-prandial blood glucose levels.*”<sup>56</sup>

In an animal study involving a high-fat diet, sorghum reduced blood lipid levels, body fat, blood sugar levels, and insulin levels—while controls showed no notable improvement.<sup>57</sup> Other research demonstrated that a sorghum compound reduces hemoglobin A1c.<sup>58,59</sup>

Mechanisms for these potent glucose benefits appear to be multiple.

First, sorghum inhibits **gluconeogenesis** (similar to metformin) and improves insulin sensitivity.<sup>57,60</sup> Second, it inhibits the ***alpha-amylase*** enzymes that break down starch into sugar for absorption into the bloodstream.<sup>18,61</sup> And third, sorghum activates the ***PPAR-gamma receptor*** that regulates glucose metabolism.<sup>57</sup>

### Phloridzin

Compelling research has determined that **phloridzin**—a polyphenol concentrated in the skin of apples<sup>62</sup>—can combat sudden rises in blood sugar, complementing the actions of both mulberry leaf extract and sorghum extracts.<sup>19,20,63,64</sup>

In 2015, the *Journal of the Science of Food and Agriculture* published a powerful human study in which healthy volunteers were given phloridzin, followed by the oral glucose tolerance test. The **glucose response** 15 to 30 minutes later was reduced by approximately **two-fold**. The study's conclusions read that phloridzin "...can be used as a health-promoting natural product for the reduction of postprandial glycaemia..."<sup>65</sup>

Just months earlier, a study conducted on both humans and mice had shown that **phloridzin** substantially decreased intestinal glucose absorption and reduced both blood glucose and plasma insulin levels.<sup>66</sup>

In 2016, scientists gave phloridzin to mice that had been fed a high-fat diet that induced obesity. Phloridzin was shown to improve measurements of obesity, inflammation, and hyperglycemia. The study also found that phloridzin decreased plasma glucose and insulin levels and was beneficial in preventing insulin resistance.<sup>67</sup>



One of the mechanisms behind these striking effects includes phloridzin's capacity to inhibit sugar carrier molecules, known as SGLT1 and SGLT2. By blocking SGLT1, phloridzin inhibits glucose absorption from the intestine, while blocking SGLT2 inhibits the return of glucose to the blood from the urine in the kidneys.<sup>64</sup> As a result, sugar passes out of the body without being absorbed.<sup>18</sup>

Animal data show that phloridzin causes significant reductions in **after-meal** blood sugar levels, along with a reduction in excessive drinking and urination that are typically seen in diabetes.<sup>64</sup>

In experimental models of diabetes, phloridzin has demonstrated benefits beyond reducing after-meal glucose spikes and glucose levels. It was shown to restore insulin sensitivity in cells and in living tissues<sup>19,20,63,64</sup> and to decrease food consumption and body weight in diabetic animals.<sup>64</sup>

Together, these three compounds deliver a web of overlapping and complementary mechanisms that inhibit the blood sugar spikes that can lead to metabolic disorders, brain shrinkage, cancer and cardiovascular disease.

### Summary

A tripling of worldwide sugar consumption over the last 50 years is associated with the epidemic obesity levels and epidemic incidence of diabetes. The expected result is increased cardiovascular disease and early mortality.<sup>68</sup>

Mainstream medicine generally misses the fact that **after-meal** blood sugar spikes are strongly linked with increased cardiovascular risk.

As described in this article, abundant evidence demonstrates that three natural compounds—extracts of **mulberry leaf**, **sorghum**, and **phloridzin**—have the capacity to impede **glucose spikes** via multiple mechanisms, thus helping to prevent not just metabolic disorders, but also brain shrinkage and cancer. ●



## Sugar-Slapping Nutrients And The Drugs That Imitate Them

Nutrient	Mechanism Of Action	Beneficial Result	Drug(s) With Similar Mechanism	Potential Drug Side Effects
SORGHUM	Reduces starch breakdown to sugar in intestine by inhibiting amylase and alpha-glucosidase <sup>18,61</sup>	Prevents glucose from reaching blood-stream	Acarbose <sup>69</sup>	Gastrointestinal symptoms (pain, gas, bloating) <sup>70</sup>
	Activates PPAR-gamma <sup>57</sup>	Increases insulin sensitivity, does not boost insulin secretion <sup>57</sup>	Thiazolidinediones ("glitazones") <sup>57</sup>	Fluid retention (edema), cardiovascular risk (rosiglitazone), bladder cancer (pioglitazone) <sup>71,72</sup>
	Reduces new sugar manufacture in liver (inhibits hepatic gluconeogenesis) <sup>60</sup>	Reduces contribution of newly-made sugar to fasting blood glucose <sup>60</sup>	Metformin <sup>52</sup>	Metformin should be avoided by those with severe end-organ disease (e.g. heart failure, kidney failure). <sup>73</sup>  Metformin decreases vitamin B12 and folate levels, causing an increase in homocysteine level. <sup>74,75</sup> Research also indicates that supplementing with folate and vitamin B12 can protect against homocysteine increase caused by metformin. <sup>76</sup> Metformin may decrease testosterone level in some individuals; <sup>77,78</sup> aging males should know their testosterone blood levels and take steps to restore testosterone to youthful ranges. Metformin may cause mild gastrointestinal upset (nausea, flatulence) in some individuals <sup>79</sup> which can be minimized by consuming frequent, small, protein-rich meals with limited carbohydrate content.
MULBERRY LEAF EXTRACT, RICH IN DNJ	Stimulates GLUT4 transport of glucose out of blood and into working cells <sup>51</sup>	Reduces blood sugar and improves insulin sensitivity <sup>51</sup>	Metformin <sup>52</sup>	
	Reduces new sugar manufacture in liver (inhibiting hepatic gluconeogenesis) without increasing insulin secretion <sup>21</sup>	Reduces contribution of newly-made sugar to fasting blood glucose <sup>21</sup>	Metformin <sup>52</sup>	
	DNJ mimics glucose and binds to alpha-glucosidase, blocking breakdown of starch and sugars <sup>50</sup>	Prevents glucose from reaching blood-stream <sup>50</sup>	Acarbose <sup>69</sup>	Gastrointestinal symptoms (pain, gas, bloating) <sup>70</sup>
PHLORIDZIN	Primarily inhibits glucose absorption (SGLT1; intestine) and to a lesser extent re-absorption (SGLT2; kidney) <sup>64</sup>	SGLT1 inhibition traps sugar in intestine, SGLT2 inhibition prevents sugar re-absorption from urine <sup>64</sup>	Canagliflozin (primarily inhibits SGLT2 in the kidney) <sup>80</sup>	Urinary tract infection <sup>80</sup>

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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# "TURN ON" Your Body's Longevity Genes!

## Optimized Resveratrol with Nicotinamide Riboside for Cellular Vitality

In aging individuals, the accumulation of **nonfunctional cells** parallels a decline in natural immune function, which is linked to problematic outcomes in normal aging.<sup>1</sup>

Scientists have found that the flavonol **quercetin** supports the body's normal ability to perform "cellular housekeeping" to selectively break down these nonfunctional cells—promoting their removal.<sup>2</sup>

**Optimized Resveratrol with Nicotinamide Riboside** provides **150 mg of quercetin.**

**Quercetin** supports cell-regulating systems that produce beneficial apoptosis (cell death) in aged, dysfunctional cells.<sup>2</sup> It also supports immune response by inhibiting inflammation-causing substances.<sup>3</sup>

**Optimized Resveratrol with Nicotinamide Riboside** is a complex of key *cellular support* ingredients formulated to promote the body's prolongevity mechanisms:

- **Resveratrol** favorably alters genes that help slow the aging process and triggers some of the same beneficial youthful gene expression activated by calorie restriction.<sup>5</sup>
- **Quercetin** enhances the longevity-supporting enzyme SIRT1, which is also activated by both resveratrol<sup>4</sup> and nicotinamide riboside.<sup>6</sup>
- **NIAGEN® nicotinamide riboside** supports mitochondrial health and promotes longevity pathways.<sup>5</sup>
- **Pterostilbene** and **fisetin**, specific compounds found in berries, work together with resveratrol to "turn on" the body's own longevity genes.<sup>7,8</sup>

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

<b>Trans-Resveratrol</b> (most biologically active form)	<b>250 mg</b>
<b>Quercetin</b>	<b>150 mg</b>
<b>NIAGEN® Nicotinamide Riboside</b>	<b>100 mg</b>
<b>Red grape (fruit) and wild blueberry (fruit) blend</b>	<b>40 mg</b>
<b>Fisetin</b>	<b>10 mg</b>
<b>Trans-Pterostilbene</b>	<b>0.5 mg</b>

### Optimized Resveratrol with Nicotinamide Riboside

Item #02031 • 30 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$42	<b>\$31.50</b>
4 bottles		<b>\$27 each</b>



### For Those Who Want Higher Dose Quercetin

**Optimized Resveratrol with Nicotinamide Ribosome** (described above) provides an ideal daily maintenance dose (**150 mg**) of quercetin. (Item #02031)

For those seeking to sweep away excess accumulated senescent cells, additional potencies of quercetin may be considered for a two- to four-month period. **Optimized Quercetin** provides **250 mg** of a quercetin food blend from apples, onion, and buckwheat. One to two capsules of **Optimized Quercetin** a day may be taken in addition to the Optimized Resveratrol formula over a two- to four-month month period.

### Optimized Quercetin

Item #01309 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$22	<b>\$16.50</b>
4 bottle		<b>\$15 each</b>



To order **Optimized Resveratrol with Nicotinamide Riboside** or **Optimized Quercetin**, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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# REPORT

## Diabetes and Cardiovascular Disease

CONFERENCES

# Recent Diabetes and Cardiovascular Disease

## CONFERENCES

The lifetime risk of type II diabetes is now estimated to be about **40%** for an American.<sup>1</sup>

Type II diabetes (formerly called adult-onset diabetes) accounts for **95%** of diabetes cases, distinct from type I (previously called juvenile-onset diabetes), which accounts for **5%** of cases.<sup>2</sup> Type II diabetes is usually caused by abdominal obesity, physical inactivity, or excess sugar consumption.<sup>3-5</sup>

The fact that high blood sugar may be more damaging to blood vessels than high blood lipids might be indicated by the fact that diabetes greatly increases risk of cardiovascular disease. Middle-aged diabetic men have **triple** the rate of cardiovascular deaths as non-diabetic men in the same age-group.<sup>6</sup> About **80%** of diabetics die of heart attack or stroke, while a substantial number of the remainder die of kidney failure.<sup>7</sup> Blood vessel damage in diabetes includes damage to vessels in the kidneys.<sup>8,9</sup>

In healthy persons, elevated blood glucose from a meal causes pancreas cells to secrete insulin. Insulin causes muscle cells to absorb glucose, fat cells to store fat, and liver cells to store rather than produce glucose.

In a prediabetic condition (**metabolic syndrome**), the responsiveness to insulin by muscle, liver, fat, and other cells diminishes (**insulin resistance**), although not to the same degree in every tissue.<sup>10</sup> Even though about **80%** of obese persons have insulin resistance and symptoms of metabolic syndrome, nearly **40%** of normal-weight people also have metabolic syndrome symptoms.<sup>11</sup>

Due to the close connection between diabetes and cardiovascular disease, both the **World Congress on Insulin Resistance, Diabetes & Cardiovascular Disease** held in Los Angeles and the **Cardiovascular Disease Prevention Symposium** held in Miami are very similar. The Miami conference is organized by Michael Ozner, MD, who is a member of the **Life Extension®** Scientific Advisory Board.

Both annual conferences are attended by physicians concerned with diabetes and cardiovascular disease. I have previously reported on these conferences in ***Life Extension Magazine®*** (July 2015 and July 2014). This report will provide updates based on the most recent conferences which were held in November 2015 and February 2016.

## Can Food Be Addictive?

Nicole Avena, PhD, a research neuroscientist at New York Obesity Research Center, Columbia University, studies food addiction. Although food is required for survival, some people overconsume food, displaying symptoms comparable to what is seen with drug addiction, including compulsive bingeing, tolerance, withdrawal, and cross-sensitization to other addictive substances. Food is comparable to alcohol insofar as only a minority of consumers exhibit addictive symptoms.

Dr. Avena has observed that people do not binge on broccoli, but are most likely to binge on sugar or, to a lesser degree, on fat (especially when combined with sugar).<sup>12</sup> Dr. Avena has shown that sugar-addicted rats demonstrate activation of the same regions of the brain as are activated by drug addiction.<sup>13</sup> Sugar-addicted rats deprived of sugar will increase their intake of alcohol, thereby displaying cross-sensitization.<sup>14</sup>

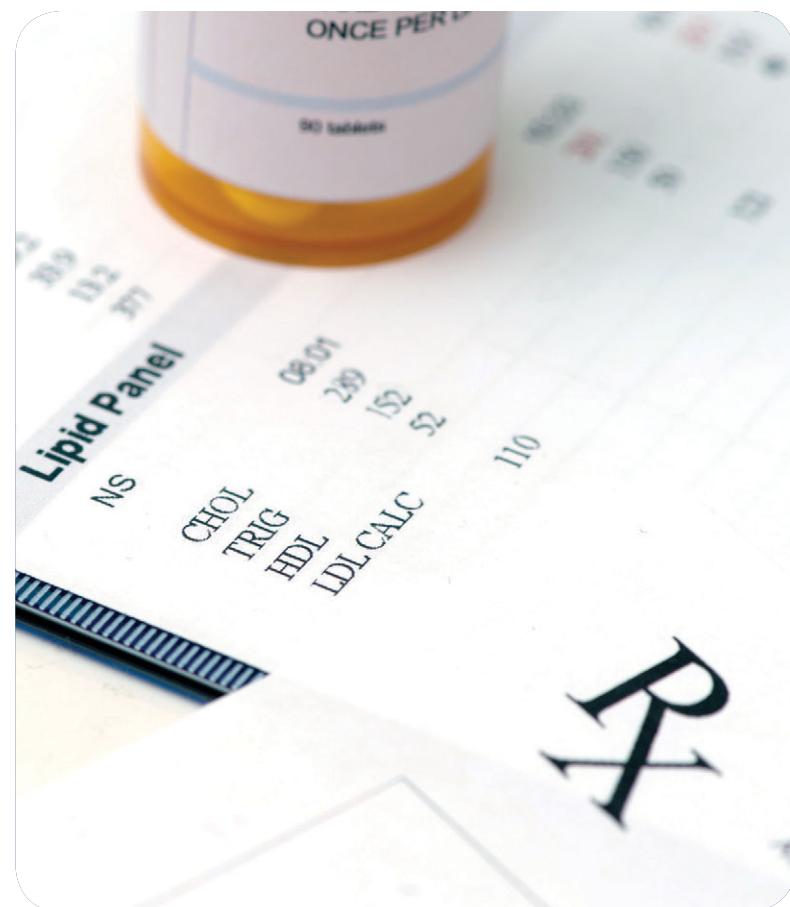
Dr. Avena suggests that the sugar fructose contributes to obesity more than glucose because glucose (from starches and sucrose) releases insulin, which reduces appetite,<sup>15</sup> whereas fructose does not cause insulin release.<sup>16</sup> A survey of 175 countries showed that increased availability of sugar is associated with increased diabetes, an association not found with any other food type.<sup>11</sup>



## Is Sitting a Health Hazard?

Ralph La Forge, MSc, CLS, a clinical lipid specialist at Duke Lipid Clinic, Durham, North Carolina, is concerned with the health hazards of sitting. More than half of the average person's waking hours are spent sitting.<sup>17</sup> Spending much time sitting has been associated with greater risk of dying from cancer and cardiovascular disease.<sup>18</sup>

The greatest health hazard is seen for those who are the least active.<sup>19</sup> Obese and overweight individuals who were induced to walk for 2 minutes every 20 minutes showed reduced blood glucose and insulin.<sup>20</sup> But a study of healthy individuals who get moderate exercise showed no mortality risk associated with the amount of time spent sitting.<sup>21</sup> Treadmill workplace desks have been shown to reduce blood glucose and raise blood HDL, but standing desks did not show this benefit.<sup>22</sup> Treadmill desks reduce work performance, whereas desks where it is possible to cycle while sitting do not interfere with work.<sup>23</sup>



## Types of LDL Cholesterol

Ronald Krauss, MD, director of Atherosclerosis Research at California's Children's Hospital Oakland Research Institute, is concerned about the fact that low blood LDL cholesterol often is not a good predictor of low risk for coronary heart disease because the size of LDL particles is more important than the level of LDL cholesterol.



Persons with the highest concentration of small, dense LDL particles have triple the incidence of metabolic syndrome,<sup>24</sup> and are more insulin resistant than persons with large, buoyant LDL.<sup>25</sup> Small, dense LDL is not only more easily oxidized than the larger particles, it is more easily glycated (modified by sugar).

Even in healthy persons, the amount of glycated LDL is several times larger than the amount of oxidized LDL.<sup>26</sup> Dr. Krauss has shown that diets low in fat and high in carbohydrate increase small, dense LDL in proportion to the amount of carbohydrate.<sup>27</sup> Aside from dietary influences, Dr. Krauss has established that many people do not benefit from LDL-lowering statin drugs because of inherited genetic factors.<sup>28,29</sup>

## Blood Lipids in Diabetes

James Underberg, MD, an internist at NYU Medical Center, New York City, is an expert in metabolic abnormalities most often found in diabetics (diabetic dyslipidemia), which are characterized by high blood triglycerides and lipoprotein composition that promotes atherosclerosis.<sup>30</sup> The amount of triglycerides divided by the amount of HDL cholesterol is an excellent predictor of insulin resistance and cardiovascular disease risk when the ratio is high.<sup>31</sup> A high carbohydrate diet has been shown to increase this ratio, indicating increased risk.<sup>32</sup>

Atherosclerosis is most strongly predicted by small, dense LDL, low HDL, and remnant cholesterol particles.<sup>33</sup> **Remnant cholesterol** is calculated as non-fasting total cholesterol minus HDL cholesterol, minus LDL cholesterol.<sup>34,35</sup> Remnant cholesterol is associated with chronic inflammation, whereas LDL cholesterol is not.<sup>36</sup> Remnant cholesterol induces endothelial dysfunction through oxidative stress.<sup>37</sup> According to one study, high remnant cholesterol is more predictive of myocardial infarction (heart attack) than any other lipid particle.<sup>38</sup>



Underberg

## Benefits of HDL Cholesterol

Eliot Brinton, MD, associate professor at University of Utah School of Medicine, Salt Lake City, spoke about the role of HDL cholesterol in protecting against cardiovascular disease. Unlike LDL cholesterol, which can contribute to atherosclerosis by its deposition in the walls of arteries, HDL can prevent atherosclerosis by removing cholesterol from arteries.<sup>39</sup> HDL can also help to prevent or to correct **endothelial dysfunction** (the reduced ability

of blood vessels to dilate), another condition that contributes to atherosclerosis.<sup>40</sup> A third means by which HDL can protect against atherosclerosis is by its anti-inflammatory properties.<sup>40</sup>

Approximately **10%** of patients given statin drugs to lower LDL cholesterol cannot tolerate those drugs. These patients can benefit from the increased HDL resulting from taking nicotinic acid (niacin, vitamin B3).<sup>41</sup> But no benefit is seen for most patients attempting to combine statins with nicotinic acid.<sup>42</sup>



Brinton

## Insulin Secretion and Insulin Resistance

Ralph DeFronzo, MD, professor of medicine at the University of Texas Science Center, San Antonio, is a renowned diabetes expert who edited *International Textbook of Diabetes Mellitus*.

In the 1980s, Dr. DeFronzo showed that although muscle is the most important tissue associated with insulin resistance (resistance to glucose uptake induced by insulin),<sup>43</sup> insulin resistance of the liver prevents the liver from reducing its glucose production.<sup>44</sup> More of the glucose produced by the liver comes from protein than from glucose that has been stored in the liver as glycogen.<sup>45</sup> According to Dr. DeFronzo, obese type II diabetics tend to be insulin resistant in both their liver and muscle, whereas lean type II diabetics have defective insulin secretion in response to blood glucose.<sup>46</sup> But as type II diabetes progresses, both lean and obese diabetics exhibit increasingly defective insulin secretion as well as defective insulin sensitivity.<sup>46</sup>

Dr. DeFronzo and his associates have shown that insulin sensitivity and glucose utilization decrease in proportion to increasing amounts of free fatty acids in the blood.<sup>47</sup> But the ability of insulin to suppress free fatty acids is impaired in type II diabetes, creating a vicious cycle.<sup>48,49</sup> Dr. DeFronzo has shown that reducing free fatty acids in the blood of type II diabetics improves glucose utilization in mitochondria (energy producing parts of cells).<sup>50</sup>



DeFronzo



## Branched-Chain Amino Acids in a High Fat Diet?

Sun Kim, MD, assistant professor of medicine at Stanford University, has attempted to understand research by Duke University's Dr. Chris Newgard indicating that adding branched-chain amino acids to a high-fat diet increased insulin resistance above that seen with a high-fat diet alone.<sup>51</sup>

In healthy people a test drink of branched-chain amino acids has been shown to increase blood insulin even more than a pure glucose drink.<sup>52</sup> Another test on healthy humans showed that combining branched-chain or aromatic amino acids with carbohydrates doubled the insulin increase of carbohydrates alone.<sup>53</sup> Unlike other amino acids, which are oxidized primarily in the liver, branched-chain amino acids are primarily oxidized in skeletal muscle.<sup>54</sup> Although Dr. Kim has confirmed the association between certain amino acids and insulin resistance, she has questions about what causal relationships exist.<sup>55</sup> Dr. Newgard has not yet published data confirming a causal relationship, but he cautions persons at risk of type II diabetes from eating foods high in fat and branched-chain amino acids such as meat and some milk products.



Kim

## Heart Failure and High Blood Pressure

Mariell Jessup, MD, professor of medicine at the University of Pennsylvania, discussed treatment and prevention of heart failure. In **heart failure** the heart is unable to pump enough blood to meet the needs of the body. One American in five over the age of 40 will develop heart failure.<sup>56</sup> Heart failure is the leading cause of hospitalization for people over age 65, with up to half of the victims dying within one year.<sup>57</sup>

A heart failure victim has shortness of breath, is easily tired, and can accumulate fluid in tissues. Fluid retention (congestive heart failure) in the lungs causes breathing difficulties and a hacking cough, whereas peripheral fluid retention (edema) is associated with swollen limbs. Poor kidney function is the best predictor that a heart failure victim will die.<sup>58</sup>

High blood pressure is the greatest modifiable risk factor for heart failure,<sup>59</sup> along with diabetes and being overweight.<sup>60</sup> Losing weight is an effective way to reduce blood pressure. Every increased unit of body mass index (BMI) is associated with a **5%** increased risk of heart failure in men, and a **7%** increased risk in women.<sup>61</sup> Cardiovascular disease risk increases in direct proportion to all blood pressure readings above **115/75 mmHg**.<sup>62</sup>

## Concluding Remarks

Insofar as these conferences were mainly concerned with preventing cardiovascular disease risk, they did not acknowledge the fact that type II diabetes greatly increases the risk of getting **cancer**.<sup>63</sup>

Excess weight and lack of exercise are obvious contributors to type II diabetes and death by cardiovascular disease or cancer.

**Metformin** is the most commonly used drug to lower blood glucose for prevention and treatment of type II diabetes.<sup>64</sup>

Most attempts to lose weight by dieting fail in almost all cases, nearly all the weight is regained within five years, with a third of dieters gaining more weight than they lost.<sup>65</sup> Bariatric surgery, by contrast, is usually a successful way for the very obese to lose weight.<sup>66</sup>

Rather than reducing food consumption, changing to a vegetarian diet can be an effective way of losing weight without regaining it. Vegetarians have lower body weight,<sup>67,68</sup> and a lower risk of metabolic syndrome.<sup>69</sup> Dr. Michael Ozner (who organized the Miami conference) recommends a Mediterranean diet.



Reducing carbohydrates can also be a way of losing weight. In many cases a low carbohydrate diet has led to reduction or elimination of medications being used to treat type II diabetes.<sup>70</sup>

Lower risk of cancer, diabetes, and cardiovascular disease by dietary changes that don't require restricting food intake can be the simplest way to better health. This lifestyle change can often be achieved without a protracted or difficult period of adjustment. ●

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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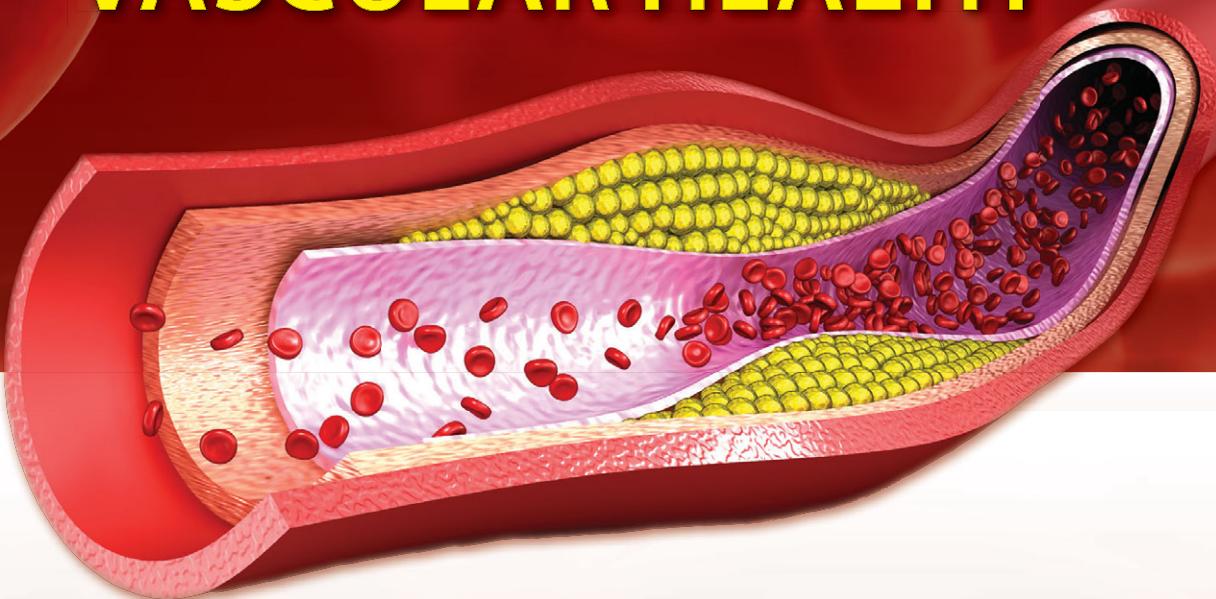
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# Understanding the Genetics of Centenarians

BY CHANCELLOR FALOON

The *Albert Einstein College of Medicine* has been conducting research evaluating the blood and genes of over 500 centenarians age 95-112 years old and their children. The team of researchers has discovered specific longevity genes and healthy blood markers they believe to be the cause of their longevity.<sup>1</sup>

Nir Barzilai, MD, is spearheading the centenarian study at *Einstein* but is also currently leading a large scale trial to test the anti-aging effects of the drug **metformin**.<sup>2</sup>

He has specific motivation for conducting this trial because of the numerous studies showing that metformin can extend life.<sup>3</sup> In fact, one of these compelling studies found that **78,241** adults with type II diabetes who were prescribed metformin lived longer than nondiabetics not taking metformin.<sup>4</sup>

This article will discuss what has been learned from research regarding the genetics of centenarians.

## Lower IGF-1 Levels Associated with Longevity

Several studies have been released on mice, flies, and worms showing that when they've been adjusted to have lower expression of **IGF-1** and closely related genes their lifespans are extended by as much as 50%.<sup>5-9</sup>

IGF-1 (insulin like growth factor-1) is a hormone similar to insulin that is produced by the liver. It is released by the liver in response to elevated amounts of **growth hormone**. IGF-1 levels are highest during puberty as they are responsible for much of our growth.<sup>10,11</sup>

Studies on centenarians have shown that they and their offspring have lower IGF-1 levels.<sup>12-14</sup> Barzilai and his team discovered that lower levels present in centenarians were attributed to specific genetic variants they carried.<sup>15,16</sup>

It has been reported in studies that having lower levels of IGF-1 is not always favorable because of the side effects of fatigue, decreased muscle mass, and sexual function.<sup>7</sup> However, these centenarians did not have these side effects. Many of them were still employed, actively exercised, and challenged their brains by reading articles and completing crossword puzzles.<sup>1</sup>

A separate study, published in the journal *Aging Cell*, evaluated the relationship between IGF-1 levels and longevity. The researchers tested 184 nonagenarians (individuals from 90 to 99 years old) and found that they have lower levels of IGF-1, leading the authors to conclude that "...low IGF-1 levels predict life expectancy in exceptionally long-lived individuals."<sup>14</sup>

These and others studies have led the way for researchers to find methods to modulate IGF-1. Calorie restriction and the anti-

diabetic drug **metformin** have emerged as promising candidates.<sup>17</sup>

A recent study revealed that metformin may protect women with breast cancer from metastasis through its ability to decrease IGF-1 and increase an important IGF-1 binding protein. The study tested **102** women who were divided into a control group (chemo + hormone therapy) and a metformin group (chemo + hormone therapy + metformin).<sup>18</sup>

Compared to the control group, the women who received metformin had significantly fewer metastases. The researchers believed this to be caused by the increase in an important IGF-1 binding protein, IGFBP-3 (IGF binding protein-3), which has been documented as an inhibitor of cell growth and inducer of apoptosis.<sup>18,19</sup>

## Caloric Restriction Benefits

In general, consuming lower calorie meals has been shown to increase longevity. This is because when we calorie restrict, longevity enzymes called **sirtuins** are activated.<sup>20-22</sup>

Numerous studies demonstrate that reductions in sirtuin enzymes lead to neurodegeneration of the brain, vascular inflammation,

increased fat storage and production, insulin resistance, fatigue, and loss of muscle strength.<sup>23-31</sup>

Sirtuin enzymes are activated by NAD+ (nicotinamide adenine dinucleotide), a cellular compound that is found in every cell in the body and is essential to life.<sup>32,33</sup> In fact, NAD+ enables the transfer of energy from the foods we eat to vital cell functions. Unfortunately, as we age, NAD+ levels decline.<sup>34</sup>

Together with calorie restriction, a natural way to boost NAD+ levels is through supplementation with a form of vitamin B3 called **nicotinamide riboside**. Studies have shown that this form of vitamin B3 converts into NAD+, making it an effective strategy for promoting youthful vitality by preventing the natural decline in cellular energy.

Studies have also shown that nicotinamide riboside extends lifespan, increases endurance, improves cognitive function, switches "off" the genes of aging, activates sirtuins, and enhances cellular energy.<sup>35,36</sup>

A study on mice fed a high-fat diet found that nicotinamide riboside supplementation improved insulin sensitivity, prevented weight gain, and on a treadmill test they ran **33%** longer than the control mice.<sup>36</sup>



## Longevity Gene Variants Identified

In studies conducted by Barzilai's research team, identification of certain genetic variants within the CETP and ADPOC3 genes were found to be present in both long-lived individuals and their offspring. These genetic variants relate to longevity, cardiovascular health, favorable lipoprotein profile, and insulin sensitivity.<sup>37,38</sup>

In another study, the same team of researchers found that centenarians and their offspring also had present a genetic variant of the **ADIPOQ** gene, which expresses higher amounts of the hormone **adiponectin**. This hormone is secreted by fat cells (adipocytes) and helps regulate glucose levels by increasing insulin sensitivity and reducing the amount of glucose produced by the liver. In addition, higher amounts of adiponectin have also been shown to protect against atherosclerosis.<sup>39</sup>

Studies have also shown that metformin can increase adiponectin levels, which is just one of the many ways it provides antidiabetic effects.<sup>40</sup>

## Alive for Over a Century and Still Working!

In particular, one fascinating centenarian Dr. Barzilai studied was Irving Kahn, who was the world's oldest active living working professional. Kahn had a very optimistic view on life. He said that he woke up every morning with something to look forward to. Unfortunately, Kahn died last year at the age of **109** but continued to actively work until his death.<sup>1</sup>

What makes Irving Kahn even more interesting is that he had three sisters who all lived to be

over a 100 years old, even though one sister **smoked** for 80 years of her life.

What was particularly fascinating was that all these centenarians were still very active. They were engaged, passionate, and very happy. They woke up every morning and set goals. Peers of these centenarians say that their zest for life was an inspiration to them all.

## Summary

The identification of genetic variants by Barzilai's research team could facilitate the development of new drug therapies that might help people live longer, healthier lives by preventing or delaying age-related diseases. This is why he has teamed up with several other well-respected researchers to conduct the first anti-aging study to be done on metformin. The study will follow **3,000** adults between the ages of 65-79 for a minimum of 5 years to see if metformin can prevent disease. If the study is successful, metformin could be the first drug approved to fight aging.<sup>3</sup>

## Note About Growth Hormone

Interestingly, the general population seems to have about the opposite effect with respect to IGF-1 as do centenarians. The average person seems to do better with higher effective levels of IGF-1. The centenarians may be lower in IGF-1 due to higher IGF-1 sensitivity, similar to how high insulin sensitivity (high insulin responsiveness) results in lower insulin levels...To be continued!



Metformin has been extensively studied because it can mimic the benefits received from exercise and calorie restriction through activating **AMPK** as well as other mechanisms. Studies continue to come out that show activating AMPK increases longevity.<sup>41-43</sup>

**Life Extension®** has published significant research and introduced numerous nutrients that can help promote longevity, reduce the biomarkers of aging and maintain healthy levels of triglycerides, glucose, cholesterol, and insulin.

The blood markers discussed in this article are just some of what has to be taken into account to optimally increase longevity and prevent disease. A new hypothesis that will be discussed in a future issue of **Life Extension** magazine will describe the potential benefit of using carefully-controlled *growth hormone* over a limited time to regenerate the thymus gland. Restoration of thymic activity would induce profound anti-aging effects including partial reversal of **immune senescence**. ●

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

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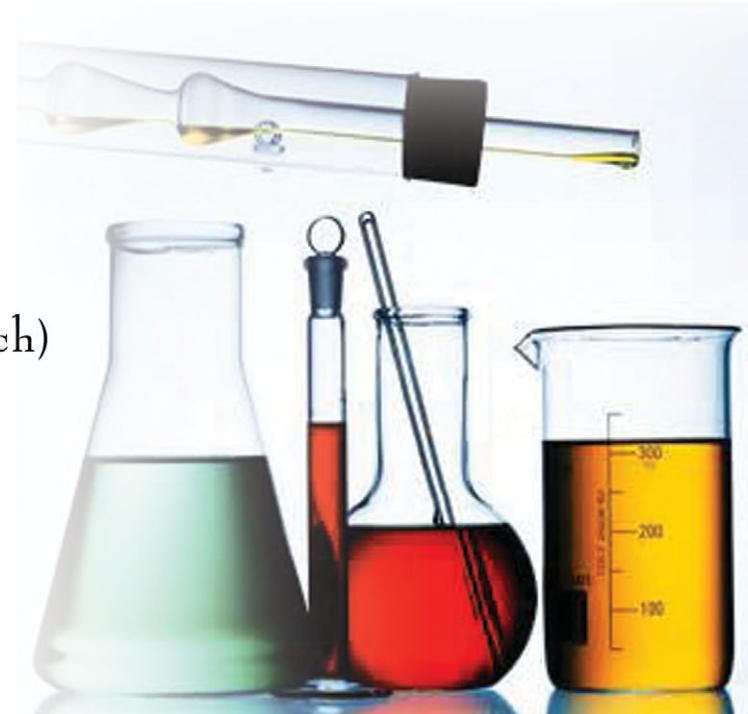
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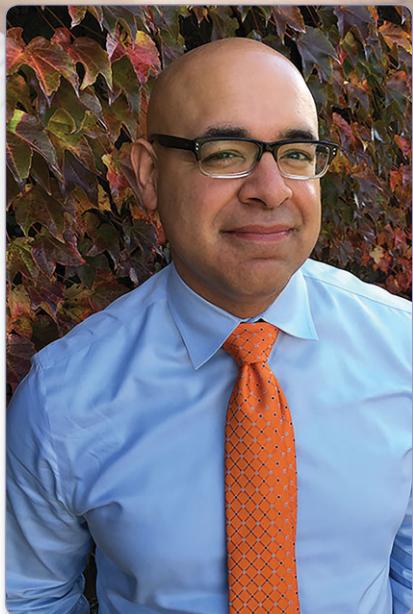
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BY MICHAEL DOWNEY



## Thrive, Don't Only Survive: Dr. Geo Espinosa

Dr. Geo Espinosa has worked as a naturopathic urology doctor for over a decade, counseling thousands of prostate cancer patients. He has also spent countless hours researching which natural strategies have the greatest impact on prostate cancer—from entire diet plans to individual foods and from fitness routines to supplements and lifestyle choices. His latest book, *Thrive Don't Only Survive: Dr. Geo's Guide to Living Your Best Life Before & After Prostate Cancer*, is not about what treatment options you should choose. Instead, Dr. Geo proposes an easy-to-follow lifestyle that will become an integral part of reversing this disease and living even healthier than before.

**LE:** Your book's title underscores the point that surviving prostate cancer is not enough. You should thrive—or as you write, be a "CaPLESS thriver." Please explain the CaPLESS concept to our readers.

**GE:** The CaPLESS Method is about building the health of your whole body to create an inhospitable environment for cancer—not simply to *treat* prostate cancer. "CaP" is an abbreviation of "carcinoma of the prostate," "L" is for "lifestyle," "E" is for "exercise," "S" is for "sleep" (and "stress"), and the last "S" is for "supplementation." Your prostate cancer can be a blessing in disguise. It is a wake-up call that you need to make significant changes—not just to manage your cancer, but to improve your quality of life. See your diagnosis as an opportunity to revamp how you eat, how you exercise, and even how you think.

**LE:** For each of these different pillars of the CaPLESS Method, or CM—from exercise to sleep—you provide the Lowest Effective Dose (LED). What is that?

**GE:** Wouldn't you want to know the minimal amount of foods, movement, supplements, sleep, etc., you need to get maximal results? I do, which is why I offer the LED.

**LE:** What are the chances that conventional physicians would be supportive of the CaPLESS Method?

**GE:** Conventional physicians are passionate about bringing a cure to their patients, but many are not trained in nutritional or naturopathic interventions—only in drug and surgical treatments. While aggressive treatments are sometimes necessary, they don't build

health...I strongly believe that treating prostate cancer with surgery, radiation, or any of a dozen or so other therapies, without the patient applying a lifestyle approach like the CaPLESS Method, falls short. After all, prostate cancer is not a local problem, it's a systemic one...The truth is, your physician likely has little or no interest in speaking with you about the CaPLESS Method, natural medicine, or any nontraditional approach to prostate cancer. Bottom line, you are the captain of your ship, so work with a physician who will respect your position in being proactive about your health. No one doctor alone can cure you. You have to cure yourself.

**LE:** People might assume this book is strictly for prostate cancer patients, but you also address the patient's life partner.

**GE:** Prostate cancer is rarely a solo journey...I offer suggestions on how (a patient's life partner) can help him during all phases of the CaPLESS Method, including when to offer advice, support, or just be there for him. Plus this gives a couple an opportunity to embrace a new way of living—together. What life partners will also discover is that they too can benefit from the CaPLESS Method.

**LE:** I assume a PSA test is the logical starting point?

**GE:** PSA tests do provide a valuable service, and are a good gauge of current risk—at least for now. But they should not be the only basis for any decision you make regarding treatment and long-term management. This is why it is often recommended that you pair your PSA results with other tests that can provide a clearer understanding of your current prostate health.

**LE:** Yes, you list various tests that support PSA results in your book. What other options do you recommend?

**GE:** You will probably hear a lot about the three most common ones: active surveillance, surgery, and radiation...What works for one person may not be right for another, so you have to keep in mind several factors, such as your PSA and Gleason scores, family history, lifestyle, and psychological reaction—which one will you be most comfortable with?

**LE:** What are the target pathways of the CaPLESS Method?

**GE:** Specifically, at a cellular, DNA level, the CaPLESS Method can do the following to promote greater health and wellness: reduce oxidative stress, lower chronic inflammation, improve detoxification capacity, strengthen the immune system, and control sugar levels and insulin production.

**LE:** Can you review the key CaPLESS Method elements—such as diet?

**GE:** This is where the CaPLESS Food Rating System comes into play. This simple five-point rating helps you separate the good stuff from the crap by giving everything you eat a rating of 1 to 5. This way you don't have to memorize a long food list of good and bad choices. Instead, it helps to reinforce the idea of good versus bad. This way you can look at a food, or even complete meals, and immediately know if it helps or hurts your cancer management, and if you should eat it more, less, or occasionally. So CaPLESS eating is about consuming more 4s and 5s, some 3s, and few 2s and 1s. This not only helps improve your eating habits, but feeds your body the nutrients it

needs to create that hostile micro-environment for your cancer.

**LE:** Another CaPLESS Method element is supplements. What do you mean by “selected supplementation?”

**GE:** By this I mean that you focus only on the individual vitamins, minerals, and botanicals you specifically need to fight your prostate cancer and improve your overall health...Selected supplementation helps to build a huge arsenal to attack cancer cells and make your “biological soil” hostile to aberrations. The right type of supplements in the right combination and in the right amounts can support a healthy immune system. Selected supplementation works to address these five areas: boost immunity, interrupt cancer formation, reduce oxidative stress, modulate inflammation, and improve detoxification.

**LE:** Yes, 14 supplements in all.

**GE:** But look at it this way: You are not just taking pills—but rather feeding your body what it needs to discourage aberrant cancer cells, while boosting your health and wellness.

**LE:** What about exercise—how does it relate?

**GE:** Research has shown that fitness can help you reduce your risk of developing prostate cancer, prevent it from returning, or lower the chances of you dying from it. If you really want to live your best life, you need to be physically active, doing both high- and low-intensity movement, every day, for the rest of your life. Plain and simple. The good news is you do not need to spend two or three hours in the gym or pounding

away on the treadmill. You only need the LED, which is the least amount of work you need to get maximal results. Once you begin to feel strong and see the results, you will be motivated to exercise consistently...Also, you can overcome common side effects from treatments, and even lower your risk of dying from *other* causes. For more specific guidance, go to <http://ThriveDontOnlySurvive.com> to create your own individualized CaPLESS movement program.

**LE:** Another part of the CaPLESS Method is stress management. How does that support prostate health?

**GE:** No matter the cause, stress manifests in your body in the same way: Your body launches a fight-or-flight response, releasing stress chemicals to help protect you from the taxing encounter.

As a result, modern men live half their lives on “high alert” due to much more mundane daily triggers, like traffic jams, demanding jobs, or financial worries. And while good in short spurts, this kind of excess stress can be damaging...Your body produces stress chemicals called cortisol, epinephrine, and norepinephrine to help you escape danger. While these stress chemicals serve you well in time of danger, chronic production, especially cortisol, can weaken your immune system to the point where a favorable cancer environment is created. To bring it even closer to home, stress can be such a powerful entity that it affects the accuracy of your PSA scores. When you can better control your reaction to stressful events, you can keep the damaging chemicals from being overproduced and thus promoting cancer development and progression.

### Nutrients That Prevent Prostate Cancer Development and Progression

There are multiple mechanisms by which healthy prostate cells develop mutations that transform into malignancies that progress to clinically relevant prostate cancer.

Fortunately, many of the nutrients already used by health-conscious individuals have been shown to interfere with these oncogenic mechanisms as evidenced by a wealth of peer-reviewed published studies.

Some of these readily available nutrients include:

- Cruciferous vegetables and/or extracts<sup>1-6</sup>
- Fish oil<sup>7-11</sup>
- Curcumin<sup>12-17</sup>
- Boswellia<sup>18-20</sup>
- Lycopene<sup>21-28</sup>
- Green tea<sup>29-33</sup>
- Lignans  
(from flax or Norway spruce)<sup>34-36</sup>
- Boron<sup>37-39</sup>
- Lutein<sup>21,40,41</sup>
- Gamma tocopherol<sup>42-44</sup>
- Zeaxanthin<sup>21,28,40,41</sup>
- Vitamin D<sup>45-51</sup>

**LE:** One of the anti-stress strategies you include may surprise some readers: sleep.

**GE:** The average amount of sleep has consistently declined and deteriorated since the advent of modern technology...When sleep is consistently sacrificed to obtain a competitive edge, due to stress or any other reason, you will damage your long-term health and promote prostate cancer. If you consistently do not go through your sleep phases at night, your body may end up producing less melatonin. This inhibits your immune system and your resistance to many types of cancers...

# AUTHOR INTERVIEW

Excess cortisol is usually released from improper stress management...Excess cortisol weakens your immunity, especially white blood cells, natural killer cells, monocytes, and macrophages. Weak immune cells entice cancer cells to have a feast in your body. Sleep is just as important as diet, exercise, supplementation, and stress reduction—everything else outlined in the CaPLESS Method. Give it the same attention.

**LE:** A critical step in your CaPLESS Method program is the 21-Day Reset Plan. Can you explain that?

**GE:** The best cancer treatment in the world won't help you in the end if you first don't clean up the cancer's home—your body. For three weeks, you will follow a special CaPLESS eating plan and specific routines that will get you going in your new health path. The plan will also contain specific nutrients that science has shown can strengthen your natural detoxification system. You will also begin to introduce movement into your everyday life and follow the exercise programs I have designed based on your fitness level and prostate diagnosis... What you need to keep in mind is that right now you are at the height of your toxin exposure and your detox system is operating at its weakest level. The 21-Day Reset is designed to reverse that.

**LE:** Any final advice for readers?

**GE:** Yes. You have battled prostate cancer, but do you want to just stay alive—or live your best life possible? Do you want to just survive—or thrive? These are the deep questions men and their loved ones need to answer before embarking on the CaPLESS journey.

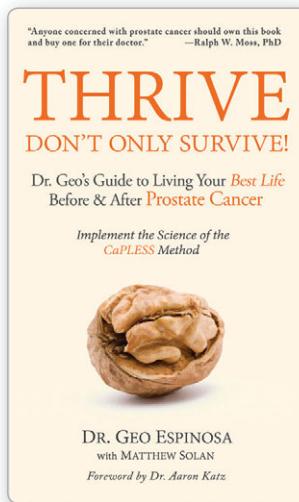
**LE:** Thanks very much, doctor. ●

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

For an appointment with Dr. Geo in his New York office, contact Erica at 646-490-0536 or email her at [Erica@drgeo.com](mailto:Erica@drgeo.com)

**Dr. Geo Espinosa** is a naturopathic doctor noted for his expertise in prostate disorders, male sexual health and male aging. Additionally, he uses acupuncture to treat athletes and patients suffering from chronic pain. With more than 10 years of clinical experience and two decades of research in natural medicine, Dr. Espinosa hosts his blog at <http://drgeo.com/> and is an editorial board member of the *Natural Medicine Journal*. A professor at New York University, he is also the founding director of the New York University Integrative Urology Center.

To purchase *Thrive, Don't Only Survive*, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)



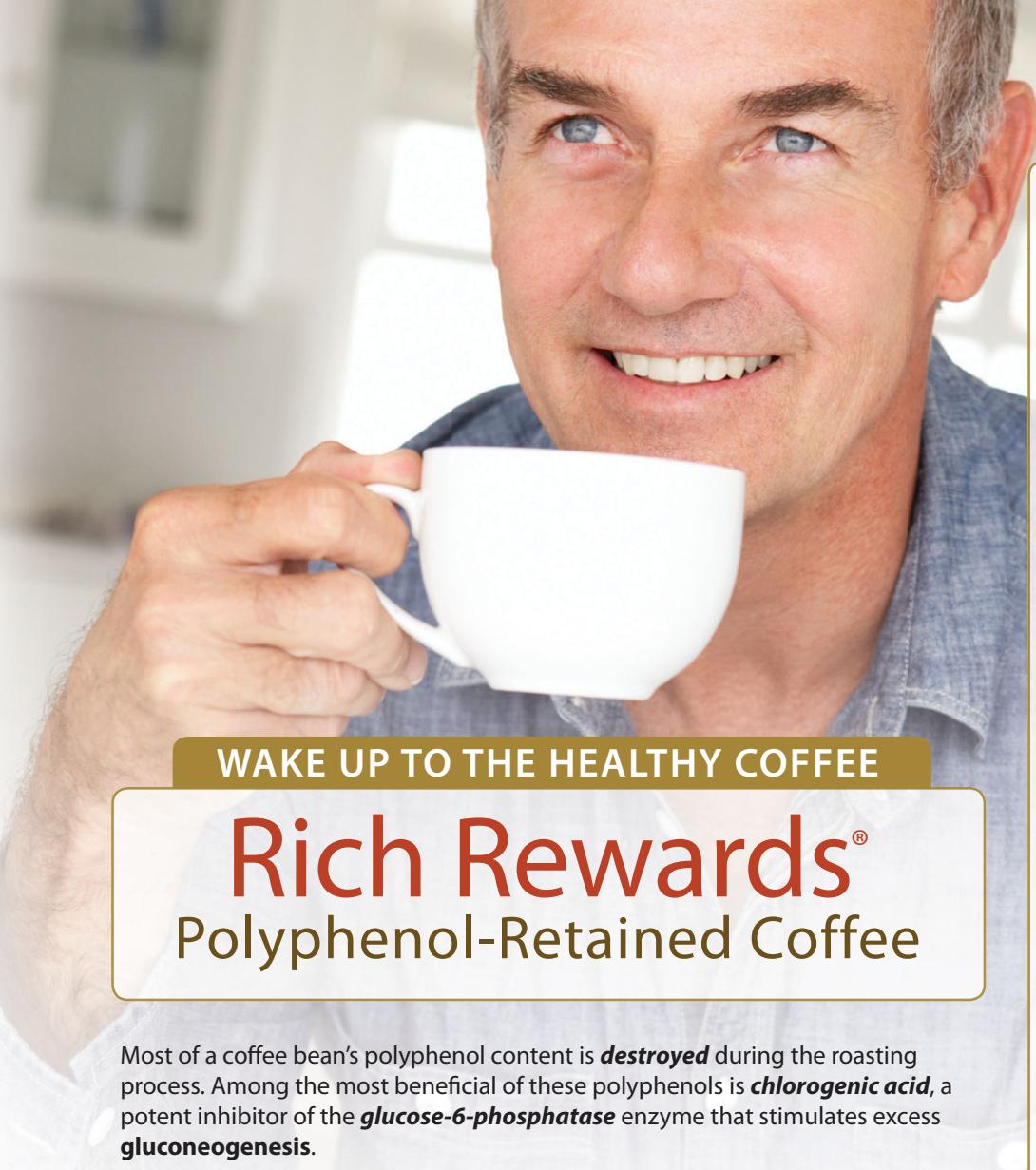
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#### References

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# Healthy Treats from the Middle East

The fabled virtues of the Mediterranean diet have been well-known for years. Associated with lower levels of LDL cholesterol and reduced incidence of heart disease, cancer, Parkinson's and Alzheimer's disease, its main components—olive oil, fruits, vegetables, legumes, nuts and whole grains—are heavily featured in a new book, *The Middle Eastern Vegetarian Cookbook* by Salma Hage (Phaidon 2016).

BY GARRY MESSICK

Born in Lebanon in 1942, Salma developed a strong interest in the dishes of her native land while growing up on a farm as the eldest of 12 siblings. "I learned quite a bit from my grandmother...Then I learned a lot from my mother-in-law and from my sisters-in-law. I had five sisters-in-law who were all wonderful cooks."

Along with her husband, Heni, and their son, Joe, Salma emigrated from Lebanon to England in 1967. The young housewife soon found employment as a kitchen hand and eventually climbed the ladder to the position of head chef for a large catering company.

She says her cooking has changed significantly in recent years, after Joe and her grandson, George, became vegetarians. "I wanted to continue preparing delicious, healthy, and satisfying meals for them, but, admittedly, I felt perplexed," says Salma, who adds that it was "a big upheaval to cut out meat and fish from my home cooking." But Salma soon became accustomed to going vegetarian.

Salma explains that her new book combines recipes that she modified from meat dishes with traditional Lebanese dishes that were vegetarian or vegan to begin with. "I never imagined that most of the meals I cook would become almost completely vegan, and totally vegetarian," she says.

Her cookbook contains a wide variety of dishes, listed in categories such as: drinks, breakfast, dips and mezzes, salads, vegetables, legumes and grains, and desserts. Vegan and gluten-free dishes are noted with specific symbols.

What follows are four tasty, healthy recipes drawn from *The Middle Eastern Vegetarian Cookbook*—three entrees and one refreshing beverage. Reprinted by permission of Phaidon.



## Eggplant and Pomegranate Salad with Toasted Pine Nuts

Preparation time: 20 minutes

Cooking time: 30 minutes

• **Serves: 4**

**1 tablespoon coriander seeds**

**1 teaspoon cumin seeds**

**2 eggplants peeled and cut into large chunks**

**2 tablespoons olive oil, plus extra for frying**

**2 garlic cloves, crushed**

**Gluten-free flour, for dusting**

**2/3 cup pine nuts**

**1 bunch parsley leaves, coarsely chopped**

**Handful baby spinach leaves, chopped**

**Handful pomegranate seeds**

**Salt and pepper**

**For the Dressing:**

**4 tablespoons pomegranate juice**

**1 teaspoon balsamic vinegar**

**Juice 1/2 lemon**

**4 tablespoons olive oil**

**Salt and pepper**

Preheat the oven to 400°. Put the coriander and cumin seeds into a mortar and crush them with a pestle. Toast them in a dry skillet or frying pan for a few minutes or until fragrant.

Put the eggplants into a large bowl and toss with the olive oil, crushed garlic, salt, and pepper. Sprinkle on the toasted coriander and cumin seeds.

Drizzle 1 teaspoon oil onto a baking sheet. Dip the eggplants lightly in the flour. Place them on the baking sheet and roast for 30 minutes, or until char-grilled and slightly crisp. Let cool.

While the eggplants are roasting, mix all the dressing ingredients together and set aside.

Put the roasted eggplants into a bowl, pour 1-2 tablespoons of the dressing and toss well. Let stand for 10 minutes so the dressing can absorb.

Heat 2 teaspoons olive oil in a skillet or frying pan and lightly toast the pine nuts until golden.

Add the chopped parsley, spinach and pomegranate seeds to the eggplants and toss together well. Sprinkle on the toasted pine nuts and serve with the remaining dressing.

## Bulgur Falafel

Preparation time: 20 minutes

Cooking time: 25 minutes, plus 6-8 minutes to cook the patties.

- Makes 8

**½ cup fine bulgur wheat**  
**2 potatoes, peeled and cut into chunks**  
**⅔ cup dried green lentils, rinsed**  
**¾ cup dried bread crumbs**  
**1 small bunch parsley, leaves only**  
**1 small bunch mint, leaves only**  
**1 onion, finely chopped**  
**½ teaspoon Lebanese 7-spice seasoning (see below)**  
**½ teaspoon ground cumin**  
**3 tablespoons olive oil**  
**Salt and pepper**

Soak the bulgur in  $\frac{1}{3}$  cup boiling water for 15 minutes, or as directed on the package. Drain well.

Boil the potatoes in plenty of salted water for 8 minutes, or until tender. Drain and let steam dry, then transfer to a bowl.

Meanwhile, in a separate saucepan, boil the lentils in plenty of unsalted water until tender. Drain well.

In a blender or food processor, combine the potatoes, lentils, bulgur wheat,  $\frac{1}{2}$  teaspoon pepper, and all the remaining ingredients except for the oil. Pulse to combine, but do not overprocess. The mixture should be smooth but retain some texture. Season well.

Mold the mixture into 8 equal patties,  $\frac{1}{2}$ - $\frac{3}{4}$  inch thick. Flour them to prevent them from sticking, if necessary.

Heat 1 tablespoon of the oil in a large skillet or frying pan over medium heat. Cook the patties in batches for 3-4 minutes on each side, or until golden, crisp, and heated through. Serve warm.



## Lebanese 7-Spice Seasoning

Preparation time: 5 minutes. Mix all the ingredients together and store in an airtight container.

- Makes about  $1\frac{3}{4}$  cups

**5 tablespoons ground allspice**  
**3  $\frac{1}{2}$  tablespoons pepper**  
**3  $\frac{1}{2}$  tablespoons ground cinnamon**  
**5 tablespoons ground cloves**  
**4 tablespoons grated nutmeg**  
**4 tablespoons ground fenugreek**  
**4 tablespoons ground ginger**



## Green Lentil Tabbouleh

Preparation time: 10 minutes

Cooking time: 15 minutes

• **Serves 2**

**½ cup green lentils, rinsed**

**1 cup vegetable broth (stock)**

**1 onion, finely chopped**

**1 small bunch parsley, leaves finely chopped**

**8 cherry tomatoes, quartered**

**2 garlic cloves, finely chopped**

**Juice of 1 lemon**

**2 tablespoons olive oil**

**1 teaspoon Lebanese 7-spice seasoning (see below)**

**1 teaspoon ground cumin**

**Salt and pepper**

Cook the lentils in the vegetable stock for 10 minutes, or as directed on the package. Add more broth (stock) if needed. Drain well.

Transfer to a bowl and add all the remaining ingredients.

Mix together well, season with salt and pepper, and serve.

## Doogh

This refreshing, sugar-free drink can be prepared in 5 minutes.

• **Serves 2**

**1 cup plain yogurt**

**1 ¼ cups milk**

**¼ - ½ teaspoon sea salt**

**2 teaspoons dried mint**

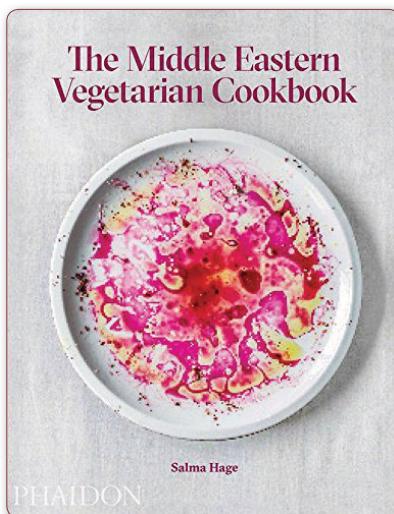
**Plenty of ice, to serve**

**Mint sprigs, to garnish**

Add the yogurt and milk to a large pitcher and stir well. Add the sea salt and dried mint and stir again. Serve over plenty of crushed ice, with fresh mint for garnish.

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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# BROCCOMAX® THE SULFORAPHANE GENERATOR™



## AN ULTIMATE LIVER & CELLULAR DETOXIFIER & PROTECTOR\*

Broccoli (*Brassica oleracea* spp.) is associated with antioxidant and cellular protection due to its components glucoraphanin (GR), aka sulforaphane glucosinolate (SGS), and myrosinase which together produce sulforaphane, a powerful, beneficial electrophile and inducer of the liver's potent Phase 2 Detoxification System.\*

Jarrow Formulas' BroccoMax® contains a standardized concentration of SGS and the myrosinase enzyme from broccoli seeds that have been processed using ultra clean super critical CO<sub>2</sub> technology. Vitamin C (as calcium ascorbate) catalyzes the sulforaphane generating action of the myrosinase enzyme.

BroccoMax® is delivered in delayed release vegetarian capsules.

To order Jarrow Formulas' BroccoMax® 60 veggie caps,  
Item # 26576  
Call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)  
Retail price \$26.95 Your price \$20.21

**MADE IN USA**

BroccoMax® is protected by  
U.S. Patent # 9,017,666

**DRcaps**  
PROTECTED

DRcaps® is a registered trademark of Capsugel®

VEGGIE  
CAPS  
GLUTEN  
FREE  
vegan

NON  
GMO

NON  
GENETICALLY  
MODIFIED

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

VISIT US AT [WWW.JARROW.COM](http://WWW.JARROW.COM) FOR MORE PRODUCT INFORMATION

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

#### Five Easy Steps:

1. Call 1-800-208-3444 to discuss and place your order with one of our knowledgeable Wellness Specialists. (This order form can also be faxed to 1-866-728-1050 or mailed). Online orders can also be placed at [www.lifeextension.com](http://www.lifeextension.com).
2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable wellness specialists by calling 1-800-226-2370; or review the results with your personal physician.

It's that simple! Don't delay—call today!

#### For Our Local Customers:

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

# Blood Testing The Ultimate Information

## MOST POPULAR PANELS

### COMPREHENSIVE PANELS

#### MALE LIFE EXTENSION PANEL (LC322582)

CBC/Chemistry Profile (See description)  
C-Reactive Protein Homocysteine  
DHEA-S Free Testosterone  
TSH for thyroid function Total Testosterone  
Estradiol PSA (prostate-specific antigen)  
Vitamin D 25-hydroxy Hemoglobin A1c

\$269

#### FEMALE LIFE EXTENSION PANEL (LC322535)

CBC/Chemistry Profile (See description)  
C-Reactive Protein Homocysteine  
DHEA-S Free Testosterone  
TSH for thyroid function Total Testosterone  
Estradiol Vitamin D 25-hydroxy  
Progesterone Hemoglobin A1c

\$269

#### FEMALE HORMONE REPLACEMENT PANEL

#### (LC100023)

CBC/Chemistry Profile (see description), Estradiol, Estrone, Free and Total Testosterone, DHEA-S, Progesterone, TSH, and Insulin

\$189

#### WEIGHT LOSS PANEL-COMPREHENSIVE

#### (LC100028)

CBC/Chemistry profile (see description), DHEA-S, Free and Total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), and Ferritin.

\$275

#### MALE ELITE PANEL\* (LC100016)

CBC/Chemistry Profile (See description), Free and Total Testosterone, Total Estrogens, Estradiol, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, Free and Total PSA, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, Ferritin, Homocysteine

\$575

#### FEMALE ELITE PANEL\* (LC100017)

CBC/Chemistry Profile (See description), Free and Total Testosterone, Total Estrogens, Estradiol, Estrone, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, Ferritin, Homocysteine

\$575

#### MALE HORMONE ADD-ON PANEL (LCADDM)\*

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.

\$120

#### FEMALE HORMONE ADD-ON PANEL (LCADDf)\*

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.

\$125

#### COMPREHENSIVE THYROID PANEL (LC100018)

TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA

\$199

#### LIFE EXTENSION THYROID PANEL (LC304131)

TSH, T4, Free T3, Free T4.

\$75

#### THYROID PANEL WITH REVERSE T3 (LC100044)

TSH, T4, Free T3, Free T4, Reverse T3

\$120

### THE CBC/CHEMISTRY PROFILE (LC381822)

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

\$35

### 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 MTHFR and COMT.



## Other Popular Tests and Panels

<input type="radio"/> <b>HEALTHY AGING PANEL-COMPREHENSIVE*</b> (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.	
<input type="radio"/> <b>HEALTHY AGING PANEL-BASIC*</b> (LC100025)	\$149
CBC/Chemistry profile, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Ferritin, and Insulin.	
<input type="radio"/> <b>NMR LIPOPROFILE® (LC123810)</b>	\$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.	
<input type="radio"/> <b>ANEMIA PANEL*</b> (LC100006)	\$79
CBC/Chemistry Profile, Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate	
<input type="radio"/> <b>AUTOIMMUNE DISEASE SCREEN*</b> (L100041)	\$199
ANA screen, hs-CRP, TNF-alpha, Immunoglobulins, IgA, IgG, IgM	
<input type="radio"/> <b>DIABETES MANAGEMENT PROFILE – COMPREHENSIVE (LC100040)</b>	\$129
Hemoglobin A1C, Glucose, Insulin, Lipid Panel, Glycomark	
<input type="radio"/> <b>DIABETES MANAGEMENT PROFILE – BASIC (LC100039)</b>	\$39
Hemoglobin A1C, Glucose, Insulin	
<b>ADVANCED CARDIAC BIOMARKERS</b>	
<input type="radio"/> <b>ADVANCED OXIDIZED LDL PANEL*</b> (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.	
<input type="radio"/> <b>OXIDIZED LDL PANEL*</b> (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.	
<input type="radio"/> <b>OMEGA CHECK™ (LCOMEGA)</b>	\$131.25
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.	



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

<input type="radio"/> <b>HORMONES</b>	
<input type="radio"/> <b>DHEA-SULFATE (LC004020)</b>	\$61
This test shows if you are taking the proper amount of DHEA.	
<input type="radio"/> <b>MALE BASIC HORMONE PANEL (LC100012)</b>	\$75
DHEA-S, Estradiol, Free and Total Testosterone, PSA	
<input type="radio"/> <b>FEMALE BASIC HORMONE PANEL (LC100013)</b>	\$75
DHEA-S, Estradiol, Free and Total Testosterone, Progesterone	
<input type="radio"/> <b>DIHYDROTESTOSTERONE (DHT)* (LC500142)</b>	\$50
Measures serum concentrations of DHT.	
<input type="radio"/> <b>ESTRADIOL (LC004515)</b>	\$33
For men and women. Determines the proper amount in the body.	
<input type="radio"/> <b>INSULIN FASTING (LC004333)</b>	\$29.90
Can predict those at risk of diabetes, obesity, heart and other diseases.	
<input type="radio"/> <b>PREGNENOLONE* (LC140707)</b>	\$116
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.	
<input type="radio"/> <b>PROGESTERONE (LC004317)</b>	\$55
Primarily for women. Determines the proper amount in the body.	
<input type="radio"/> <b>SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)</b>	\$33
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.	
<b>GENERAL HEALTH</b>	
<input type="radio"/> <b>VITAMIN D (25OH) (LC081950)</b>	\$47
This test is used to rule out vitamin D deficiency.	
<input type="radio"/> <b>FERRITIN (LC004598)</b>	\$28
Ferritin levels reflect your body's iron stores and is also a biomarker for insulin resistance.	
<input type="radio"/> <b>PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322)</b>	\$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

**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  
Carnosothe 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® Provinol® 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 InSea™ 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 AprésFlex®  
Advanced Bio-Curcumin® with Ginger & Turmerones  
Black Cumin Seed Oil with Bio-Curcumin®  
Black Cumin Seed Oil  
Boswellia  
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® & AprésFlex®  
ArthroMax® with Theaflavins & AprésFlex®  
Bio-Collagen with Patented UC-II®  
Fast-Acting Joint Formula  
Glucosamine/Chondroitin Capsules  
Kril 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 Nicotinamide  
     Ribosome  
 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  
 Theracal® 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  
 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™ Garcinia 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				QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each		
<b>A</b>							
01524	ACETYL-L-CARNITINE • 500 mg, 100 veg. caps	34.00	25.50	22.50			
01874	ACETYL-L-CARNITINE ARGINATE • 90 veg. caps	52.00	39.00	35.00			
01628	ADRENAL ENERGY FORMULA • 60 veg. caps	24.00	18.00	16.50			
01630	ADRENAL ENERGY FORMULA • 120 veg. caps	46.00	34.50	31.50			
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>B</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/AÇAI (Enhanced) • 60 veg. caps	29.00	21.75	19.50			
00664	BETA-CAROTENE • 25,000 IU, 100 softgels	11.25	8.44				
01622	BIFFO 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				QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each		
<b>C</b>							
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			
<b>D</b>							
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	CARNOSONTHE W/PICROPROTECT™ • 60 veg. caps	30.00	22.50	20.25			
01829	CARNOSENINE • 500 mg, 60 veg. caps	36.00	27.00	24.00			
01687	CARNOSENINE (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		
<b>E</b>							
<b>SUBTOTAL OF COLUMN 2</b>							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each	
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	19.50		
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		
<b>COSMESIS</b>						
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**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each	
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		
<b>D</b>						
00658	7-KETO® DHEA METABOLITE • 25 mg, 100 caps	28.00	21.00	18.00		
01479	7-KETO® DHEA METABOLITE • 100 mg, 60 veg. caps	40.00	30.00	27.00		
01640	DHA (Vegetarian) • 30 veg. softgels	20.00	15.00	13.50		
00607	DHEA • 25 mg, 100 tablets (Dissolve in mouth)	14.00	10.50	8.81		
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		
01689	DHEA • 100 mg, 60 veg. caps	24.00	18.00	16.50		

**SUBTOTAL OF COLUMN 4**

OCTOBER 2016

ITEM No.	PRODUCT	YOUR PRICE				
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each	I QTY Total
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		
<b>E</b>						
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/MIRTGENOL® • 30 veg. caps	38.00	28.50	25.50		
<b>F</b>						
*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		
<b>G</b>						
02070	GAMMA E TOCOPHEROL/TOCOTRIENOLS • 60 softgels	40.00	30.00	27.00		
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	YOUR PRICE				
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each	I 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		
<b>H</b>						
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 (Garcinia) • 90 veg. caps	17.00	12.75	11.25		
29754	HCACTIVE™ GARCINIA CAMBOGIA EXTRACT • 90 caps	30.00	22.50			
01393	HEPATOPRO • 900 mg, 60 softgels	50.00	37.50	34.50		
01527	HUPERZINE A • 200 mcg, 60 veg. caps	40.00	30.00	27.00		
00661	HYDRODERM® • 1 oz	79.95	59.96	49.00		
<b>I</b>						
*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		
<b>J, K, L</b>						
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	44.00	33.00	30.00		
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	
<b>SUBTOTAL OF COLUMN 6</b>						

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each	
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		
<b>M</b>						
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	12.00	9.00	7.50		
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		
<b>N</b>						
01534	N-ACETYL-L-CYSTEINE • 600 mg, 60 veg. caps	14.00	10.50	9.25		
01904	NAD+ CELL REGENERATOR™ • 100 mg, 30 veg. caps	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**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each	
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		
<b>O</b>						
01824	OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRACT (Advanced) • 60 veg. caps	36.00	27.00	24.00		
01988	OMEGA-3 PLUS EPA/DHA w/SESAME LIGNANS, OLIVE EXTRACT, KRILL & ASTAXANTHIN (SUPER)• 120 softgels	45.00	33.75	31.50	24.75	
01983	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 60 softgels	18.00	13.50	12.00	9.38	
01982	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 120 enteric coated 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		
<b>P</b>						
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		
<b>SUBTOTAL OF COLUMN 8</b>						

**SUBTOTAL OF COLUMN 8**

OCTOBER 2016

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each	
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	19.50		
01743	PROTEIN-ISOLATE (Whey) Chocolate • 437 grams	30.00	22.50	19.50		
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla 500 grams	30.00	22.50	19.95		
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate 640 grams	30.00	22.50	19.95		
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		
<b>Q, R</b>						
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	REGIMENT • 60 enteric-coated caps	19.95	14.96	14.00		
01708	REISHI EXTRACT MUSHROOM COMPLEX • 60 veg. caps	30.00	22.50	20.25		
01448	REJUVENEX® BODY LOTION • 6 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		
<b>S</b>						
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		
<b>SUBTOTAL OF COLUMN 9</b>						

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each	
01740	SEA-IODINE™ • 1,000 mcg, 60 veg. caps	8.00	6.00	5.40		
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	
<b>T</b>						
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	ATHERALAC® 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			
<b>SUBTOTAL OF COLUMN 10</b>						

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE				QTY Total
			1 Unit Each	4 Unit Each	10 Unit Each		
<b>U, V</b>							
01921	URIC ACID CONTROL • 60 veg. caps	24.00	18.00	16.50			
00213	VANADYL SULFATE • 7.5 mg, 100 veg. tablets	15.00	11.25	9.38			
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			
<b>W</b>							
01902	WAIST-LINE CONTROL™ • 120 veg. caps	42.00	31.50	28.50			
<b>X, Y</b>							
01919	X-R SHIELD • 90 veg. caps	15.00	11.25	9.75			
00409	XYLIWHITE™ MOUTHWASH • 16 oz	10.00	7.50				
<b>Z</b>							
01813	ZINC HIGH POTENCY • 50 mg, 90 veg. caps	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				
<b>BOOKS</b>							
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 Dzigan, 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 McGlothlin 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				
<b>SUBTOTAL OF COLUMN 11</b>							

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33878	TESTOSTERONE REPLACEMENT THERAPY by Dr. John Crisler • 2015	19.99	14.99				
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33876	TOX-SICK • by Suzanne Somers • 2015	26.00	19.50				
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33874	MISSING MICROBES • by Martin J. Blaser, MD • 2014	28.00	21.00				
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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. Dzigan, 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				
33815	KNOCKOUT • by Suzanne Somers • 2009	25.99	17.00				
33809	TESTOSTERONE FOR LIFE by Abraham Morgentaler, MD • 2008	16.95	11.87				
33696	LIFE EXTENSION REVOLUTION by Philip Lee Miller, MD (Paperback)	16.00	12.00				
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33906	THE MIGRAINE CURE • by Sergey Dzigan, MD, PhD • 2006	24.00	15.60				
33803	WHAT YOUR DOCTOR MAY NOT TELL YOU ABOUT DIABETES by Steven V. Joyal, MD • 2008	14.99	10.49				
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## LifeExtension® Magazine



### 7 HOW OBVIOUS CURES ARE OVERLOOKED

Citrus was shown to protect against **scurvy** 400 years before the medical establishment recognized it. Today, biological aging has been reversed in animals, but these technologies are not being translated fast enough to save the **6,000** Americans who perish daily from degenerative illness.



### 22 COQ10 PLUS SELENIUM REDUCES CARDIOVASCULAR MORTALITY

Researchers have found that combining **CoQ10** with **.selenium** lowers cardiovascular mortality risk by **49%** and dramatically reduces hospital stays.



### 48 NUTRIENTS REMOVE AGING CELLS

Scientists are aggressively researching drugs to remove damaged cells from our bodies. Fortunately, two readily available **nutrients** have shown the ability to remove many aging cells, making room for new cells and thwarting an underlying mechanism of degenerative aging.



### 58 CONTROLLING AFTER-MEAL SUGAR SPIKES

After-meal **blood sugar spikes** present a significant mortality risk factor. Studies have identified three nutrients that function via several mechanisms to help control excess blood glucose levels.



### 79 GENES OF CENTENARIANS

The **Albert Einstein College of Medicine** has discovered the **genes** responsible for longevity. These researchers are also planning a human trial to study the anti-aging effects of the drug **metformin**. These studies may lead to metformin being approved by the FDA to control aging processes.