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January 2020

FEATURE ARTICLES

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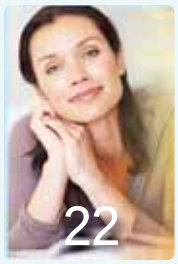
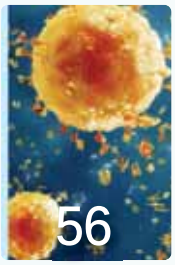
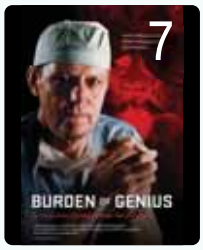
CONTENTS

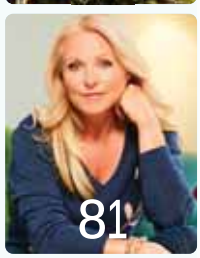
REPORTS





DEPARTMENTS





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The Science of a Healthier Life™

LifeExtension.com January 2020

Volume 26 • Number One
Publisher • LE Publications, Inc.

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Tribute to a Life-Saving Pioneer

A documentary titled "Burden of Genius" was screened in late 2018 at Baylor University Medical Center.

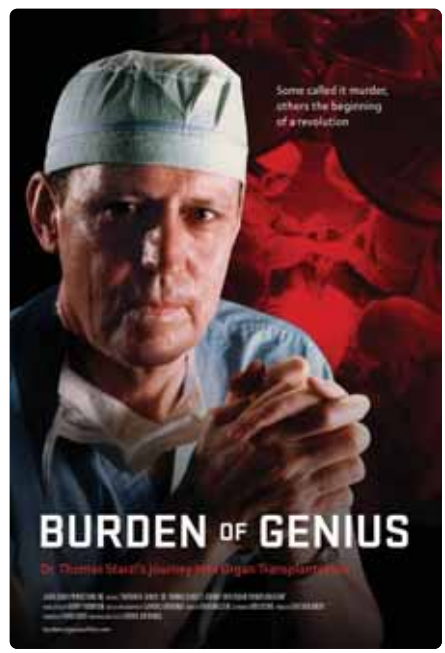
WILLIAM FALOON

The film depicts the relentless determination of a surgeon who made **liver transplantation** the routine procedure it is today.

The surgeon's name is **Thomas Starzl, M.D., Ph.D**.

Despite fierce criticism that **organ transplants** were **impossible**, Dr. Starzl's early efforts now save **20,000** lives each year.[2]

Dr. Starzl began liver transplant studies in **1958** with almost no resources.[3] Back then, the notion of replacing a diseased **liver** with a healthy one was viewed as utter fantasy.



In **1963**, Dr. Starzl attempted the first **human** liver transplant.[4] The patient **died** on the operating table. Several other attempts resulted in tragic outcomes. Critics called him "reckless."

The difficulties extended beyond connecting a new liver. A series of **biochemical** obstacles also had to be overcome, including **organ rejection.**

Dr. Starzl persevered against a tidal wave of technical and legal challenges. Today he is recognized as the "***father of transplantation***."[4]

Today's Liver Crisis

In the February 2004 issue of ***Life Extension***® magazine, we described a condition that few doctors had heard about. It's called **non-alcoholic fatty liver disease** or **NAFLD**.[5]

The disease ranges from simple fatty buildup to advanced fibrosis and **cirrhosis**. This end result can be **liver failure** and/or **liver cancer**.

Our predictions of an NAFLD epidemic have turned tragically real. NAFLD is expected to be the leading reason for people to require **liver transplants** in **2020**.[6]

Approximately **25%** of Americans suffer the damaging effects of NAFLD. Its prevalence and severity in overweight individuals are far higher.[7,8]

The encouraging news is that **NAFLD** is often a **reversible** condition, meaning those afflicted can avoid progressing to diseases like fibrosis and cirrhosis that increase the need for a **liver transplant**.

Dr. Thomas E. Starzl

"With determination and irresistible resolve, Thomas Starzl advanced medicine through his intuition and uncanny insight into both the technical and human aspects of even the most challenging problems."[9]

People often **trivialize** scientific advances that were considered **impossible** when the idea was conceived.

Instead of recognizing the heroic accomplishments of pioneering individuals, the attitude is that their discovery was **obvious**, and someone would have eventually done it. This is the opposite of reality.

How One Individual Changed the World

The accomplishments of Dr. Starzl are worthy of a book that should be mandatory reading for medical students.

Dr. Starzl spent decades discovering and improving the full spectrum of organ transplantation technologies. He tirelessly educated other surgeons so they could perform these lifesaving procedures worldwide.

In between, he battled an apathetic and sometimes hostile establishment that raised "ethical and legal" obstacles relating to **organ transplantation**.

To put the enormity of Dr. Starzl's work in perspective, there was a time when he was averaging the publication of a new scientific paper every **7.3 days**![3]

In responding to pessimists Dr. Starzl wrote:

"What was inconceivable yesterday, and barely achievable today, often becomes routine tomorrow."[3]

Challenges of Transplanting A Liver

Few people understand the difficulties of performing a liver transplant.

Some view transplantation as simple as removing and replacing parts like a toy model.

The reality is that **liver transplantation** requires the intricate disconnect and reconnect of blood vessels, ligaments, and ducts... while keeping the patient alive on the operating table.[10]

The **metabolic** challenges are more complex. A patient can die from coagulation imbalance, acidosis, ammonia toxicity, or the acute deficit of other critical liver functions.[11-16]

Lifelong monitoring, and anti-organ-rejection drugs are required.

The challenge of identifying tissue-type-matched **donor organs** in a timely manner was considered insurmountable in early years.

Why the Liver Is Essential to Sustain Life

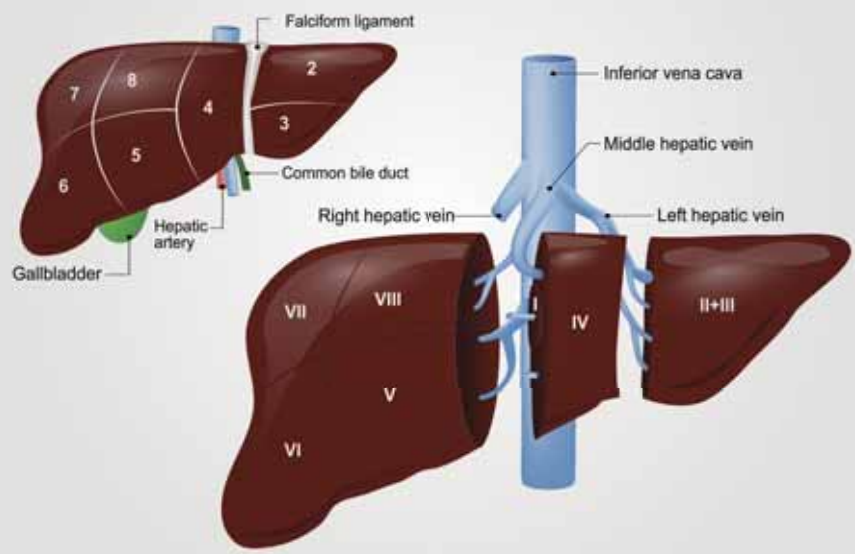
Everything one ingests that is absorbed from the **stomach** or **intestines** first passes through the **liver**. This is where food, drinks, drugs and most everything else you consume is detoxified and/or converted into forms that are easier to use in cells throughout the body.

At any given moment, the liver contains about **13%** of the body's entire blood supply.[19] As blood moves through the liver, numerous life-sustaining metabolic processes are performed.

This includes detoxifying **ammonia** that is a byproduct of normal cell metabolism.

Acute liver failure results in rapid **ammonia buildup** that quickly kills unless some **liver function** is restored.

Liver Transplantion (Segmental Anatomy of the Liver)



Chronic **liver dysfunction** can result in excess ammonia levels that dangerously impact one's health and wellbeing.[15,16]

The liver contains specialized **proteins** that **vitamin K** activates to enable blood to properly coagulate. A dysfunctional liver adversely impacts blood clotting.[20]

Diabetes is often thought of as a **pancreatic** disorder, but the **liver** also regulates glycemic control by, among other things, storing excess **blood glucose** (as glycogen). It then releases glucose back into the blood as needed. **Type II diabetics** often have impaired liver function that results in poorly controlled blood glucose.[21,22]

Healthy **digestion** is highly dependent on the **liver** to produce **bile** that breaks down dietary fats for absorption in the small intestine.

Chronic Illnesses Can Begin in the Liver

Age-related diseases often begin as the liver slowly fails. That's because the liver is responsible for everything you've read so far and more, including:[19,23-25]

1. Degrading old, red blood cells to make room for new, red blood cells that can efficiently carry oxygen,
2. Producing **lipoproteins** essential to transport **fats,** and
3. Making essential **plasma proteins** (like albumin).

The liver is responsible for more than **500** vital functions, including making **immunoglobulins**, that are essential for immune health.[19]

When the **liver** completely **fails**, the result is **death** unless a **transplant** is readily available.

Few understand the difficulty of advancing transplant technology.

Some think organ transplantation is as simple as removing and replacing parts like a model.

Replacing an organ requires the intricate disconnect and reconnect of vasculature, peritoneum, ligaments, and much more... it is exceedingly complex.

Today's Chronic Liver Disease Issue

Hepatitis C was once a leading cause of liver cirrhosis, liver cancer and eventual liver failure.

Drugs approved seven years ago now cure over **90%** of hepatitis C viral infections.[26] This is an underappreciated medical breakthrough.

Liver cirrhosis caused by excess **alcohol** consumption has remained rather constant over the past four decades.[27]

The disorder that is explosively **increasing** in prevalence is **non-alcoholic fatty liver disease**, which is abbreviated as **NAFLD**.

NAFLD represents more than **75%** of all liver disease. Its severe form, non-alcoholic steatohepatitis (NASH), is becoming a **leading** reason people need **liver transplants**.[28]

Long before acute **liver failure** occurs, **NAFLD** can inflict multiple miseries when it progresses to its more severe form, **NASH**, which causes a chronic **inflammatory** disorder that impacts **quality of life**.

Most physicians respond to the health problems caused by NAFLD by prescribing **drugs** to treat the various disorders that arise as **liver** function declines.

A better approach is to reverse the **damage** and **fat** in the liver by increasing insulin sensitivity and lowering glucose and lipid levels. This can be accomplished by losing excess **body fat** and increasing **physical activity**.

These lifestyle changes are easier said than done.

NAFLD that has progressed to NASH can be so severe that more than dietary and physical activity improvements are needed.

New Approach to A Healthier Liver

NAFLD and **NASH** increase the risk of death from liver disease by **1.5-fold** to over **10-fold**.[29]

Before causing death, the buildup of fibrotic (non-functional) liver tissue ignites a series of chronic conditions that are often confused with **degenerative** aging.

Decades ago, **Life Extension®** identified nutrients to help benefit those afflicted with **non-alcoholic fatty liver disease** (**NAFLD**).

The nutrients included **n-acetyl-cysteine**,[30,31] **milk thistle extract**,[32,33] and an expensive nutrient (sold as a drug in Germany) called **polyenylphosphatidylcholine** (PPC).[34]

I'm pleased to announce a new approach that demonstrates a marked reduction in severe **liver-fibrosis** scores in addition to the modest benefits achieved by lifestyle modifications.

This non-drug method showed a **46%** decrease in **C-reactive protein** (CRP), indicating a significant lowering of systemic **inflammation**.

The article on page 46 of this month's issue describes this advance that may save lives while improving one's **quality of life**.

This is of particular importance to **abdominally obese** individuals who have chronically elevated **inflammatory** markers (such as C-reactive protein).

A Hero Today

I grew up in Pittsburgh, Pennsylvania, at the time Dr. Starzl was performing the first, human **liver transplants** in the 1960s.

Yet the first time I heard his name was in **2017** in an obituary announcing his death at the age of **90**. (I read obituaries to increase my motivation to keep me and you out of them.)

As I read how Dr. Starzl saved so many lives, I lamented that he is not a more recognized name.

By the time of his death, **Thomas Starzl, M.D. Ph.D.** had a towering reputation in the field of transplant medicine, yet **sports stars** of his era are whom most people recognize and idolize.

The burden of NAFLD on the escalation of **liver disease** can be summarized in the following percentages of those afflicted:[8]

Adults	Percent with NAFLD
Obese	Up to **91%**
Overweight	Between **35-67%**
Normal Weight	Up to **25%**

Critics called Dr. Starzl reckless. Yet his relentless exploration and clinical implementation changed the course of transplantation medicine forever.

Annual Super Sale

For the **31st** consecutive year, we are **discounting** the price of all our advanced nutritional formulas.

Long-time readers take advantage of this annual sale, along with **additional discounts** to obtain **premium-grade** nutrients at the year's best pricing.

This year's **Super Sale** ends on Feb. 3, 2020. With the **free shipping** available to **Premier Rewards** customers, consider ordering what you need now and then prepare your longer list in **January 2020**.

As many of you learned decades ago, our commitment to **quality** is backed by our unrelenting efforts to eradicate **degenerative aging**.

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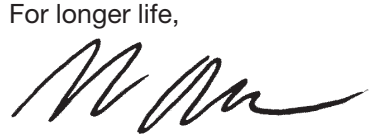

William Faloon, Co-Founder
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Liver Transplant Complexities

A patient with a failing liver is put on a waiting list and told to be available on a moment's notice.

The liver-failure patient relies on someone else to tragically die and the deceased individual's liver to be harvested in a timely fashion and then transported for rapid taransplantation.

There is a severe shortage of donor organs. Each year, about 7,000 Americans with failing livers die because a suitable transplant does not become available in time.[17]

The operation is done through a large incision in the upper abdomen.

The surgical procedure involves severing and reattaching the common bile duct, the hepatic artery, the hepatic vein and the portal vein, as well as ligaments that hold the liver in place.[10]

Additional vascular surgery involves the inferior vena cava (the largest vein in the body that is located in the thoracic and abdominal regions).[10,18]

The donor's blood in the liver is replaced by an ice-cold, organ-storage solution, until the donated liver is implanted into the liver-failure patient's body.

Implantation involves anastomoses (surgical connections) of the inferior vena cava, portal vein, and hepatic artery. After blood flow is restored to the new liver, the biliary (bile duct) connection is constructed, either to the recipient's bile duct or small intestine.[10]

The surgery usually takes between four and eight hours.

During the surgical procedure careful monitoring of the patient is needed as there are many complex challenges (such as coagulation imbalances) that can result in the patient's death on the operating table.

Precise use of organ-rejection drugs is then needed.

Dr. Starzl pioneered and relentlessly improved <u>all</u> of the above.

COMBAT Senescent Cells and AGING

Science of *Senolytics*!

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

Senolytic compounds selectively help target senescent cells in the body.

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

Once-Weekly Senolytic Formula

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

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

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Essential Factor to Reduce Cell Fat Storage

The engine that enabled you to mature from a **fertilized egg** to an **adult** is a cell protein called **mTOR**.

Once we reach maturity, **mTOR** should turn down and serve only to maintain our structural and functional integrity.

Most people today consume too many excess calories. This results in **mTOR** is constantly running at high gear, which is a factor in unwanted **fat storage**.

Increase AMPK to Lower mTOR

Studies show that increasing **AMPK** activity turns down excess **mTOR**.[1]

Scientific studies show that increasing **AMPK** activity can encourage cells to store less fat and burn it as energy.[2,3]

AMPK Metabolic Activator was formulated based on data showing reduced **belly fat** in response to just one of its ingredients (*gynostemma pentaphyllum*).[3]

AMPK Metabolic Activator is a dual-nutrient formula designed to support healthy AMPK cellular activation.

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SUPER SALE PRICING!

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4 bottles $21.60 each

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1 DAILY

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

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PRO-RESOLVING MEDIATORS

Specialized **Pro-Resolving Mediators** (**SPMs**) support a healthy relationship with inflammatory factors in our aging bodies.

SPMs help:

- **REMOVE:** Support the body's natural process for clearing cellular debris.
- **RESTORE:** Help balance cytokines in the body.
- **RENEW:** Promote the regeneration of healthy tissues.

Specialized **Pro-Resolving Mediators** (**SPMs**) are derived from polyunsaturated fatty acids found in highly refined, marine-oil concentrate.

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1 bottle **$18.90**

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In the News

Low Magnesium Increases Risk of Depression in Women

A beneficial role for greater magnesium intake and higher serum magnesium levels in the prevention of depression was suggested in a study published in the *Journal of Affective Disorders.**

The study included 17,730 participants in the 2007–2014 National Health and Nutrition Examination Survey (NHANES).

Researchers found a lower risk of depression among women who had a *higher* intake of magnesium.

Individuals who were among the top **25%** of magnesium consumers had an adjusted risk of depression that was **53%** less than those who were among the lowest **25%**.

Editor's Note: The study contributes to the ever-expanding body of evidence in support of optimal magnesium intake and periodic magnesium blood testing, and it supports the inclusion of depression on the list of conditions benefitted by magnesium.

* *J Affect Disord.* 2019 Mar 1;246:627-632.

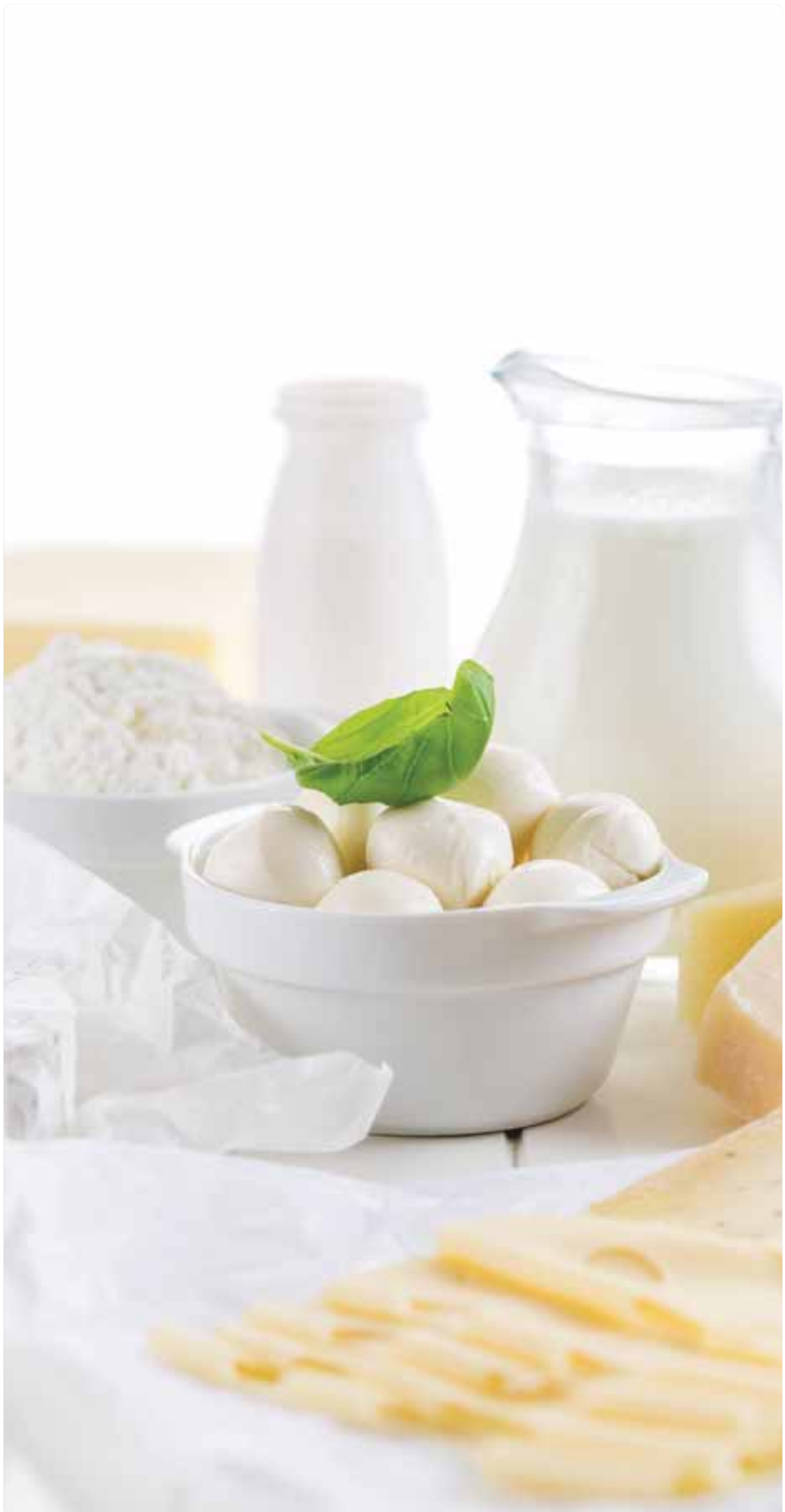
Vitamin D Deficiency Predicts Mortality in Cirrhosis Patients

Results from a meta-analysis published in *Clinical Research in Hepatology and Gastroenterology* found an association between severe vitamin D deficiency in patients with cirrhosis of the liver and a significantly greater risk of dying during follow-up periods ranging from 147 to 419 days.*

For the meta-analysis, researchers selected eight studies that included a total of 1,339 subjects with liver cirrhosis. Study reports included subjects' serum **25-hydroxyvitamin D** levels and provided data concerning mortality from all causes. While vitamin D levels of less than **20 ng/mL** were categorized as deficient, severe deficiency was defined as a level of less than **10 ng/mL**. Being severely deficient in vitamin D was associated with a **79%** greater mortality risk during follow-up, in comparison with having higher levels of the vitamin.

Editor's Note: Vitamin D deficiency of less than **6 ng/mL** was associated with an even greater risk of dying during follow-up. Severe deficiency was also associated with cirrhosis severity.

* *Clin Res Hepatol Gastroenterol*. 2019 Mar 29.



Calcium May Decrease Risk of Age-Related Macular Degeneration

A greater intake of calcium was linked to a lower risk of progression to late, age-related macular degeneration (AMD), according to a study reported in *JAMA Ophthalmology*.*

From 1992 to 2001, the Age-Related Eye Disease Study (AREDS) evaluated the effects of nutritional supplements on cataracts and AMD.

The study included 4,751 men and women, who were followed until 2005. Among those whose intake of calcium from food was among the **top 20%** of participants, there was a **27% lower risk** of developing late AMD in comparison with subjects whose intake was among the **lowest 20%.** When calcium supplementation was evaluated, participants whose intake was among the top one-third had a **30% lower risk** of developing neovascularization than those who did not use calcium supplements.

Editor's Note: The authors found that, "Women in the highest tertile of calcium supplementation had a lower risk of progression to neovascular AMD…compared with those who did not take calcium supplements. Similar findings were found in men for dietary calcium. Too few men took calcium supplements to allow for analyses."

* *JAMA Ophthalmol.* 2019 May 1;137(5):543-550.

Olive Oil Helps Maintain Normal Blood Viscosity

A presentation at the American Heart Association's Epidemiology and Prevention/Lifestyle and Cardiometabolic Health Scientific Sessions 2019 reported on a study showing an association between regular consumption of olive oil and a reduction in blood platelet activity. Participants were healthy, obese adults, who were at risk of developing cardiovascular disease.* Increased blood platelet activation increases blood clot formation, which can impair blood flow.

The 63 nondiabetic subjects had no known cardiovascular disease and were part of a larger prospective study of platelet function in obesity. Dietary questionnaire responses provided information concerning the frequency of olive oil intake. Platelet activation was assessed via flow cytometry.

Among subjects whose intake of olive oil was once a week or less, platelet activation was significantly higher than the level of activation associated with consuming olive oil one to three times per week.

Editor's Note: Olive oil consumption four or more times per week was associated with an even greater benefit than consuming the oil one to three times weekly.

* Abstract P335. Presented at: EPI-Lifestyle 2019 Scientific Sessions; March 5-8, 2019; Houston.

Glucosamine Supplementation Lowers Risk of Cardiovascular Disease

Among people who supplemented with glucosamine, there was a lower risk of cardiovascular disease events, coronary heart disease, stroke, and death from cardiovascular disease, according to a study reported in *The BMJ*.*

Researchers utilized data from 466,039 participants who enrolled in the UK Biobank between 2006 and 2010. Subjects completed questionnaires upon enrollment that provided data concerning diet, supplement use and other factors. Participants were followed for an average of seven years.

People who used glucosamine supplements had a **15%** lower risk of total cardiovascular disease events, defined as cardiovascular disease death, coronary heart disease, and stroke, in comparison with people who did not use the supplements. When these outcomes were examined individually, glucosamine use was associated with a **22%** lower risk of cardiovascular death, an **18%** lower risk of coronary heart disease and a **9%** lower risk of stroke.

Editor's Note: Glucosamine is a popular over-the-counter supplement used by people with osteoarthritis to relieve pain and support healthy joint tissue.

* *BMJ.* 2019 May 14;365:l1628.

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Visible Wrinkle Reduction with Oral Plant Ceramides

BY MICHAEL DOWNEY

Our **skin** has its own natural, built-in moisturizer: **ceramides**.

They make up **50%** of the lipids in the outer layer of the skin and are crucial for a **wrinkle-free** skin appearance.[1]

Ceramides are part of the skin's **barrier function** that enables a smooth and moist outer appearance.

With age and environmental exposure, the skin's outer barrier and moisture are depleted.[2,3]

Seeking a way to revitalize aging skin, scientists have developed plant-derived **ceramides** that can be taken ***orally,*** working from the inside out to help restore skin to a more youthful state.

A clinical trial showed that taking a plant-ceramide extract does more than just moisturize the skin.

It reduced fine lines and wrinkles—with **88%** of participants experiencing ***visible reduction of wrinkles*** and **90%** experiencing greater skin **hydration**.[4]

The Need to Replenish Ceramides

Ceramides are lipids that help hold the surface skin cells together.[3,5]

They are essential to the skin's barrier function and moisture content, both of which decrease with age.[2,3]

Ceramides are natural skin constituents that help keep skin moist and soft, and protect against damage from pollution and other environmental stresses.

Alterations to the skin's barrier function and moisture content contribute to wrinkles and dry skin, and make skin more susceptible to environmental allergens, infections, and skin disorders.[2,6]

The solution: **Plant-derived ceramides**—or **phytoceramides**—that can be taken orally.

The Superiority of *Oral* Ceramides

Researchers discovered that **ceramides** are found in large quantities in grains such as rice, corn, and wheat.[7,8]

Using non-genetically modified **wheat**, they created an extract containing purified **gluten-free** oils.[8]

This wheat-derived **ceramide extract** is taken *orally* to nourish skin cells in the *same way* as the body's natural supply of ceramides.

By circulating internally through the bloodstream, these ceramides are able to penetrate into the deepest skin cell layers, where they can hydrate, smooth, and help regenerate skin all over the body.[8,9]

Skin Rejuvenation

In one lab study, ceramide extract effectively **hydrated** and **rejuvenated** human skin.[10]

One way it does this is to inhibit *enzymes* that destroy **elastin** (which provides resilience to the skin). These **elastin-destroying** enzymes contribute to increased wrinkling and loss of skin flexibility.[11,12]

Ceramides were also shown to slow the **hyperpigmentation** that can cause age spots and other unwanted discolorations.[13-15]

To conclusively demonstrate wheat-derived ceramides' effect on aging skin, investigators conducted a series of double-blind, placebo-controlled **human** studies.

The first involved giving **200 mg** daily of either a placebo or an **oral ceramide extract** to women with dry to very dry skin.[9]

After three months, the **ceramide group** experienced *substantial improvement* in skin hydration, along with significant reductions in dry patches, roughness, and itching. The placebo group had no changes.[9]

In another clinical trial, women with dry to very dry skin took **350 mg** daily of either wheat-derived, **ceramide-oil extract** or a placebo.[8]

In three months, the ceramide oil significantly increased **skin hydration** all over the body.

On the arms, hydration increased by over **35%**, compared to less than **1%** in the placebo group.[8]

When volunteers were asked to rate their own views, the **ceramide extract** was perceived to provide greater improvement in *all* factors. These included facial skin hydration, leg skin hydration, suppleness, roughness, uniformity of complexion, itchiness, and overall state of the skin.[8]

Additional Findings

A clinical trial demonstrated the most impressive results yet, showing that plant ceramides can reverse age-related wrinkling and dryness.

Sixty-four women, aged 42 to 66, were given either **350 mg** of the **oral ceramide extract** or a placebo **daily for 12 weeks**.[4]

The ceramide extract:[4]

- Increased skin hydration for **75%** of the women after **four weeks**,
- Increased skin hydration for **90%** of the women after **12 weeks**,
- Visibly reduced **wrinkles** around the eyes ("crow's feet") for **88%** of the participants after **12 weeks**,
- Visibly reduced **wrinkles** through ***20 weeks***—a full eight weeks *after* participants stopped taking ceramides, showing long-term benefits, and
- Improved **radiance** and reduced dullness around the eye area after **eight weeks**.

Compared to the placebo, the ceramide extract led to:[4]

- **3 times** the reduction in wrinkle visibility,
- **Nearly 3 times** the improvement in facial-skin hydration, and
- **5 times** the improvement in skin radiance.

Ceramides and Dermatitis

Scientists have discovered that many **skin disorders** are connected to a decrease in **ceramides**.[3]

For example, patients with **psoriasis** (a chronic skin condition marked by a scaly, itchy rash) and **atopic dermatitis** (a condition that makes skin red and itchy) have lower levels of ceramides in the outer skin layer.[16-18]

WHAT YOU NEED TO KNOW

Get Younger, Healthier Skin

- Natural lipids known as **ceramides** play an essential role in the water-retaining properties of the skin, which are critical to preserving skin's smooth, youthful appearance.
- Ceramides are essential to the skin's barrier function and moisture content.
- Clinical trials have shown that, when taken **orally**, plant ceramides are transported through the bloodstream and deep into the cells of the skin. There, they work from the inside out to improve skin hydration, smoothness, and suppleness.
- A recent, landmark study demonstrates that **oral, wheat-derived ceramides** significantly **reduce wrinkles** and fine lines and effectively **hydrate** and **rejuvenate** the skin.

Scientists found that using topical creams *and* increasing ceramide content in the skin alleviated **atopic dermatitis** in children and adults. Ceramides also relieved **contact dermatitis** (caused by an allergen or irritant) in patients, more than topical treatments alone.[19,20]

Dermatitis is more than an inconvenience. Patients with the condition have higher concentrations of bacteria, especially ***Staphylococcus aureus***, on the skin surface.[21,22]

This bacterium is dangerous, causing skin infections, pneumonia, and heart valve and bone infections.[23] Ceramides help protect against the damage *Staphylococcus aureus* can do.[24-26]

Compromised skin integrity increases the chance of bacterial infections that strike during other illnesses and are often resistant to drugs.[27,28]

Summary

Ceramides are essential to the skin's barrier function and moisture content.

Ceramides are natural **lipids** that function as natural skin moisturizers. Losing them leaves skin vulnerable to wrinkles, dryness, infections, and skin diseases.

Researchers developed an **oral**, wheat-derived **ceramide extract** that supports skin from *within* the body.

Clinical trials confirm that it substantially boosts **skin hydration**, **smoothness**, and **suppleness**.

The most recent study demonstrates that these plant ceramides **reduce fine lines** and **wrinkles** and rejuvenate the skin. •

Why Aging Skin Needs Ceramides

The most visible signs of aging occur in the outer skin layer, the ***stratum corneum***.

The stratum corneum is composed of flattened, hard, dead skin cells that resemble overlapping bricks, which start as living cells in the lower skin layers. As they are pushed closer to the surface, they flatten out and die, providing a thin but very tough barrier.[29]

These flat cells would immediately flake away if they were not held together by a kind of flexible skin cement—**ceramides**.[8] If you think of the dead skin cells as bricks, the ceramides are the mortar between them that holds them in place.

Together, these flat cells and the flexible, lipid-rich cement act as a two-way barrier, keeping out germs, toxins, and other contaminants, and ***keeping in*** moisture. The result is healthy, flexible, and supple skin.[30]

Cells in the stratum corneum are constantly replaced by living cells in the deeper skin layers.[29] And the **ceramides** and other lipids holding them together are replenished by nutrients brought to the deeper skin layers by the bloodstream.[31]

That's how it works in youth.

Studies show that after age 50 or so, new outer layer skin cells take more than **50% longer** to reach the surface.[32] The amount of lipids supporting these cells also declines, with **ceramides** among the first to go.[33-35]

As a result, the "cement" that holds the skin cells together is weakened and loses much of its moisture-barrier function.[35] Lost moisture results in the **dry, wrinkle-prone** skin common in older adults.[33,35,36]

In addition, the skin is damaged by oxidative stress and chronic inflammation,[37] which trigger production of *enzymes* that degrade skin proteins. Among their chief targets are **collagen**, the main, structural skin protein, and **elastin**, which gives skin its suppleness and flexibility.[38] Chronic exposure to sunlight aggravates the destruction of these proteins.[33,39-41]

Ceramides act as a natural sealing agent from *inside* the body. They're delivered by the bloodstream, then make their way up through deeper skin layers until they're deposited in the stratum corneum.[31]

Oral ceramides *can* replenish the skin's supply, leading to reduced wrinkles, improved hydration, and rejuvenated skin.[4,8,9]

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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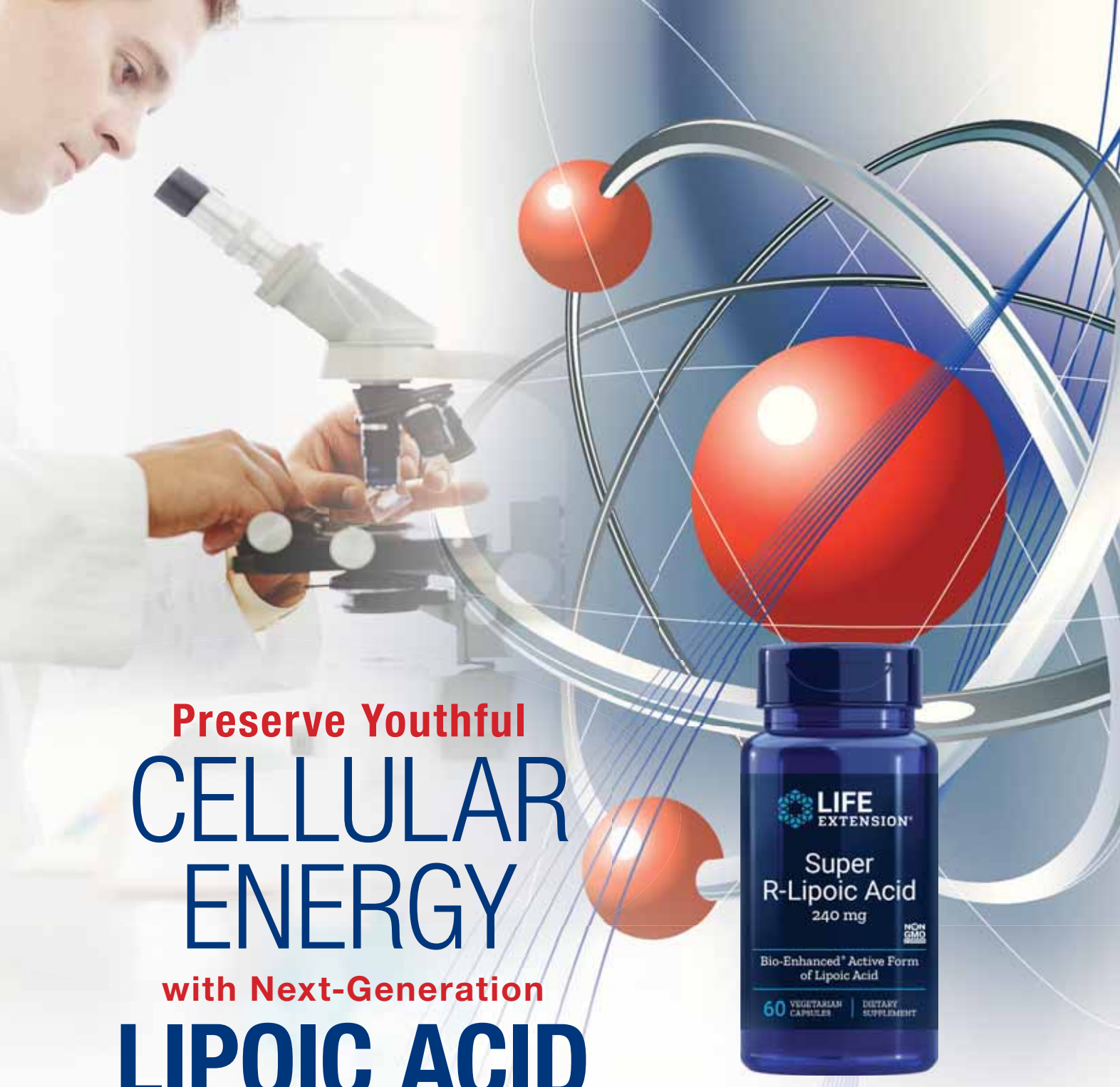

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Vitamin K Promotes Healthy Blood Sugar Metabolism

BY SUZANNE SCHIFF

Type II diabetes isn't curable, but it is preventable, given the right combination of lifestyle and nutritional choices.

There's no cure for **type II diabetes**. But there is new hope for the 21 million adults living with it.[1]

Recent research has shown that **vitamin K** plays an important role in **glucose metabolism**. That can help diabetics avoid the high blood sugar that damages the eyes, kidneys, nerves, and heart.

Vitamin K may also help **prevent** the onset of type II diabetes.[2]

Vitamin K and Risk of Type II Diabetes

Vitamin K is best known for helping blood properly clot, maintaining bone density, and preventing vascular calcifications.[2,4-7]

But its benefits go far beyond that.[2,8,9]

Several large-scale studies have analyzed the association between vitamin K and **type II diabetes**, examining more than **40,000** people in total.[2,3,10,11]

Together, these studies show that *increased* intake of vitamin K—as either **K1** (**phylloquinone**) or **K2** (**menaquinone**)—is linked to a *reduced* risk of developing type II diabetes.[2,3,10]

In one study of older adults, subjects who increased their dietary vitamin K intake had a **51%** reduction in their risk for developing diabetes, compared with those who decreased or failed to change their vitamin K intake.[3]

The study further demonstrated a **17%** ***reduction*** in the risk for type II diabetes for each additional intake of **100 mcg/day** of vitamin K1.[3]

And a **2018** study revealed that people with type II diabetes had blood vitamin K levels more than **2.7 times** lower than non-diabetic patients of the same age.[11]

Lower levels of vitamin K are linked to greater **insulin resistance**, the core metabolic defect in type II diabetes.[11]

Vitamin K Improves Glucose Metabolism

Recent studies show that supplementing with **vitamin K** (either as **K1** or **K2**) can directly reduce the risk of type II diabetes. Among the results:

- In a study of 355 adults 60-80 years old, **500 mcg/day** of **K1** for three years led to significant *reductions* in insulin resistance and blood insulin levels in men.[12]
- A study of 82 women (mean age: 40 years) with **prediabetes** (a condition often indicative of poor insulin sensitivity, that can progress to type II diabetes) showed that **1,000 mcg/day** of **K1** resulted in significant increases in insulin sensitivity and *reductions* in insulin levels in just four weeks.[13]
- In a four-week study of 33 healthy young men (median age 29), supplementation with vitamin **K2** led to *increased* insulin sensitivity.[14]

Research shows that *both* forms of the vitamin, **K1** and **K2**, have a positive impact on glucose metabolism, insulin resistance, and other metabolic functions. These results hold out great promise for people with diabetes *and* those at risk of developing it.

How It Works

A study published in 2018 sheds further light on *how* vitamin K improves glucose metabolism.[8]

Dutch researchers gave 214 postmenopausal women either **180 mcg/day** of vitamin **K2** or a **placebo** over a period of three years.[8]

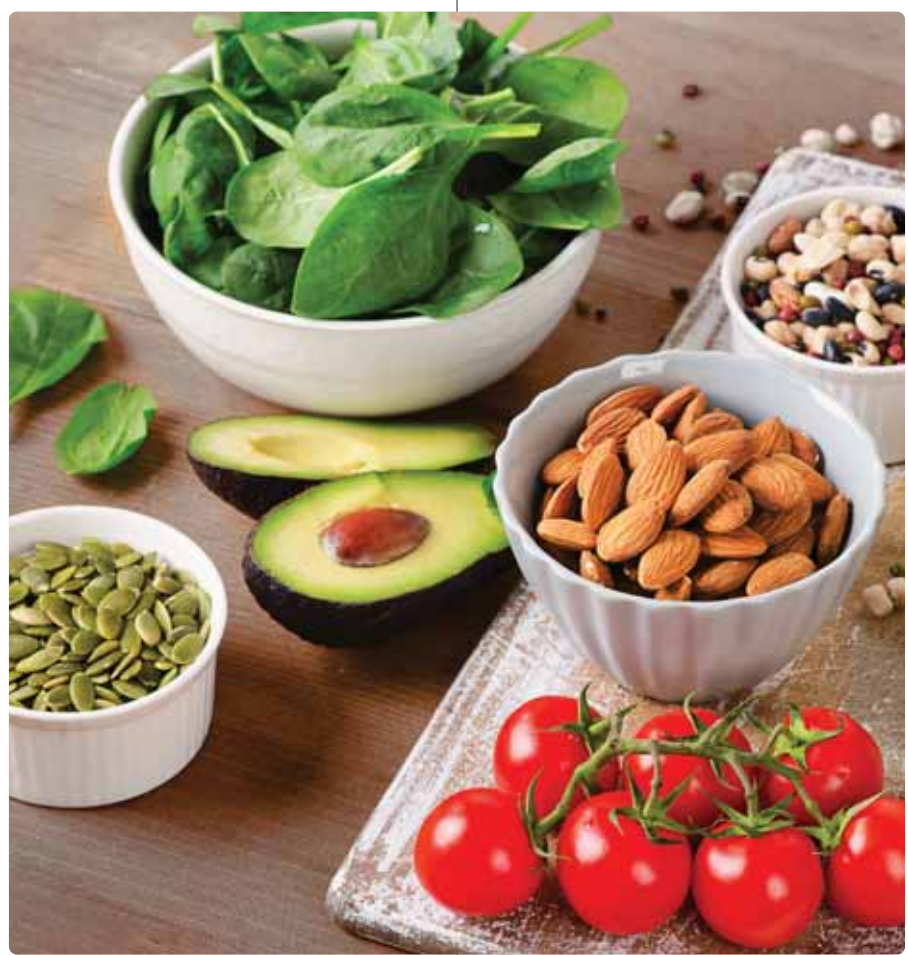
As expected, they found that vitamin K activated a group of proteins called ***Gla proteins***,[8] known for their role in bone and mineral metabolism. However, Gla proteins are found throughout the body, and are instrumental in regulating metabolism.

In the group that received vitamin K, a subset who showed the largest increase in Gla protein activity experienced significant **reduction in abdominal fat mass**, compared with other participants.[8]

That group also had a significant reduction in body mass index, waist and hip circumference, and waist-hip ratio. All these results translate to a *reduced* risk for developing metabolic syndrome and type II diabetes.[8]

Vitamin K has also been shown to boost levels of **adiponectin**, a beneficial hormone that helps regulate the metabolism of sugars.[2]

Finally, a series of preclinical studies have indicated that vitamin K reduces activity of **nuclear factor kappa B** (**NF-kB**), the primary driver of inflammation in the body.[15]



Summary

Type II diabetes isn't curable, but it is preventable, given the right combination of lifestyle and nutritional choices.

There's growing evidence that those with *higher* intake and blood levels of **vitamin K** (in the form of both **K1** and **K2**) have substantially reduced risks of developing type II diabetes.

Studies show that people taking vitamin K have improved glucose metabolism, improved insulin sensitivity, and lower body fat, all of which protect against type II diabetes and metabolic syndrome.

Increasing vitamin K can also benefit those who already have diabetes, by keeping damaging high blood sugar under control. •

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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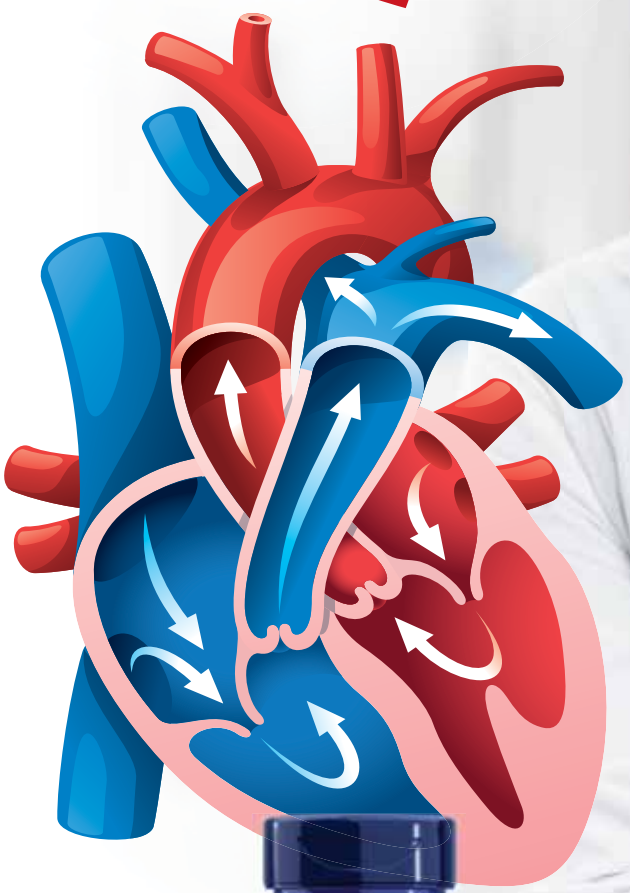

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Ease Arthritis with Type II Collagen

BY MICHAEL DOWNEY

Nearly **24%** of U.S. adults suffer from **arthritis**.[1]

One type, **osteoarthritis**, is a leading cause of disability worldwide.[2]

Arthritis was once considered an unavoidable result of wear and tear on the joints.

But scientists discovered a way to combat the structural degeneration that marks osteoarthritis. They did this by supplying the same type of **collagen** that is the main component of **joint cartilage**.

The name of this compound is **undenatured type II collagen**.

Clinical trials show that this specific **collagen** can improve joint pain, joint function, and quality of life, while helping to reduce the inflammatory cartilage destruction.[3-6]

Collagen may even boost the production of ***new cartilage*** and protect against the development of future arthritis.[7]

A Novel Approach to Arthritis

Most people treat arthritis by taking painkillers or anti-inflammatory drugs. They provide temporary relief but can have long-term side effects and do nothing to address the underlying cause.

Undenatured type II collagen is identical to the collagen present in our joints.

Animal and human studies have shown that supplementation with this type of collagen, prevents the progression of joint damage, helps relieve joint pain, and improves joint function. [3,7,8]

This should be of interest for the millions of Americans affected by osteoarthritis.

Protecting Joints in Animals

In a rat model of osteoarthritis, oral administration of undenatured type II collagen prevented pain, improved balance, and improved motor activity.[8]

Additionally, a marker of **cartilage breakdown**, called **CTX-II**, was significantly *decreased*. This suggests that this collagen ***prevented the progression of joint damage***.[8]

In dogs, supplementation with undenatured type II collagen for 90 days resulted in significant declines in overall pain and increased physical activity levels.[9]

Promising Results in People

Scientists decided to see what would happen if **undenatured type II collagen** were combined with two known, cartilage-supporting nutrients, ***glucosamine*** and ***chondroitin sulfate***.

In a year-long study, 104 patients (average age 61.4 years) with **osteoarthritis of the hand,** took glucosamine and chondroitin daily. Fifty-seven of those patients *also* took small daily doses (just **2 mg**) of undenatured type II collagen.[7]

Doctors found that patients who added collagen to their treatment had **less severe osteoarthritis** than the other group, at both six months and after one year. This collagen decreased progression of osteoarthritis and reduced bone decay more than glucosamine and chondroitin alone.[7]

The study also tested subjects' urine for *two* markers of cartilage breakdown, **CTX-I** and **CTX-II**.

Levels of these markers were reduced for both groups at six months and at one year. But those taking **undenatured type II collagen** with the other nutrients had a *greater* decrease in **CTX-II** after a year, indicating that patients taking collagen improved *more* than those treated with glucosamine and chondroitin alone.[7]

The study's authors noted that undenatured type II collagen appears to reduce damage to joints and slow the breakdown of cartilage, and it may help promote **new cartilage synthesis.**

Randomized Controlled Human Trial

Next, scientists enlisted patients, aged 47 to 70, with **knee osteoarthritis** for a randomized controlled study.[3]

Each day, all 39 patients took **1,500 mg** of **acetaminophen** (Tylenol®), the usual first step in mild osteoarthritis treatment. Twenty of the patients *also* took **10 mg** of **undenatured type II collagen** daily.[3]

After 90 days, in the patients taking acetaminophen *and* collagen, there was significant improvement in **joint pain** while walking, in **knee function**, and in **quality of life**. In fact, this group reported a compelling **50% reduction** in the pain score.[3]

But in the acetaminophen-only group, the sole improvements were in some subscales of the pain and quality-of-life measures.[3] The addition of undenatured type II collagen more substantially decreased joint pain and supported joint health.[3,7,8]

Acetaminophen is dangerous to the kidneys and liver when taken long term. For instance, regular acetaminophen users may be doubling their risk of kidney cancer.[10-13]

WHAT YOU NEED TO KNOW

Fight Arthritis with Undenatured Type II Collagen

- Osteoarthritis is the most common form of arthritis affecting millions of Americans.
- Drug treatments come with harsh side effects and only address symptoms.
- A unique collagen compound called **undenatured type II collagen** has been developed that is capable of safely and naturally reducing the inflammation and destruction that aging joints can suffer in osteoarthritis, reducing pain and improving quality of life.
- Groundbreaking human studies show that undenatured type II collagen significantly improves joint pain, joint function, and quality of life—and even boosts production of **new cartilage.**

Summary

Uncontrolled **inflammation** is a key underlying factor in **osteoarthritis**, resulting in joint pain, inflammation, stiffness, and deterioration.

A protein called **undenatured type II collagen** has demonstrated the ability to relieve joint pain and inflammation, and even slow the destruction of cartilage.

Animal and human studies have demonstrated that **undenatured type II collagen** improves joint pain and function, enhances quality of life, and reverses cartilage loss. ●

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

Other Nutrients for Joint Health

Undenatured type II collagen can improve joint pain and function and may reduce cartilage loss. Other nutrients act in different ways to support the overall health and comfort of joints. Taking them together can most effectively provide relief from arthritis pain.

BOSWELLIA SERRATA

Resin made from the ***Boswellia serrata*** tree has long been used in traditional Indian medicine to alleviate inflammatory diseases like arthritis. Research shows that this plant extract promotes joint health by inhibiting inflammation that affects aging joints.[14-16] Placebo-controlled studies have shown that *Boswellia* decreases swelling, pain, and joint discomfort in patients with **osteoarthritis** of the knee.[16,17]

GLUCOSAMINE

Glucosamine is a natural compound found in **cartilage.** In controlled clinical trials, it was shown to support the structural foundation for joint and cartilage tissue, promoting joint health.[18,19] It's shown a greater effect when used *in combination* with other nutrients,[20,21] underscoring the need for arthritis sufferers to try a multipronged approach.

BORON

The mineral **boron** is essential for healthy bones and joints.[22,23] A double-blind pilot study on patients with **severe osteoarthritis** showed that **71%** of those taking boron improved, while only **10%** of those taking a placebo improved. No side effects were observed.[24]

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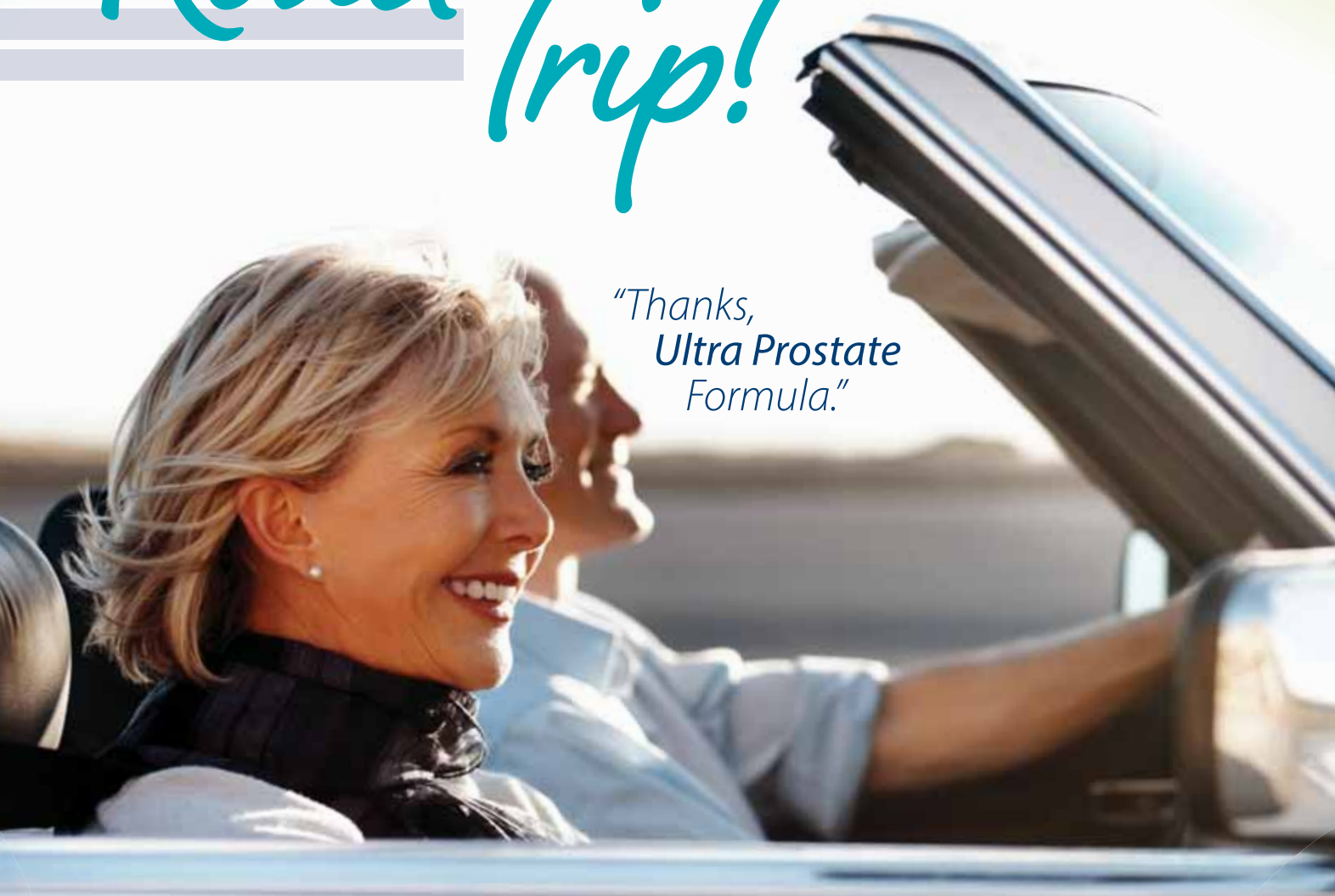

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Protect Against Fatty Liver with Targeted Probiotics

BY KAREN NEWTON

Alcohol abuse and viral hepatitis are well-known causes of liver disease.

Few people are aware that **non-alcoholic fatty liver disease** (**NAFLD**) and its more severe form, **nonalcoholic steatohepatitis (NASH)**, are responsible for a large share of chronic liver disease cases.[1-4]

The rates of both **NAFLD** and **NASH** have grown exponentially and are expected to increase by **21%** and **63%**, respectively, by the year **2030**.[5]

NAFLD shows no obvious symptoms until potentially irreversible liver damage has occurred. And there are no medications currently available to treat it.

But researchers have discovered a close link between the health of the **liver** and the health of the **gut**.[6]

They found that unhealthy gut bacteria contribute to NAFLD and beneficial bacteria protect against it, when combined with a healthy lifestyle.[6-8]

Recent clinical trials have shown that a specialized blend of **probiotics**, in combination with a healthy lifestyle, can reduce the severity of NAFLD and even *stop* the harm it does to the liver.[7,8]

In one study, probiotic supplementation plus following healthy lifestyle advice led to a remarkable **54% reduction** in **C-reactive protein** levels, a measure of inflammation.[7]

The Threat of Non-Alcoholic Fatty Liver Disease

The most common sources of chronic liver damage and liver failure used to be alcohol abuse, and infection of the liver by viruses such as hepatitis B and C.

In recent years, however, liver disease *not* associated with alcohol or infection has skyrocketed. In this condition, known as **non-alcoholic fatty liver disease (NAFLD)**, high levels of fatty tissue build up in the liver, slowly destroying it.

NAFLD currently affects approximately **25%** of the entire U.S. population, accounts for over **75%** of all chronic liver disease, and is a major contributor to the incidence of advanced liver disease.[5,9-11]

Those people most at risk are the **obese** and individuals who suffer from high **blood sugar**.

Men and women with NAFLD usually have no symptoms. It is diagnosed through a combination of blood tests and medical scans. In cases where the diagnosis is not clear,[12] a biopsy may be necessary.

Few people give their liver a second thought, but it works tirelessly to filter the blood and detoxify the body.

In the long term, NAFLD can cause **fibrosis** (scarring) of the liver, significantly impairing normal liver function.[13-15] *Advanced* scarring, known as liver **cirrhosis**, is irreversible and can lead to liver failure, that is eventually fatal. The only treatment at that point is a liver transplant.[16]

The Gut-Liver Connection

The microorganisms that live in our intestines, or **gut**, have a critical impact on overall health throughout the body.

An *unhealthy* mix of gut microbes is increasingly common in populations that consume a modern Western diet. This imbalance has been found to be tied to many chronic ailments.[17-19]

Improving **gut health** through diet and the use of **probiotics** may help reduce the risk of some of these diseases.

The impact of gut microbiota is particularly profound for liver health—so much so that the link is known as the **gut-liver axis**.[18]

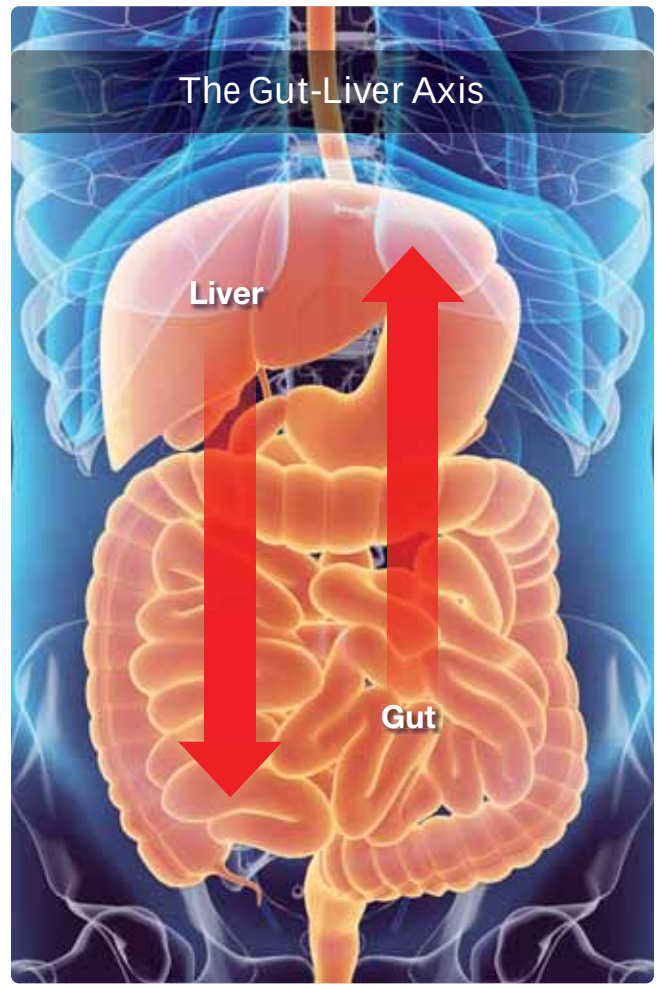
Here's why: The majority of blood that circulates away from the **intestines** feeds *directly* into the liver through a large vessel called the **portal vein**. This vein then splits into tiny capillaries that run throughout the liver.

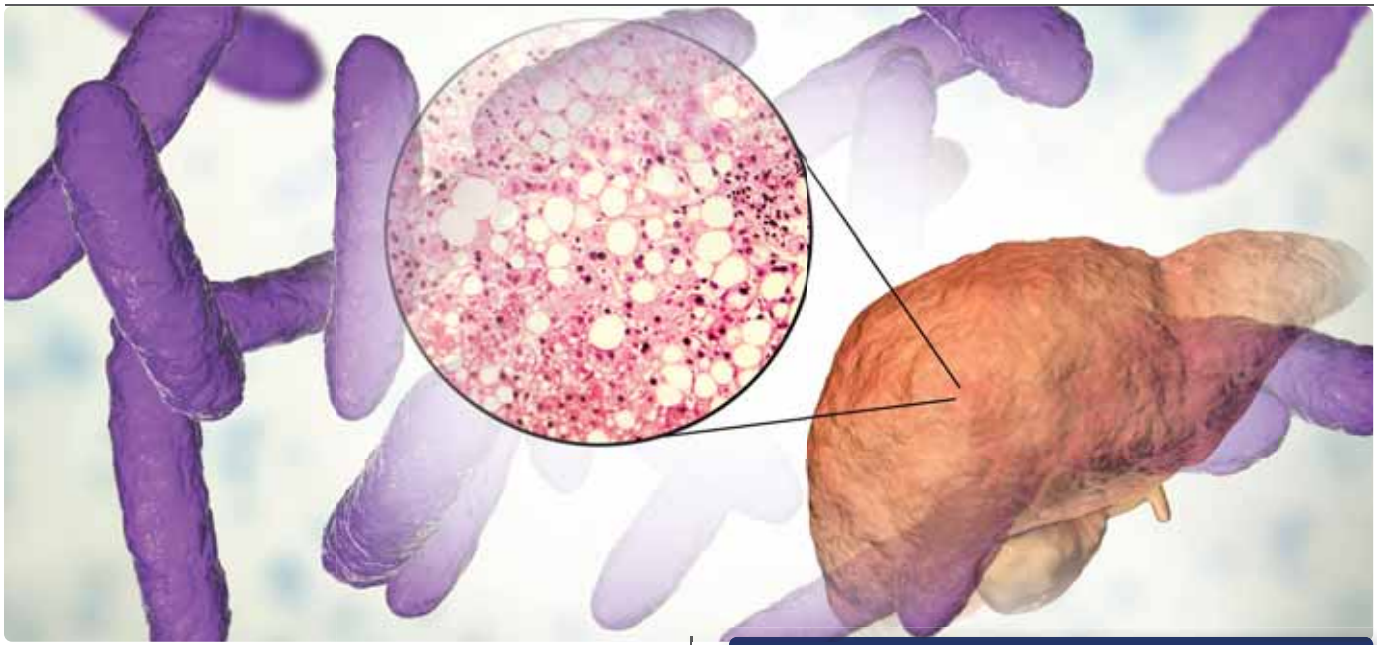
What this means is that most blood-borne substances coming from the digestive system pass through the liver *before* circulating to other organs and tissues, giving the liver a first shot at processing nutrients, and filtering out and neutralizing toxins.

But this gut-liver axis has a downside: It makes the liver particularly susceptible to harmful compounds and microorganisms coming from the gut. While the liver neutralizes most of these harmful substances, it can be damaged in the process.

With an *unhealthy* mix of **gut microbes**, damage occurs to the lining of the intestines, *increasing* the number of harmful compounds and cells that get into the portal vein and make their way to the liver.[18]

The makeup of the **gut microbiota** therefore has a dramatic impact on **liver health**. While beneficial bacteria are protective, the wrong microbes can do a huge amount of damage to the liver. Researchers believe this is one of the major contributing factors to non-alcoholic fatty liver disease.[6]





Probiotics Protect Against NAFLD

Due to the rapid increase in NAFLD rates, scientists have been scrambling to find ways to shield the liver against the damage it causes.

Because of the strong link between gut microbes and NAFLD, they decided to focus on **probiotics**.

Scientists designed a blend of microorganisms they believed was ideal to improve gut health and favorably impact the liver, reducing risk *and* severity of non-alcoholic fatty liver disease (NAFLD).

This probiotic blend consists of **seven beneficial bacteria** that are considered to be a part of a healthy gut microbiome. They are:

- *Lactobacillus casei* PXN® 37,
- *Lactobacillus rhamnosus* PXN® 54,
- *Streptococcus thermophilus* PXN® 66,
- *Bifidobacterium breve* PXN® 25,
- *Lactobacillus acidophilus* PXN® 35,
- *Bifidobacterium longum* PXN® 30, and
- *Lactobacillus bulgaricus* PXN® 39.

But probiotic organisms can only work if they survive and thrive in the intestines, outcompeting *harmful* bacteria. Combining the **probiotics** with **prebiotics**, compounds that help support the health and functioning of the bacteria, give the probiotic organisms an added boost.

WHAT YOU NEED TO KNOW

Synbiotics Combat NAFLD

- **Non-alcoholic fatty liver disease (NAFLD)** is the most common cause of chronic liver damage. It affects **25%** of the U.S. population, and much higher rates of older adults and people who are overweight.
- There are generally no warning signs or symptoms of NAFLD until damage to the liver is already severe and irreversible. No drugs are currently approved to treat it.
- Scientists have discovered that the health of the liver is closely related to **gut microbiota**, the mix of bacteria in the digestive tract.
- Clinical trials have shown that a carefully designed **probiotic and prebiotic blend**, combined with following dietary and lifestyle advice, can significantly reduce several markers of NAFLD severity, and even appears to stop the damage it does to the liver.

The blend of probiotics and prebiotics is often referred to as **synbiotics** because of their ***synergistic*** activity in improving gut health.

Results of Human Trials

Two randomized clinical trials have evaluated the impact of this new **probiotic-prebiotic blend** on non-alcoholic fatty liver disease.

The first study recruited volunteers who were overweight or obese and had a diagnosis of NAFLD. Patients were randomized to receive either the **synbiotic** blend or a placebo for 28 weeks.[7] Both groups were advised to follow recommendations for physical activity and balanced diet.

To determine the effectiveness, researchers evaluated different markers of **NAFLD** severity. The first was levels of two **liver enzymes**, **ALT** (alanine aminotransferase) and **AST** (aspartate aminotransferase), which spill into the bloodstream when there's damage to the liver. *Higher* levels in the blood indicate *more* liver damage.

The subjects in this study all started out with ***elevated*** liver enzyme levels due to NAFLD. At the end of the study, both groups saw a decline in liver enzymes, but those who received the **probiotic** had a *greater* drop in levels of **ALT** and **AST** of such magnitude that they returned to a ***normal range***.

By the end of the study, another marker of NAFLD severity, the **fibrosis score** (showing how much scarring is present in the liver), dropped, on average, into the ***normal*** range in the **probiotic-prebiotic** group.

Lastly, this study looked at **C-reactive protein**, a marker of the inflammation resulting from NAFLD. The **probiotic-prebiotic** group had a **54% reduction** in C-reactive protein levels by the end of the study.

The second study tested the same **probiotic-prebiotic** blend plus healthy lifestyle advice on people with non-alcoholic fatty liver disease who were *not* overweight or obese.[8]

In these subjects, those taking the **probiotic-prebiotic** blend saw a larger average drop in liver enzymes, including a significant **17%** reduction in AST. The fibrosis score also dropped significantly in the **synbiotic** group, falling into the normal range, on average, and C-reactive protein was **reduced by 46%**.

The outcomes of these trials indicate that the new **probiotic-prebiotic blend** significantly reduces signs of non-alcoholic fatty liver disease (NAFLD) severity, regardless of body weight.

Summary

Non-alcoholic fatty liver disease (NAFLD) occurs in **25%** of the U.S. population, and in much higher rates in older and in overweight people.

Over time, without dietary and lifestyle changes, it can progress and damage the liver, potentially leading to liver cirrhosis and liver failure.

There are currently no FDA-approved medical treatments to prevent or reduce liver damage. However, scientists have discovered that liver health is tied to a healthy mix of **gut microbes**.

A carefully chosen blend of **probiotic microorganisms**, combined with a **prebiotic** to support their survival, has been shown in clinical trials to reduce the severity of liver disease caused by NAFLD. •

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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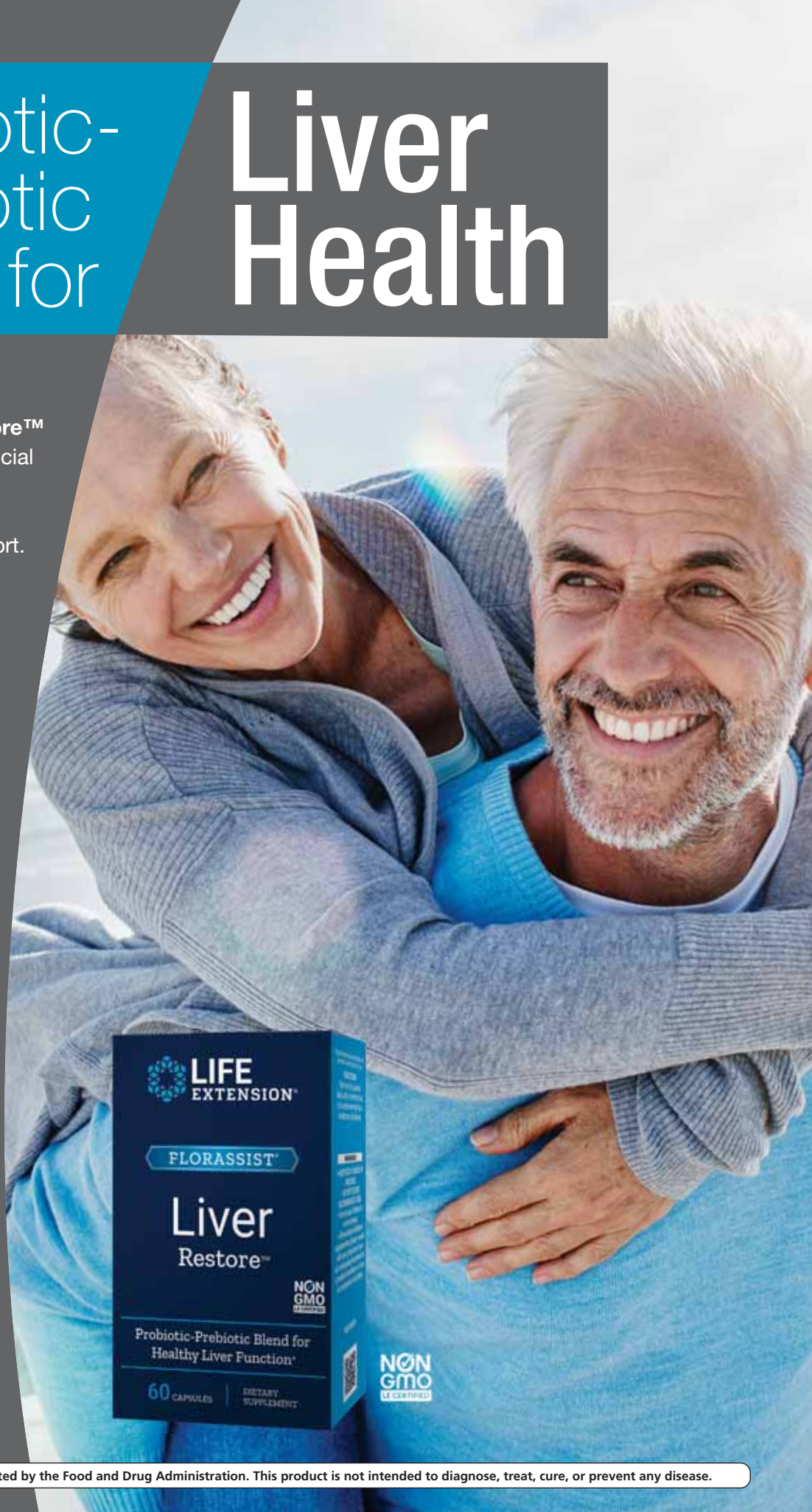

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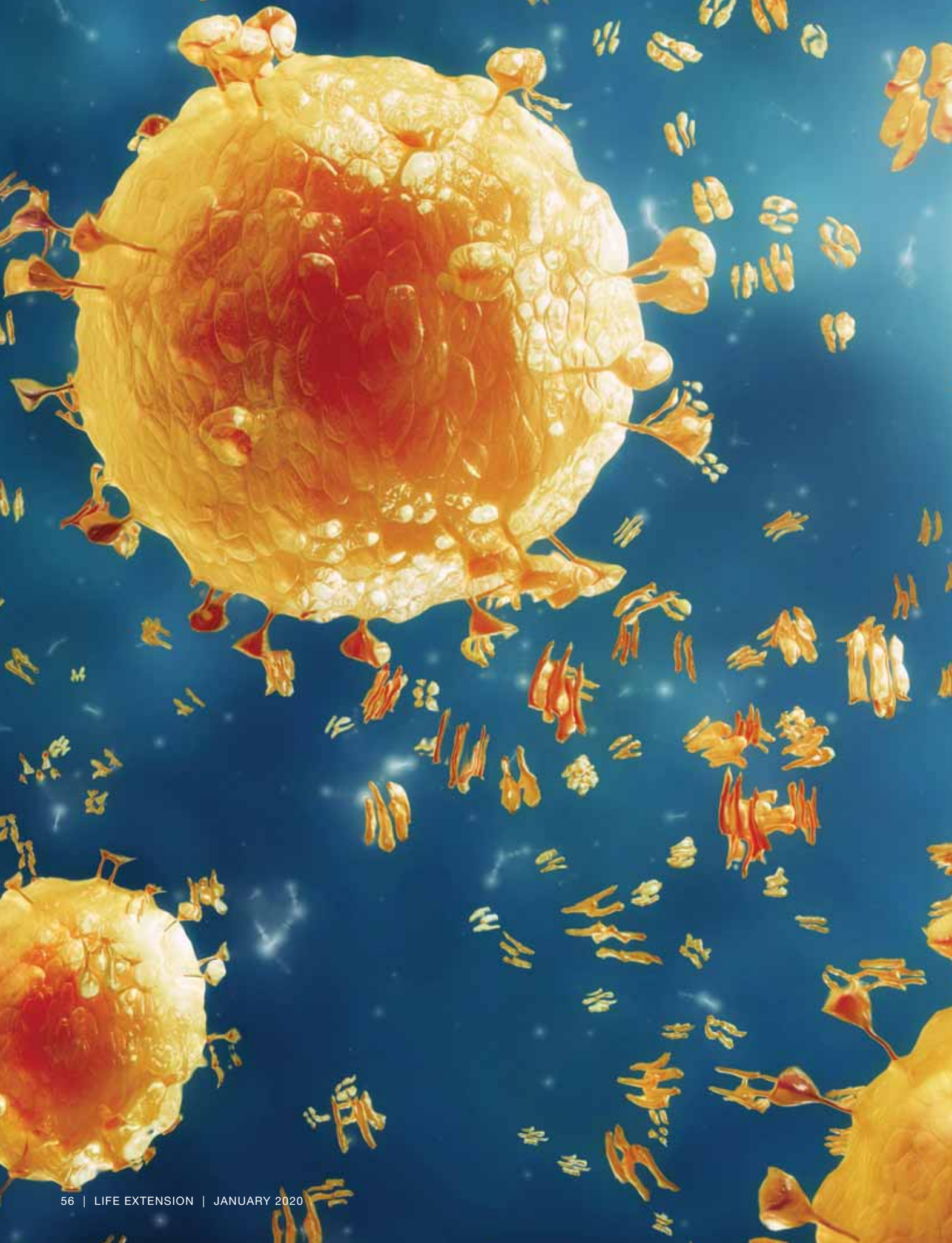

How Ionic Zinc Can Stop Colds Fast

BY MICHAEL DOWNEY

Common colds are the most common human infection.[1]

Based on research published in the **1980s**, many people know to start popping **zinc lozenges**.

But not all zinc is the same.

Many cold lozenges feature different forms of zinc that are not the most effective choice.

The *specific kind* of zinc lozenge that has shown the most consistent benefit is one that slowly releases **ionic zinc**.

Taken at the earliest sign of symptoms, it can protect against a cold developing and shorten the duration of a cold by seven days.[2,3]

What's critical is to initiate zinc lozenges as soon as the first cold symptom manifests. Waiting for full symptoms to develop inhibits the ability of zinc to do its job.

And the best way to get the **ionic** form is from **zinc acetate**.

Dangers of the Common Cold

The **common cold** is a viral infection of the upper respiratory tract that causes symptoms like a runny or stuffy nose, sneezing, coughing, and sore throat. Headache, fatigue, fever, and muscle aches can also occur.[4]

Americans contract an estimated **one billion** colds annually, and they're the leading cause of missed days at work or school.[5,6]

Though cold symptoms are usually mild, the effects on those with a weakened immune system, like the elderly, may be severe. Complications can develop, including sinusitis, and secondary infections like pneumonia and strep throat.[7,8]

Zinc Wards Off Colds

Rhinoviruses, the most common cold viruses, attach to receptors in cells of the mucus membranes of the upper respiratory tract and then replicate out of control.[9,10]

When taken as a **slow-release** lozenge, **zinc** binds to those same cell receptors, preventing the rhinovirus from entering cells and establishing a common cold infection. This makes it uniquely effective in warding off colds.[11]

Zinc is a mineral that has functions throughout the body, including support for the **immune system**. But its unique effect in the throat (blocking viruses from entering cells) is what makes the occasional use of zinc lozenges so beneficial.

Only *Ionic* Zinc Really Works

In 1984, a team of researchers led by pioneering scientist **George Eby** published the results of the first double-blind, human study on **zinc lozenges** for common colds. They discovered that after seven days, cold symptoms **vanished in 86%** of people taking zinc, compared to **46%** taking placebo lozenges.[2]

The form of zinc that most effectively binds to cell receptors, blocking the cold virus, is ***ionic* zinc**.[3] This type of zinc has acquired a positive charge by losing electrons.

There are significant differences in the amounts of **ionic zinc** released from the different zinc **forms**. Scientists have now calculated these amounts, and they found that:[3]

- **Zinc acetate** releases **100%** of its zinc as ionic zinc,
- **Zinc gluconate** releases **72%** of its zinc as ionic zinc,
- **Zinc gluconate-glycine** releases **57%** or less of its zinc as ionic zinc, and
- **Zinc gluconate-citrate** releases no ionic zinc.

These findings show **zinc acetate** releases the most ionic zinc, which is believed to be the essential form for fighting the common cold.

In fact, research demonstrates that when the right dose of **zinc acetate** is used within 24 hours of cold symptoms developing, the benefits can be remarkable.[12]

Zinc Acetate Stops Colds

In a 2000 study, researchers gave patients moderate-dose (**12.8 mg**) zinc acetate lozenges, every two to three hours while awake, within 24 hours of developing common cold symptoms. Days of suffering were reduced by about **45%**. The average, overall duration of symptoms was just **4.5 days**, compared to **8.1 days** in a placebo group.[13]

In a similar study done in 2008, adults took moderate doses (**13.3 mg**) of zinc acetate lozenges within 24 hours of showing symptoms, every two to three hours while awake. On average, cold duration was **4 days** compared to **7.1 days** for those taking a placebo. Severity of cold symptoms was also markedly lower in the zinc group.[14]

In 2011, a review of 13 placebo-controlled human trials was published that examined the effect of zinc lozenges on common cold episodes:[15]

- Five trials used a total daily zinc dose of **less than 75 mg**. These studies found ***no*** effect.
- Three trials used **zinc acetate** in **total *daily* doses** of **over 75 mg**. The pooled result of these higher-dose studies showed a **42% reduction** in **cold duration**.
- Five trials used other zinc forms (like zinc gluconate) in total daily doses of **over 75 mg**. The pooled result of these *non-acetate* trials showed a more modest **20%** reduction in cold duration.

This review demonstrated that **zinc acetate** is the best zinc form for shortening the duration of colds.[15]

In fact, after reviewing decades of studies, the scientist who led the first zinc lozenge trial, George Eby, concluded that slowly dissolving zinc acetate lozenges every two waking hours should shorten colds by **up to seven days**.[3]

In 2017, a meta-analysis provided further support for the use of **zinc acetate**. Scientists selected three double-blind, controlled trials that evaluated the effect of zinc acetate lozenges on colds among a total of 199 participants. Dosages ranged from **80 mg** to **92 mg daily**. They found that:[12]

- Zinc acetate increased rate of recovery compared with a placebo.
- On the fifth treatment day, **70%** of subjects given zinc acetate had recovered from their colds, compared to **27%** in the placebo group.

The team concluded that people who come down with colds should use zinc acetate within 24 hours of symptom onset.[12]

WHAT YOU NEED TO KNOW

Compelling Evidence

- **Colds** are the most common illness and pose a serious health risk to those with respiratory or immune issues, as well as the elderly.
- People frequently take **zinc lozenges** to treat colds, but many products on the market use a form of zinc that's inferior.
- Evidence shows that, taken at the very *first* symptoms, **ionic zinc** blocks the cold-causing **rhinovirus** from entering cells. This can shorten the duration of a cold by **seven days**, which scientists consider a cure.
- The most effective way to get ionic zinc is from **zinc acetate**. Taken in **18.75 mg** doses every two hours, this specific form of zinc has demonstrated compelling findings in clinical studies.

An Accidental Discovery

The effectiveness of **zinc lozenges** against the common cold was discovered purely by accident in 1979.

During her eventually successful battle with leukemia, a three-year-old girl was being treated with chemotherapy, radiation, and zinc supplements. One day, because she had a sore throat due to a cold, she refused to swallow the usual **50 mg zinc** tablet and instead ***dissolved*** it in her mouth.[2]

Within hours, her cold had disappeared and did not return.[2]

That lucky accident spurred researchers to conduct the first double-blind, human study on zinc lozenges for common colds. In 1984, the published results confirmed that zinc lozenges could drastically shorten the length of a cold.[2]

Summary

Many people take **zinc lozenges** to ward off a common cold. But studies show that only **ionic zinc**, delivered most effectively by **zinc acetate**, can help stop a cold in its tracks.

Taken at the first onset of symptoms in doses of **18.75 mg** every two waking hours, this specific form of zinc prevents the rhinovirus from entering cells and establishing a cold infection.

These zinc lozenges are not meant for everyday use. They should instead be kept for use upon any symptom developing and used for no more than seven days. One reason for short term use is one might ingest excess amounts of zinc at the frequency recommended. •

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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Fasting for a Longer, Better Life

BY PAUL MCGLOTHIN

HAPPY, HEALTHY NEW YEAR!

Congratulations on reaching the 2020s—the decade when life-changing opportunities to become a long-lived, more functional human will be possible. One of the best ways to do that is already here: Fasting! The benefits are amazing:

1. Slower Aging

Scientists from the *National Institute on Aging* (NIA), the University of Wisconsin-Madison, and Louisiana's Pennington Biomedical Research Center report that longer daily fasting times improve health and longevity in lab mice. The results held up regardless of what the mice ate or how many calories they consumed.[1]

Many LivingTheCRWay members also incorporate long, daily fasting times into their lives, and their results are remarkable, indicating reduced risk of age-related disease.[2]

2. Decreased Cancer Likelihood and Slower Metastasis

Fasting reduces risk factors that make cancer likely. [3]

Fasting may help slow metastasis and make chemotherapy more effective.[4]

3. Type II Diabetes and Prediabetes—Reversible

Fasting makes cells more insulin sensitive, reducing blood glucose levels. Some studies indicate that low-calorie diets can reverse type II diabetes and prediabetes.[5,6]

4. Improved Cardiovascular Health

Intermittent fasting may slow atherosclerosis progression, decrease blood pressure, improve lipid profile, and cut inflammation related to heart risk.[7]

Why Fast when you are Already Healthy?

In my 40s, I was happy with the results of my calorie-restricted diet and did not see a reason to try fasting.

Once I got into my 50s, though, brain fog crept into my life. *Brain fog* is another way of saying memory and other cognitive capabilities—like creativity and organizational skills—are not working as well as they once did.

Looking for help, I tried a brain-training program that flashed numbers for a few seconds on my computer screen and challenged me to repeat them back from memory. I wondered whether this kind of brain training could clear up brain fog.

Try it. Take **two seconds** to memorize this number:

864237906

Now look away so you can't see the number and repeat it. How did you do? Can you repeat it without looking?

If you can, try repeating it backward without looking.

In my 50s, a sequence of nine numbers was as much as I could remember. A sequence of 10 numbers (try 2539046407), especially backward, was too much for me.

I could probably have improved my score by practicing for weeks or months, but I wanted to improve faster—like I could in my 20s and 30s. Little did I know that a far-away lab had developed what I needed: Intermittent Fasting or Periodic Fasting, as they called it in their paper.[8]

This innovative research compares the cognitive functions of calorie-restricted mice to mice that were not calorie-restricted but were fed on a schedule that included fasting time without food. The brain-boosting benefits were greater for the fasting mice.

Inspired, I decided to try it. I ate two meals—a big breakfast and a smaller lunch—and stopped eating as soon as I could: mid-afternoon. Then I drank only water until the next morning.

After eating this way for a few days, I tried the number sequences again, not expecting any improvement. But there it was: When I got to ten numbers, I could do it! Soon I progressed to 11 numbers, then 12 and 13. And sometimes I could remember 13 numbers backward. I was amazed. Not only did I get better at the brain-training game, but other aspects of my life got better too. I was able to use my increased cognitive skills to develop business opportunities that required new, creative concepts.

By then I was hooked. Life was too good to go back to eating three meals a day. What has become The CR Way to Daily Intermittent Fasting will always be part of my life.

Transforming Lives

As The CR Way to Daily Intermittent Fasting developed, new possibilities emerged for people to transform their lives by improving their brain function. Seniors particularly, might be able to combine better brain function with social skills, developed over decades, to be terrific grandparents, great managers, salespeople, entrepreneurs—whatever they want.

Our mentor, Ralph Cornell in Massillon, Ohio, did just that. Ralph started daily intermittent fasting when he was in his 50s. He didn’t call it *intermittent fasting.* He just decided to skip lunch so he wouldn’t feel like falling asleep after eating and therefore get nothing done in the afternoon.

Ralph lived to 104, almost 20 years longer than his two brothers who died in their 80s.

Reinforcing how effective daily intermittent fasting can be for healthy longevity, Walter Breuning, who lived to 114.5 years, revealed that he ate two meals a day for 35 years.[9]

Should you Fast?

Meredith Averill, cofounder of the CR Way, says, “If you want to slow aging, fasting may be appropriate for you. However, if you need to gain weight or if you sense that you would be under undue emotional stress while fasting, address those issues first before trying to fast. Also, see a doctor who makes sure that fasting is not unduly stressful to your cardiovascular system.”

If you decide to fast, choose a fasting method that works for you. Here are a few to consider:

- Intermittent Fasting
  (15-16 hours between meals most days)
- 24-hour Fasts
- Weekend Fasts
- Five-day Fasts
- Longer Fasts

For fasts longer than 24 hours, consider going to a fasting center where your vital signs would be monitored by knowledgeable doctors.

Here is how some experienced CR Way members fast and why they chose their fasting method:

"Intermittent fasting for me usually involves just extending my overnight fast for several more hours. This is a more regular practice. For example, I haven't eaten yet today and I will likely have my first meal around 1 or 2. Sometimes this is shorter and I will have lunch at noon and sometimes I wait until 5 or 6 for dinner. I have had several 24-hour fasts in the last year and I believe one 36-hour fast during that time due to traveling. I love fasting when traveling because I just focus on hydrating and I don't have to worry about finding the types of healthy foods I like to eat in airports or in unknown restaurants."

– Heidi, 2019

"Inspired by Mahatma Gandhi, I began fasting as an experiment in the early 1980s, speculating that there might be benefits. My water-only fasting begins after dinner and ends two days later at noon, approximately 42 hours. This was done weekly for about 20 years. I stopped fasting for several years and later returned to a regime of fortnightly 42-hour fasts, combined with a daily intermittent-fasting eating window of eight hours. The evidence-based benefits of fasting include activation of protective nutrient-sensing pathways and deactivation of harmful pathways, thus promoting healthspan."

– Ernest, 2019

"I started intermittent fasting in 2016 as I moved from five or six small meals a day to three meals, then two meals and finally to one meal a day with a 21-to-22-hour fasting window. In 2017 I began fasting for two to four days at a time, gradually becoming more metabolically flexible. My current optimal intermittent fasting schedule is alternate-day fasting with a six-hour eating window in the morning between 6 a.m. and noon followed by 42 hours of fasting. I also do several medium-term, four-to-six-day fasts a year—usually when travelling on business, and one long-term supervised fast at TrueNorth Health in CA in the summer. Last year after a 22-day water fast there my arterial age went down by 11 years!"

– Alex, 2019

"I prefer daily intermittent fasting to extended fasting. I would like to give my body predictability rather than surprises, so I give it meal-timing it can count on. My targets of finishing food intake around 4 p.m. in the afternoon and fasting until breakfast at 7 a.m. the next morning give me a window of time away from food of about 15 hours—and that's every day! I'm toying with the idea of eating one meal a day to grow my fasting window."

– Meredith, 2019

Refeeding—An Important Part of Your Fast

When you break your fast, your refeeding plan should do the following:

- Get insulin back into production
- Normalize bowel function
- Hydrate well
- Reduce populations of pathogens and their influence

Fasting can do wonders for your health—but only if you do it the right way. The CR Way's key to fasting success includes solving the problem from healthy refeeding as well as lifestyle planning—especially diet—to complement the beneficial biochemistry you get from fasting. ●

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

Be part of the new age of longer life. Join LivingTheCRWay and take advantage of Longevity 101, their new online course to help you live a longer, better life.

Paul McGlothin and Meredith Averill have discovered the bridge between scientific research and its practical application for a better, longer life. Their work brings real results and longevity benefits to CR Way practitioners. Their CR Way lifestyle is based on decades of research, showing favorable changes in genes and other biomarkers of aging. They have played a pivotal role in this research on aging at Washington University in St. Louis School of Medicine and at the University of California at both San Francisco and Riverside.

You can find more about them and the benefits of LivingTheCRWay Membership by calling 877-481-4841 or visiting www.livingthecrway.com.

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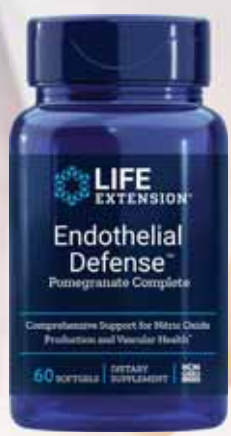

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Mostly Plants:
101 Delicious Flexitarian Recipes from the Pollan Family

BY TRACY, DANA, LORI, AND CORKY POLLAN


Healthy Vegetable-Fried Farro

Michael Pollan is a *New York Times* best-selling author of books such as *The Omnivore's Dilemma, In Defense of Food,* and *Cooked*.

Now, Pollan's mother and sisters are building on his famous words, "Eat food, mostly plants, not too much," with a cookbook that puts this food philosophy into practice.

Their cookbook, called *Mostly Plants*, focuses on a *flexitarian* diet, which can be defined as eating mostly plant-based foods, with meat and other animal products eaten in moderation. For those individuals who don't want to go completely vegetarian or vegan, the authors encourage simply changing the ratio on their plate and using meat as an accent rather than the centerpiece.

In addition to providing recipes that are both satisfying and delicious, the authors highlight the health benefits of following a flexitarian lifestyle.

"Plants are Mother Nature's prescription for improved health," they write. "They are chock-full of protective vitamins, minerals, and antioxidants, many of which cannot be found in animal protein. The great news is, you don't have to give up meat completely to reap the benefits of a plant-based diet. In fact, there is compelling evidence that just cutting back on meat reduces the risk of many chronic diseases and can help you live longer."

Mostly Plants includes simple, plant-centric recipes that can often be prepared in 35 minutes or less. The 101 recipes presented in the book include a mix of recipes for vegetarian, vegan, dairy-free, and gluten-free dishes, as well as seafood, poultry, and meat.

On the following pages, ***Life Extension®*** features four of these delicious, nutritious recipes, specifically designed to help you achieve a healthier lifestyle.

—LAURIE MATHENA

Cauliflower, Spinach, and Chickpea Patties

These chickpea patties are packed with the added goodness of cauliflower, spinach, red pepper, and scallions, giving them a wonderful light flavor and texture. Then we add tasty Mediterranean herbs and spices, such as cumin, turmeric, and parsley. The end result? A great-tasting dish, chock-full of legume protein and nutritious vegetables.

6 servings
Time: 1 hour 15 minutes

3 cups 2-inch cauliflower florets

One 15-ounce can chickpeas, drained and rinsed, or 1½ cups cooked chickpeas

One 10-ounce package frozen chopped spinach, thawed and squeezed of excess liquid

¾ cup finely chopped red bell pepper

4 scallions, white and light green parts only, finely chopped

3 cloves garlic, minced

2 tablespoons finely chopped fresh flat-leaf parsley

½ teaspoon ground cumin

½ teaspoon ground turmeric

Sea salt

Freshly ground black pepper

3 large eggs, lightly beaten

1 cup panko bread crumbs, plus more as needed

4 tablespoons extra-virgin olive oil, plus more as needed

Sauce of your choice: such as tahini, salsa, spiced yogurt

1. Preheat the oven to 350°F. Line a rimmed baking sheet with parchment paper and line another baking sheet with waxed paper.

2. In a stockpot fitted with a steamer basket, bring 2 inches of water to a simmer over medium-high heat. Place the cauliflower florets in the steamer, cover, and cook until just tender, 8 to 10 minutes.

3. Meanwhile, place the chickpeas into a large bowl and use a potato masher or fork to crush them. Add the cauliflower and mash until the ingredients are well smashed but not smooth. Add the spinach, bell pepper, scallions, garlic, and parsley and mix well. Stir in the cumin, turmeric, 1 teaspoon salt, and ¼ teaspoon black pepper. Add the eggs and ½ cup of the bread crumbs and stir to combine.

4. Place the remaining ½ cup bread crumbs in a shallow dish. Shape about ⅓ cup of the chickpea mixture into a patty ½ inch thick. Coat the patty lightly with bread crumbs. Place on the waxed-paper-lined baking sheet. Repeat with the remaining mixture (to make 12 to 14 patties).

5. In a large nonstick skillet over medium heat, heat 2 tablespoons of the olive oil until shimmering. Place one-third to one-half of the patties in the pan and cook undisturbed until golden brown, about 4 minutes. Flip the patties and cook until golden, about 4 minutes more. Transfer the patties to the parchment-lined baking sheet. Wipe the skillet clean with paper towel. Repeat to cook the remaining patties, wiping the skillet clean and adding 2 tablespoons of oil before each batch. Transfer the patties to the baking sheet as they are done. When all the patties have been cooked, place the baking sheet in the oven and bake for 10 minutes.

6. Transfer the patties to a serving platter, season with additional salt and pepper, and serve hot, with the sauce passed separately.

White Bean and Kale Quesadillas with Roasted Tomatillo Salsa

This combination hits all the right marks: creamy white beans, gooey cheese, and earthy kale, finished with a fabulously flavorful salsa verde. Serve with a salad, soup, or sliced avocado for a simple, savory, and healthy meal.

4 servings
Time: 40 minutes

2 tablespoons extra-virgin olive oil

3 tablespoons minced shallots

1 clove garlic, minced

Two 15-ounce cans cannellini beans, drained and rinsed, or 3 cups cooked cannellini beans

1 tablespoon finely chopped fresh flat-leaf parsley

Kosher salt

Freshly ground black pepper

5 cups roughly chopped lacinato (dinosaur or Tuscan) kale, stems removed

2 to 3 tablespoons unsalted butter

Ten 8- to 10-inch multigrain or whole wheat flour tortillas

2½ cups shredded Monterey Jack cheese

¾ cup salsa

1. Preheat the oven to 250°F.

2. In a medium nonstick skillet over medium heat, heat 1 tablespoon of the olive oil until shimmering. Add the shallots and cook until translucent, 2 to 3 minutes. Add the garlic and cook for an additional minute. Add the beans, parsley, ¼ teaspoon salt, and ⅛ teaspoon pepper and mix well. Cook until the beans are hot, about 3 minutes.

Transfer to a bowl and mash the beans with a fork, leaving a few chunks for texture.

3. Wipe out the skillet, return it to medium heat, and add the remaining 1 tablespoon olive oil. Once the oil is shimmering, add the kale and sauté until wilted, about 4 minutes. Season with salt and pepper. Set aside.

4. In a grill pan or a separate large skillet over medium heat, melt a small pat of the butter. Place a tortilla in the pan and sprinkle 3 tablespoons of the cheese over the entire tortilla. Cook until the cheese has melted, then distribute about 2 tablespoons of the white bean mixture and some of the kale over just half the tortilla. With a spatula, fold the tortilla in half to sandwich the filling. Sprinkle the folded tortilla with a pinch of salt. Cook until the bottom is golden brown, about 1 minute, then flip, sprinkle with an additional pinch of salt, and cook until golden brown on the second side, about 1 minute more. Transfer to a rimmed baking sheet and place in the oven to keep warm. Repeat with the remaining tortillas, cheese, filling, and kale.

5. Remove the quesadillas from the oven, cut each in half, and serve with the salsa.

Amped-Up Vegetable Nachos

This dish comes out of the oven sizzling and bubbling and is devoured as soon as it hits the table. Everybody loves nachos, but it's not typically a dish that offers much in the way of nutrition. We've taken these up a notch by loading them with kale, corn, beans, and avocado. And yes, cheese, too. The end result is addictive.

4 to 6 servings
Time: 35 minutes

2 tablespoons extra-virgin olive oil

1 cup chopped red onion

2 cloves garlic, minced

4 cups roughly chopped stemmed lacinato (dinosaur or Tuscan) kale leaves

Kosher salt

Freshly ground black pepper

1½ cups fresh or thawed frozen corn kernels

One 15-ounce can refried beans

2 tablespoons low-sodium vegetable broth

2 tablespoons pico de gallo or salsa, plus more for serving

40 tortilla chips

2 cups freshly shredded Monterey Jack cheese

10 pickled jalapeno slices

1 cup diced ripe avocado

1. Preheat the oven to 375°F.

2. In a large nonstick skillet over medium-high heat, heat 1 tablespoon of the olive oil until shimmering. Add the onion and garlic and cook, stirring with a wooden spoon, until the onion is soft and translucent, about 3 minutes. Add the kale, ½ teaspoon salt, and 1/8 teaspoon pepper and cook, stirring, for 1½ minutes. Add the corn and cook for an additional 1½ minutes. Transfer to a bowl and set aside.

3. Wipe out the skillet with paper towels and return it to medium-high heat. Add the remaining 1 tablespoon olive oil and the refried beans and stir. Pour in the broth and mix until incorporated. Add the pico de gallo and stir to combine. Set aside.

4. Divide the tortilla chips between two 9 by 13-inch baking dishes. Spoon the beans over the chips in each baking dish. Top each with half the vegetables and sprinkle the cheese evenly over each. Scatter the jalapeño slices on top. Bake until the cheese is melted, about 7 minutes. Switch the oven to broil and broil until the cheese is golden and bubbling, 1 to 2 minutes.

5. Serve with additional pico de gallo and the avocado.

Healthy Vegetable-Fried Farro

This dish is our take on fried rice, but here we've substituted farro—one of our favorite grains—for white rice. The chewy texture and nutty taste of the farro add complexity to this familiar dish. We've included traditional fried rice veggies like broccoli, carrots, and peas, but any assortment of vegetables you have on hand—like bell peppers, cauliflower, or spinach—will work. If you cook your farro the day before, this is a super-fast dish to get on the table.

4 servings
Time: 45 minutes

2 cups farro

4 large eggs

2 tablespoons plus 1¼ teaspoons low-sodium soy sauce

2 teaspoons plus ¼ teaspoon toasted sesame oil

1 tablespoon plus 2 teaspoons peanut oil

1 cup sliced carrots, ¼-inch-thick rounds

2½ cups 1-inch broccoli florets

2 cloves garlic, minced

1 teaspoon grated fresh ginger

4 scallions, thinly sliced, green and white parts separated

1 cup frozen petite peas, thawed

Kosher salt

½ teaspoon rice vinegar

Sriracha or chili garlic sauce (optional)

1. In a medium saucepan, cook the farro according to the directions on the package. Drain well and let cool. (The farro can be made ahead of time and refrigerated.)

2. In a small bowl, beat the eggs with ¼ teaspoon of the soy sauce and ¼ teaspoon of the sesame oil.

3. In a large nonstick skillet over medium-high heat, heat 1 teaspoon of the peanut oil until shimmering. Add the egg mixture and scramble until it sets, 3 to 4 minutes. Transfer the egg to a plate, cut into bite-size pieces, and set aside.

4. Wipe the skillet clean, add the remaining 1 tablespoon plus 1 teaspoon peanut oil, and heat over medium-high heat until shimmering. Add the carrots and cook, stirring, for 2 minutes. Add the broccoli and cook until the vegetables are fork-tender, 3 to 4 minutes. Stir in the garlic, ginger, scallion whites, and peas and cook for 2 minutes. Season with ½ teaspoon salt.

5. Using a wooden spoon, push the vegetables to the sides of the skillet, making a well in the center. Add the cooked farro to the well and gradually mix the vegetables into it.

6. Add the remaining 2 tablespoons plus 1 teaspoon soy sauce, the remaining 2 teaspoons sesame oil, and the vinegar. Stir in the scrambled eggs and mix well.

7. Serve hot, garnished with the scallion greens. Pass the Sriracha or chili garlic sauce separately, if desired. •

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

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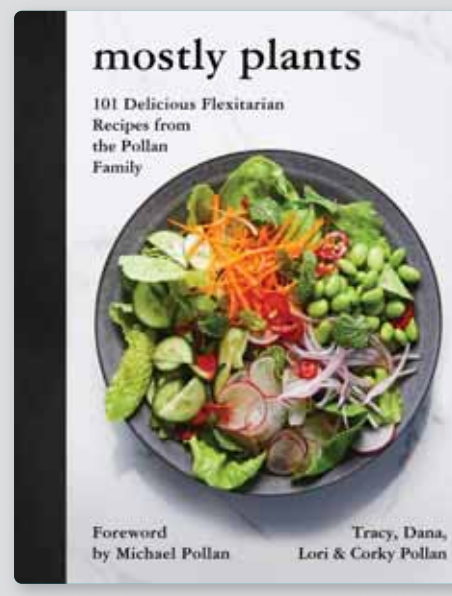

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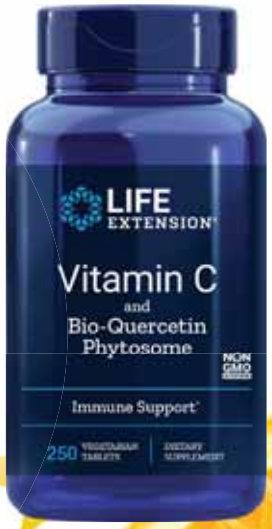

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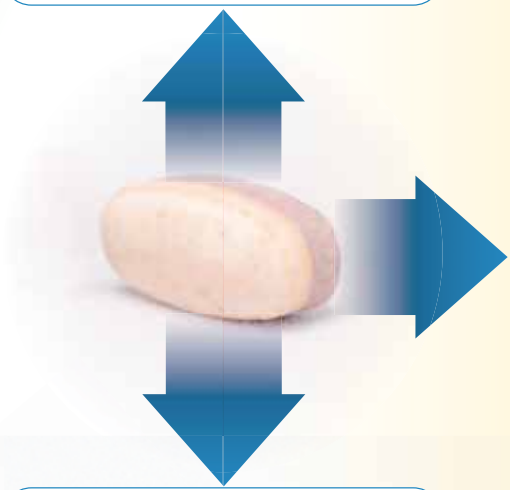

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References
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8. *J Agric Food Chem. 2003* Jun 4;51(12):3560-3.

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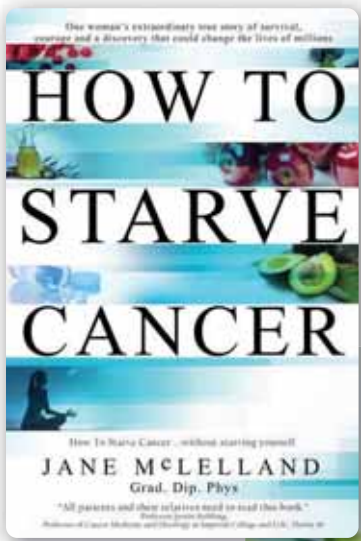
Against All Odds
How Jane McLelland Survived *Terminal* Cancer
(and is Helping Others Do the Same)

BY LAURIE MATHENA

McLelland was reluctant about writing her book, but she felt she had a duty to share with the world what she had discovered—and what had saved her life.



Jane McLelland shouldn't be alive.

According to doctors and cancer statistics, she should have lived only about 12 weeks after receiving her diagnosis of stage IV cancer.

But McLelland refused to go down without a fight. Taking matters into her own hands, she dug through medical journals, poring over long-forgotten research and overlooked evidence, looking for clues to overcoming her cancer.

Along the way, she discovered a missing link to defeating cancer: *starving it*. Based on this concept, she developed her own cancer-starving cocktail—utilizing diet, supplements, and off-label drugs—that proved to be more effective than any current cancer treatment.

Now, 18 years later, after suffering from cervical cancer, secondary lung cancer, and treatment-related myelodysplasia, she is alive, well, and *cancer-free*.

And she has made it her life's mission to help other cancer patients achieve the same results.

This is Jane's remarkable story.

Strike One: Jane's First Cancer Diagnosis

You have cervical cancer.

When Jane McLelland first heard the devastating news, she was only 30 years old. Just three days later, she underwent a complete, radical hysterectomy, followed by months of chemotherapy and radiation.

A cancer diagnosis was terrifying enough, but what McLelland struggled with most was the fact that she would never be able to have her own biological children.

"I was massively depressed. With cervical cancer, it's not just about having a lump cut off," she said. "Knowing that I would never have my own children was utterly devastating."

What made the diagnosis even more tragic was the fact that McLelland's doctor had misdiagnosed her for years. Since cervical cancer is highly treatable in its early stages, her tragedy could have been avoided.

After treatment, McLelland believed she was out of the woods. But two short years later, her mother's cancer diagnosis was the wake-up call she needed.

A Wake-up Call

In 1996, McLelland's mother received her own devastating news: She had stage IV breast cancer.

After an initial breast cancer diagnosis and treatment a few years earlier, the cancer had come back with a vengeance, and she died within a few months.

But McLelland says that her mother's death is what ultimately saved her life.

"My mother's cancer was a huge wake-up call to me to re-evaluate the situation I'd found myself in. For the first time ever, I realized I was only one step away from terminal cancer," McLelland said. "That's when I started looking at diet and supplementation in more detail as a way to combat cancer."

In the early stages of her research, McLelland first learned that glucose feeds most cancers and that IGF-1 (an insulin-like growth factor hormone found in high levels in dairy and meat) also helped to drive its growth.

So, she modified her diet, cutting out simple carbohydrates and removing dairy and most meat. She cut out foods like potatoes and tomatoes because they caused an inflammatory reaction in her body (and she had learned that inflammation was a driving force for cancer). She also started drinking green tea, juicing, and taking numerous supplements.

Unfortunately, just a few months later, Jane started coughing up blood, and found out that her worst nightmare had come true: Her cervical cancer had spread to her lungs.

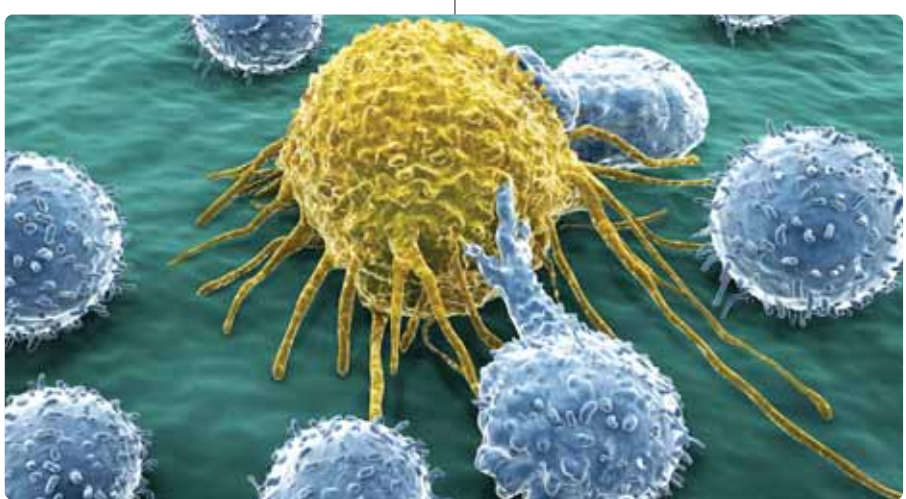
She now had stage IV, terminal cancer.

Strike Two

Just like the cervical cancer, Jane's lung cancer was initially misdiagnosed (this time as a chest infection). But the benefit of having the improperly read X-ray from four months prior—along with the properly diagnosed X-ray—was the ability to see the rate at which the cancer was growing.

McLelland had repeatedly been told that diet had no impact on cancer, but the fact that her lung tumor had remained the size of a golf ball—and the fact that there were no tumors in other locations in her body—proved to her that the dietary changes she had already made were making a difference.

"You could see that my approach had slowed the tumor's growth," said McLelland. "I may have had that tumor for a long time. That was actually quite reassuring for me."



This time, Jane would not be rushed into a hasty treatment decision. She delayed surgery and dove even deeper into cancer research. That's when she learned that in order to fully eradicate her cancer, she'd have to attack it in a different way: *by starving it*.

Starving Cancer

The idea behind starving cancer cells is nothing new. In 1931, Otto Warburg was awarded the Nobel Prize for his discovery that cancer cells have an altered metabolism. Since then, more research has expanded on his initial studies, and has revealed that cancer cells require a tremendous amount of three fuel sources in order to survive: glucose, glutamine (an amino acid), and lipids.

Mainstream medicine ignores this simple fact, focusing instead on using chemotherapy and radiation therapy to target the tumor's abnormal, fast-dividing cells. Given that chemotherapy often has poor outcomes for stage IV cancer, McLelland determined that she had to attack her cancer from two fronts: starve the cancer's stem cells, and then kill them when they're in a weakened state. Cancer stem cells are dangerous because they are more resistant to conventional treatment and are capable of producing new malignant cells that are more difficult to eradicate.

This one-sided approach is why mainstream treatments can appear to work for a time, only to have the cancer come back more aggressively in the future. It is also why the percentage of positive outcomes in a stage IV patient is, too often, zero.

On the other hand, starving the cancer by cutting off the supply to its three main fuel sources attacks

the elusive stem cell. Based on that research, McLelland determined that she had to attack her cancer from two fronts: starve the cancer's stem cells, and then kill them when they're in a weakened state.

Working Together

McLelland underwent surgery to remove the tumor in her lung, and she endured six months of chemo (at a much lower dose than that recommended by her oncologist). But this time, she also employed a strategy to starve the cancer's stem cells.

Her diet and numerous supplements were already helping on that front—particularly berberine, hydroxycitrate, gymnema, curcumin, niacin, and pycnogenol—all of which were inhibiting key pathways that are abnormal in cancer. She also underwent treatment with high-dose intravenous vitamin C.

"Intravenous vitamin C has been shown to target cancer stem cells, the original cancer cells that are responsible for chemo and radiotherapy resistance, because it stops a key step in the process of glycolysis, effectively starving the cancer as well as triggering apoptosis, or cell death," said McLelland. "It helps block off one of cancer's main energy supply lines."

To her doctor's utter amazement, it appeared that McLelland had beaten the odds once again. Nine months later, she was not only alive, but her cancer blood markers were good.

Those months turned into years of living cancer-free.

Still, McLelland lived with the constant realization that her cancer could always come back. And four years later, it did.

Strike Three

McLelland's cervical cancer markers were in the normal range. But in 2003, she received yet another death sentence: treatment-related myelodysplasia, a form of bone marrow mutation that may progress to leukemia.

What had gone wrong?

"I couldn't understand why I was controlling one cancer without controlling the other," said McLelland. "But it's all about metabolism. The metabolism of my leukemia was totally different from that of my cervical cancer. So, with my low glycemic index diet, I was controlling the cervical cancer, but I wasn't controlling the leukemia, which instead thrives on proteins."

She had to cut off the fuel supply line to this new cancer. In order to do that, she would need to bring in the "big guns"—off-label drugs. In doing so, she serendipitously reduced the nutrient supply to her first cancer as well.

McLelland's Big Guns

McLelland discovered that there were numerous drugs on the market designed for other purposes (like heart disease or infections) that could go beyond diet and supplements to effectively cut off cancer's various fuel lines. These drugs are considered "off-label," since they were developed for conditions other than cancer.

The first big gun was a cardiovascular drug called *dipyridamole*, which stops protein from getting into the cancer cell, a key factor in starving leukemia, according to McLelland.

This was exactly what she needed, McLelland decided.

She made another critical finding when she picked up an issue of ***Life Extension*® Magazine** that she says played a key role in saving her life. From *Life Extension*, she learned about a novel combination of a statin (lovastatin) plus a non-steroidal anti-inflammatory drug (*etodolac*).

"I already knew that statins would be potentially useful against cervical cancer. But research had also shown that they caused apoptosis in acute myeloid leukemias. I also had overlooked the fact that NSAIDs could cause cell death (apoptosis)," said McLelland. "What I learned from the *Life Extension* article was that there was a synergy between the two drugs, making them far more potent when taken together."

She later learned that statins also block the cell surface receptor Glut1, which is used by most cancers to access more glucose.

Another key, off-label drug McLelland learned about from reading *Life Extension* was the diabetes drug, *metformin*. Metformin is critical for starving cancer because it cuts off cancer's supply to glucose and insulin, and reduces IGF-1.

"I recognized that *Life Extension* was ahead of its time. It was providing information that nobody else seemed to be providing, and piecing together research and reporting on it before anybody else did," said McLelland. "*Life Extension* really was instrumental in helping me survive."

Years later, she also discovered the anti-cancer effects of the antibiotic *doxycycline* (which slows the creation of new cancer cells) and of the anti-worming drug *mebendazole* (which stops the cancer cells from being able to take on more glucose).

"All of these drugs are cheap and off-patent, which is why they have largely been ignored by the pharmaceutical industry, despite research

supporting their effectiveness against cancer," said McLelland.

According to McLelland, drugs like these are necessary because cancer cells rely on the same fuel the rest of your body requires to live. You can cut down on glucose, protein, and fat, but you can't remove enough from your diet to starve the cancer cells without starving your own body in the process. These drugs solve that problem because they allow your body to access the nutrients it needs, while blocking the cancer's access to them.

After intensive research, McLelland concluded that all of these drugs would starve the cancer from different angles: dipyridamole cut off cancer's access to protein, metformin cut off access to glucose, and the statin cut off access to fat. Once the cancer cells were in their weakened state, the addition of etodolac could help finish them off.

McLelland believed she had finally found out how to beat her cancer once and for all. And her test results proved her right. Blood tests revealed that her TM2PK tumor markers (a marker of abnormal glycolysis) had dropped from 397 to 21.5—just slightly above a "normal" reading of 15.

She had done the impossible. Her cocktail of cheap, off-label drugs—in addition to diet and supplementation—had halted the progression of myelodysplasia.

Spreading the Word

In 2018, McLelland chronicled her cancer journey—including detailed information on her science-backed approach to cancer—in her book, *How to Starve Cancer Without Starving Yourself*.

McLelland was reluctant about writing her book, but she felt she had a duty to share with the world what she had discovered—and what had saved her life.

"I didn't want to have to relive everything," said McLelland, "but I knew I had information I had to pass on. It was a social responsibility to provide people with information they weren't getting elsewhere."

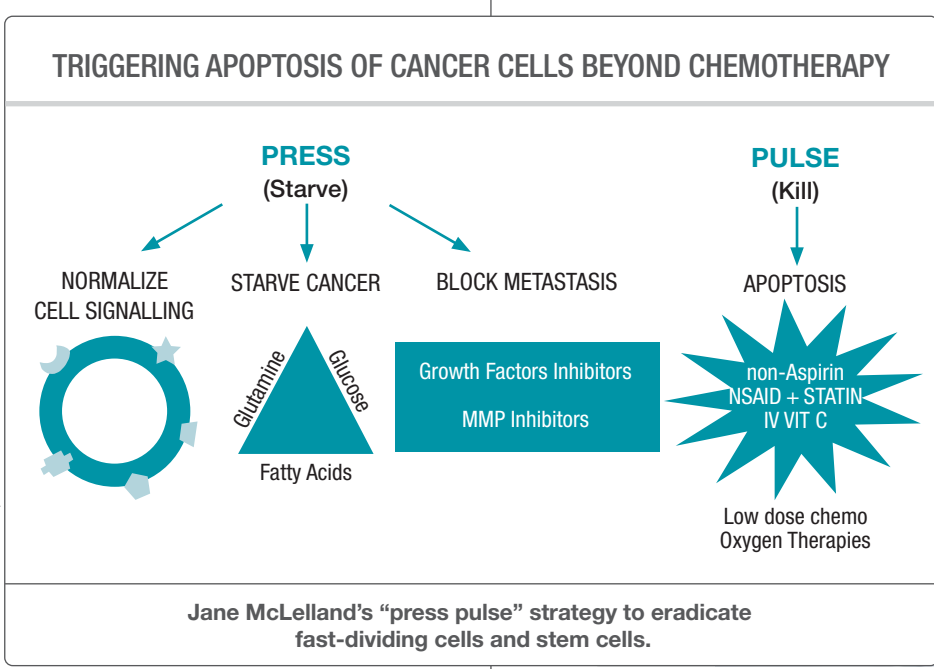
That information has already saved countless lives.

One man who followed her protocol took his PSA numbers from 1008 down to .67. She's also helped a stage IV pancreatic cancer patient achieve full remission—another success story unheard of in the medical world.

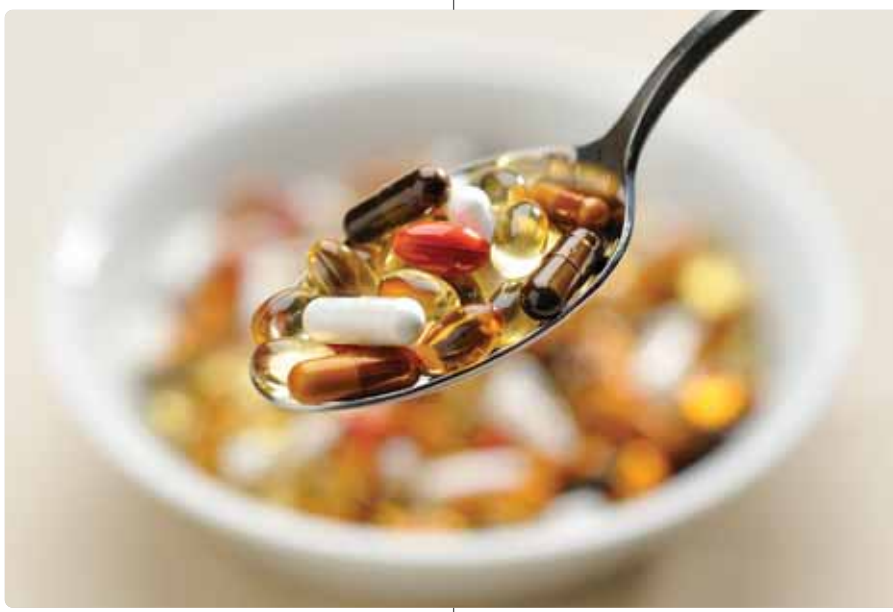
And a breast cancer patient who was told by her oncologist she was going to die is still alive and well, going to the gym, working as a nurse, and living a full life—all as a result of following McLelland's approach to starving her cancer.

But McLelland cautioned that we have to start looking at cancer differently.

"People are always looking for the disappearance of tumors, but we have to rethink how we evaluate success with cancer," she said. "I have a huge number of people following my protocol who still have tumors in their bodies that are no longer growing. Success is not necessarily about getting rid of the tumor. You can live with the tumor quite happily as long as it's not pressing on something vital."



Jane McLelland's "press pulse" strategy to eradicate fast-dividing cells and stem cells.



Utilizing the Metro Map

McLelland created a diagram depicting her approach to starving cancer that she calls the "Metro Map," based on an analogy of an underground metro system.

If one tunnel is blocked, the trains will be rerouted through a different tunnel, but will ultimately keep running. Cancer is the same way. If you cut off one fuel source, it will simply "reroute," using a different source for energy.

McLelland's system simply boils down to this: You have to cut off all fuel sources at the same time in order to effectively weaken cancer.

"The Metro Map is the key to starving the cancer. Once you've done that, killing it becomes much easier," said McLelland.

She lists several off-label drugs (like chloroquine and loratadine), supplements (like curcumin, resveratrol, and quercetin), and treatments (like intravenous vitamin C, and following a low-glycemic diet). According to McLelland, all have been shown to block one or more of cancer's three main fuel lines.

However, McLelland cautions that there is no one-size-fits-all approach. Her own experience with her various forms of cancer highlight that fact. Instead, McLelland's approach focuses on learning which fuel sources your particular cancer uses—and then creating a targeted treatment plan based on that information.

In her book, McLelland provides all the information a cancer patient might need to point them in the right direction for developing a protocol to starve their cancer.

"The book is a starting point," said McLelland.

Not a Death Sentence

For people currently struggling with a cancer diagnosis, McLelland has an important message: Never give up.

"I do believe we already have every drug and every supplement that we need to beat cancer. The key is getting the right combinations to people at the right time," said McLelland. "Yes, in certain circumstances there can be too much damage to the body from the cancer itself. But if you can get to people before that, I cannot see why patients can't be rescued even from advanced malignancies. Stage IV cancer should not be a death sentence, in my view."

McLelland herself is the living, breathing proof of that belief.

Now, 18 years after her initial cancer diagnosis—after battling cervical, lung, and blood cancers—McLelland is living the life of her dreams. She married the love of her life, and through the selflessness of a surrogate, was able to have two sons of her own.

"I didn't even think I was going to be alive, and I certainly didn't expect to have a family," said McLelland. "I have to pinch myself to believe it sometimes." •

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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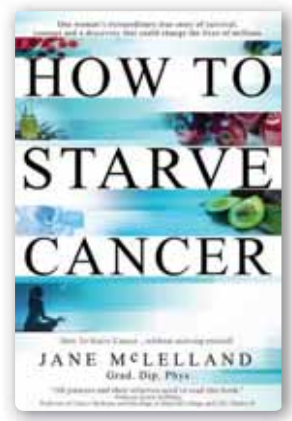

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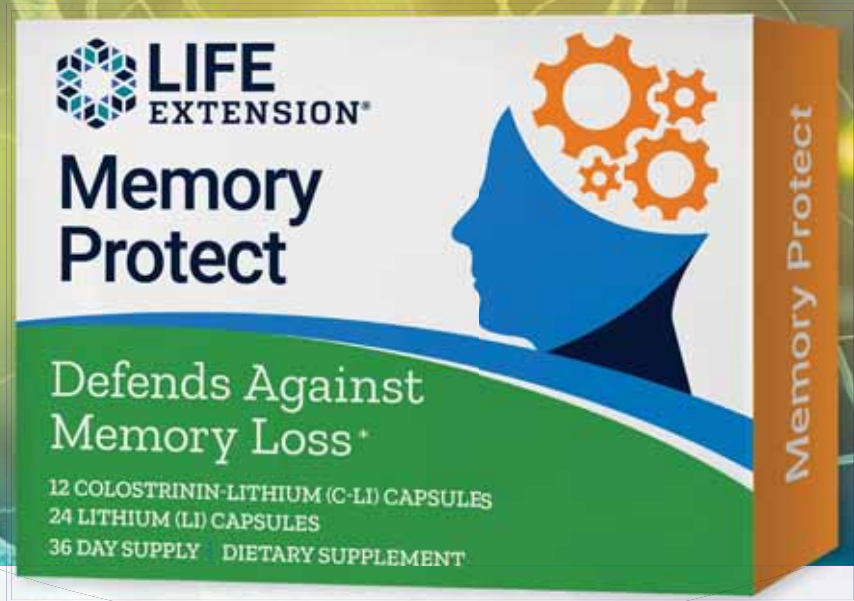

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MKMZAV190201

Eggplant

BY LAURIE MATHENA

Eggplants are best known for their deep, glossy purple skin, but they also come in colors ranging from lavender to green to orange, and in sizes ranging from a small tomato to a large zucchini.

Early varieties of eggplants had a predominantly bitter taste, which contributed to their reputation as a cause of insanity and leprosy.

Today's varieties are much less bitter, and they are now recognized for what they truly are: a nutrient-dense health food that has beneficial effects on heart health and cancer prevention.

Heart Health

In one animal study, feeding eggplant juice to rabbits with high cholesterol for two weeks led to lower LDL cholesterol and triglycerides.[1]

Another study showed that feeding raw or grilled eggplant to animals for 30 days prior to inducing a heart attack provided important cardioprotective effects. These included increasing left ventricular function, reducing the size of the heart attack (the portion of the heart without oxygen), and reducing the death of heart muscle cells.[2]

Anti-Cancer Properties

Eggplants contain numerous compounds that have anti-cancer properties.

For example, **glycoalkaloids**, which help protect plants against various threats, have been shown in cell studies to have anti-cancer properties against **gastric cancer**,[3] **leukemia**,[4] **liver cancer**,[5] **lung cancer**,[6] and **osteosarcoma**.[7]

Eggplants contain the phenolic compound, **chlorogenic acid**, which has been shown to induce apoptosis in human **leukemia cells** and human **lung cancer cells**.[8] They are also rich in **anthocyanins**, which have been shown to have numerous anti-cancer actions in **gastrointestinal cancer cells**.[9]

One cup (**82 grams**) of raw eggplant contains only **20 calories** and is loaded with fiber. You can enjoy eggplant roasted, sautéed, or baked. It can also be used as a healthy substitute in dishes like lasagna (use eggplant instead of noodles), or in place of sausage in other Italian recipes. •

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02246 Wellness Code® Advanced Whey Protein Isolate Vanilla
02221 Wellness Code® Muscle Strength & Restore Formula
02127 Wellness Code® Plant Protein Complete & Amino Acid Complex
02261 Wellness Code® Whey Protein Concentrate Chocolate
02260 Wellness Code® Whey Protein Concentrate Vanilla
02243 Wellness Code® Whey Protein Isolate Chocolate
02242 Wellness Code® Whey Protein Isolate Vanilla
02220 Wellness Shake • Chocolate
02219 Wellness Shake • Vanilla

AMINO ACIDS

01039 Arginine & Ornithine Capsules
00038 Arginine Ornithine Powder
01253 Branched Chain Amino Acids
01829 Carnosine
01671 D,L-Phenylalanine Capsules
01624 L-Arginine Caps
01532 L-Carnitine
00345 L-Glutamine
00141 L-Glutamine Powder
01678 L-Lysine
00133 L-Taurine Powder
00326 L-Tyrosine Tablets
01827 Taurine

BLOOD PRESSURE & VASCULAR SUPPORT

01824 Advanced Olive Leaf Vascular Support with Celery Seed Extract
02004 Arterial Protect
70000 Blood Pressure Monitor Arm Cuff
70004 Blood Pressure Monitor Digital Wrist Cuff
02097 Endothelial Defense™ Pomegranate Complete
00997 Endothelial Defense™ with GliSODin®
02320 NitroVasc™ Boost
00984 Optimal BP Management
01953 Pomegranate Complete
00956 Pomegranate Fruit Extract
02024 Triple Action Blood Pressure AM/PM
02102 VenoFlow™

BONE HEALTH

01726 Bone Restore
02123 Bone Restore-Sugar-Free
01727 Bone Restore with Vitamin K2
01725 Bone Strength Formula with KoAct®
00313 Bone-Up™
01963 Calcium Citrate with Vitamin D
01506 Dr. Strum's Intensive Bone Formula
01476 Strontium Caps

BRAIN HEALTH

01524 Acetyl-L-Carnitine
01974 Acetyl-L-Carnitine Arginate
01008 Blast™
02321 Cognitex® Basics
02396 Cognitex® Elite
02397 Cognitex® Elite Pregnenolone
01659 Cognizin® CDP-Choline Caps
01540 DMAE Bitartrate (dimethylaminoethanol)
02006 Dopa-Mind™
02212 Focus Tea™
01658 Ginkgo Biloba Certified Extract™
01527 Huperzine A
00020 Lecithin Granules
02101 Memory Protect
00709 Migra-Eeze™
01603 Neuro-Mag® Magnesium L-Threonate Caps
02032 Neuro-Mag® Magnesium L-Threonate Powder
00888 Optimized Ashwagandha Extract
01676 PS (Phosphatidylserine) Caps
01327 Vinpocetine

CHOLESTEROL MANAGEMENT

01828 Advanced Lipid Control
01359 Cho-Less™
01910 CHOL-Support™
01030 Red Yeast Rice
01304 Theaflavins Standardized Extract
00372 Vitamin B3 Niacin Capsules

DIGESTION SUPPORT

53348 Betaine HCl
54160 Black Vinegar
30747 Digest RC®
07136 Effervescent Vitamin C - Magnesium Crystals
02021 Enhanced Super Digestive Enzymes
02022 Enhanced Super Digestive Enzymes W/Probiotics
02033 EsophaCool™
01737 Esophageal Guardian
01706 Extraordinary Enzymes
02100 Gastro-Ease™
01122 Ginger Force™
00605 Regimint
01386 TruFiber®

ENERGY MANAGEMENT

01628 Adrenal Energy Formula • 60 veg capsules
01630 Adrenal Energy Formula • 120 veg capsules
01805 Asian Energy Boost
00972 D-Ribose Powder
01473 D-Ribose Tablets
01544 Forskolin
00668 Metabolic Advantage Thyroid Formula™
01869 Mitochondrial Basics with PQQ
01868 Mitochondrial Energy Optimizer with PQQ
01904 NAD^+ Cell Regenerator™ • 100 mg, 30 veg capsules
02344 NAD^+ Cell Regenerator™ Nicotinamide Riboside 300 mg, 30 veg capsules
02348 Optimized NAD^+ Cell Regenerator™ and Resveratrol
01500 PQQ Caps • 10 mg
01647 PQQ Caps • 20 mg
00889 Rhodiola Extract
01900 RiboGen™ French Oak Wood Extract
02003 Triple Action Thyroid

EYE HEALTH

01923 Astaxanthin with Phospholipids
00893 Brite Eyes III
02323 Digital Eye Support
01514 Eye Pressure Support with Mirtogenol®
01992 MacuGuard® Ocular Support with Saffron
01993 MacuGuard® Ocular Support with Saffron & Astaxanthin
01873 Standardized European Bilberry Extract
01918 Tear Support with MaquiBright®

FISH OIL & OMEGAS

02311 Clearly EPA/DHA Fish Oil
00463 Flaxseed Oil
01937 Mega EPA/DHA
02218 Mega GLA Sesame Lignans
01983 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract

01988 Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin
01982 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 softgels
01985 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 enteric coated softgels
01984 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 enteric coated softgels
01986 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 240 softgels
01812 Provinal® Purified Omega-7
01640 Vegetarian DHA

FOOD

02008 California Estate Extra Virgin Olive Oil
02170 Rainforest Blend Decaf Ground Coffee
02169 Rainforest Blend Ground Coffee
02171 Rainforest Blend Whole Bean Coffee
00438 Stevia™ Organic Liquid Sweetner
00432 Stevia™ Sweetener

GLUCOSE MANAGEMENT

01503 CinSulin® with InSea$^{2®}$ and Crominex® 3+
01620 CoffeeGenic® Green Coffee Extract
02122 Glycemic Guard™
00925 Mega Benfotiamine
01803 Tri Sugar Shield®

HEART HEALTH

01066 Aspirin (Enteric Coated)
01842 BioActive Folate & Vitamin B12 Caps
01700 Cardio Peak™ with Standardized Hawthorn and Arjuna
02121 Homocysteine Resist
02018 Optimized Carnitine
01949 Super-Absorbable CoQ10 Ubiquinone with *d*-Limonene • 50 mg, 60 softgels
01951 Super-Absorbable CoQ10 Ubiquinone with *d*-Limonene • 100 mg, 30 softgels
01929 Super Ubiquinol CoQ10
01427 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 30 softgels
01425 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 100 softgels
01437 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 30 softgels
01426 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 60 softgels
01431 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 200 mg, 30 softgels
01733 Super Ubiquinol CoQ10 with PQQ
01859 TMG Liquid Capsules
00349 TMG Powder

HORMONE BALANCE

00454 DHEA (Dehydroepiandrosterone) 15 mg, 100 capsules
00335 DHEA (Dehydroepiandrosterone) 25 mg, 100 capsules
00882 DHEA (Dehydroepiandrosterone) 50 mg, 60 capsules
00607 DHEA (Dehydroepiandrosterone) 25 mg, 100 tablets (dissolve in mouth)
01689 DHEA (Dehydroepiandrosterone) 100 mg, 60 veg capsules
02368 Optimized Broccoli and Cruciferous Blend
00302 Pregnenolone • 50 mg, 100 capsules
00700 Pregnenolone • 100 mg, 100 capsules
01468 Triple Action Cruciferous Vegetable Extract
01469 Triple Action Cruciferous Vegetable Extract with Resveratrol

IMMUNE SUPPORT

00681 AHCC®
02302 Bio-Quercetin
01961 Enhanced Zinc Lozenges
01704 Immune Modulator with Tinofend®
00955 Immune Protect with PARACTIN®
02005 Immune Senescence Protection Formula™
29727 Kinoko® Gold AHCC
24404 Kinoko® Platinum AHCC
00316 Kyolic® Garlic Formula 102
00789 Kyolic® Reserve
01681 Lactoferrin (Apolactoferrin) Caps
01903 NK Cell Activator™
01394 Optimized Garlic
01309 Optimized Quercetin
01811 Peony Immune
00525 ProBoost Thymic Protein A
01708 Reishi Extract Mushroom Complex
01906 Standardized Cistanche
13685 Ten Mushroom Formula®
01097 Ultra Soy Extract
01561 Zinc Lozenges

INFLAMMATION MANAGEMENT

01639 5-LOX Inhibitor with AprèsFlex®
02324 Advanced Curcumin Elite™ Turmeric Extract, Ginger & Turmerones
01709 Black Cumin Seed Oil
02310 Black Cumin Seed Oil and Curcumin Elite™ Turmeric Extract
00202 Boswella
02467 Curcumin Elite™ Turmeric Extract • 30 veg capsules
02407 Curcumin Elite™ Turmeric Extract • 60 veg capsules
01804 Cytokine Suppress® with EGCG
02223 Pro-Resolving Mediators
00318 Serraflazyme
01203 Specially-Coated Bromelain
01254 Zyflamend™ Whole Body

JOINT SUPPORT

02404 Arthro-Immune Joint Support
02238 ArthroMax® Advanced NT2 Collagen™ & AprèsFlex®
01617 ArthroMax® with Theaflavins & AprèsFlex®
02138 ArthroMax® Elite
00965 Fast-Acting Joint Formula
00522 Glucosamine/Chondroitin Capsules
01600 Krill Healthy Joint Formula
01050 Krill Oil
00451 MSM (MethylsulfonylMethane)
02231 NT2 Collagen™

KIDNEY & BLADDER SUPPORT

00862 Cran-Max® Cranberry Whole Fruit Concentrate
01424 Optimized Cran-Max® with Ellirose™
01921 Uric Acid Control
01209 Water-Soluble Pumpkin Seed Extract

LIVER HEALTH & DETOXIFICATION

02240 Anti-Alcohol HepatoProtection Complex
01651 Calcium D-Glucarate
00550 Chlorella
01571 Chlorophyllin
01922 European Milk Thistle • 60 softgels
01925 European Milk Thistle • 120 softgels
01522 European Milk Thistle • 60 veg capsules
02402 FLORASSIST® Liver Restore™
01541 Glutathione, Cysteine & C
01393 HepatoPro
01608 Liver Efficiency Formula

01534 N-Acetyl-L-Cysteine
00342 PectaSol-C® Modified Citrus Pectin Powder
01080 PectaSol-C® Modified Citrus Pectin Capsules
01884 Silymarin

LONGEVITY & WELLNESS

00457 Alpha-Lipoic Acid
01625 AppleWise Polyphenol Extract
01214 Blueberry Extract
01438 Blueberry Extract with Pomegranate
02270 DNA Protection Formula
02119 GEROPROTECT® Ageless Cell™
02133 GEROPROTECT® Longevity A.I.™
02211 Grapeseed Extract
02109 Mediterranean Whole Food Blend
00954 Mega Green Tea Extract (decaffeinated)
00953 Mega Green Tea Extract (lightly caffeinated)
01513 Optimized Fucoidan with Maritech® 926
02230 Optimized Resveratrol
01637 Pycnogenol® French Maritime Pine Bark Extract
02210 Resveratrol
00070 RNA (Ribonucleic Acid)
02301 Senolytic Activator
01208 Super R-Lipoic Acid
01919 X-R Shield

MEN'S HEALTH

02209 Male Vascular Sexual Support
00455 Mega Lycopene Extract
02306 Men's Bladder Control
01789 PalmettoGuard® Saw Palmetto with Beta-Sitosterol
01790 PalmettoGuard® Saw Palmetto/Nettle Root Formula with Beta-Sitosterol
01837 Pomi-T®
01373 Prelox® Enhanced Sex for Men
01940 Super MiraForte with Standardized Lignans
01909 Triple Strength ProstaPollen™
02029 Ultra Prostate Formula

MINERALS

01661 Boron
02107 Extend-Release Magnesium
30731 Ionic Selenium
01677 Iron Protein Plus
01459 Magnesium Caps
01682 Magnesium (Citrate)
01328 Only Trace Minerals
01504 Optimized Chromium with Crominex® 3+
02309 Potassium with Extend-Release Magnesium
01740 Sea-Iodine™
01879 Se-Methyl L-Selenocysteine
01778 Super Selenium Complex
00213 Vanadyl Sulfate
01813 Zinc Caps

MISCELLANEOUS

00577 Potassium Iodide
00657 Solarshield® Sunglasses

MOOD & STRESS MANAGEMENT

02312 Cortisol-Stress Balance
00987 Enhanced Stress Relief
01074 5 HTP
01683 L-Theanine
02175 SAMe (S-Adenosyl-Methionine) 200 mg, 30 enteric coated tablets
02176 SAMe (S-Adenosyl-Methionine) 400 mg, 30 enteric coated tablets
02174 SAMe (S-Adenosyl-Methionine) 400 mg, 60 enteric coated tablets

MULTIVITAMINS

02199 Children's Formula Life Extension Mix™
02398 Comprehensive Nutrient Packs ADVANCED
02354 Life Extension Mix™ Capsules
02364 Life Extension Mix™ Capsules without Copper
02356 Life Extension Mix™ Powder
02355 Life Extension Mix™ Tablets
02357 Life Extension Mix™ Tablets with Extra Niacin
02365 Life Extension Mix™ Tablets without Copper
02292 Once-Daily Health Booster • 30 softgels
02291 Once-Daily Health Booster • 60 softgels
02313 One-Per-Day Tablets
02317 Two-Per-Day Capsules • 60 capsules
02314 Two-Per-Day Capsules • 120 capsules
02316 Two-Per-Day Tablets • 60 tablets
02315 Two-Per-Day Tablets • 120 tablets

NERVE & COMFORT SUPPORT

02202 ComfortMAX™
02303 PEA Discomfort Relief

PERSONAL CARE

01006 Biosil™ • 5 mg, 30 veg capsules
01007 Biosil™ • 1 fl oz
00321 Dr. Proctor's Advanced Hair Formula
00320 Dr. Proctor's Shampoo
02322 Hair, Skin & Nails Collagen Plus Formula
01278 Life Extension Toothpaste
00408 Venotone
00409 Xyliwhite Mouthwash
02304 Youthful Collagen
02252 Youthful Legs

PET CARE

01932 Cat Mix
01931 Dog Mix

PROBIOTICS

01622 Bifido GI Balance
01825 FLORASSIST® Balance
02125 FLORASSIST® GI with Phage Technology
01821 FLORASSIST® Heart Health
02250 FLORASSIST® Mood Improve
02208 FLORASSIST® Nasal
02120 FLORASSIST® Oral Hygiene
02203 FLORASSIST® Prebiotic
01920 FLORASSIST® Throat Health
52142 Jarro-Dophilus® for Women
00056 Jarro-Dophilus EPS® • 60 veg capsules
21201 Jarro-Dophilus EPS® • 120 veg capsules
01038 Theralac® Probiotics
01389 TruFlora® Probiotics

SKIN CARE

80157 Advanced Anti-Glycation Peptide Serum
80165 Advanced Growth Factor Serum
80170 Advanced Hyaluronic Acid Serum
80154 Advanced Lightening Cream
80155 Advanced Peptide Hand Therapy
80152 Advanced Triple Peptide Serum
80140 Advanced Under Eye Serum with Stem Cells
80137 All-Purpose Soothing Relief Cream
80139 Amber Self MicroDermAbrasion
80118 Anti-Aging Mask
80151 Anti-Aging Rejuvenating Face Cream
80153 Anti-Aging Rejuvenating Scalp Serum
80133 Anti-Oxidant Facial Mist Hydrator
80156 Collagen Boosting Peptide Serum

80169 Cucumber Hydra Peptide Eye Cream
80141 DNA Support Cream
80167 Environmental Support Serum
80163 Eye Lift Cream
80123 Face Rejuvenating Anti-Oxidant Cream
80109 Hyaluronic Facial Moisturizer
80110 Hyaluronic Oil-Free Facial Moisturizer
80138 Hydrating Anti-Oxidant Facial Mist
00661 Hydroderm
80103 Lifting & Tightening Complex
80168 Melatonin Advanced Peptide Cream
80114 Mild Facial Cleanser
80172 Multi Stem Cell Hydration Cream
80159 Multi Stem Cell Skin Tightening Complex
80122 Neck Rejuvenating Anti-Oxidant Cream
80174 Purifying Facial Mask
80150 Renewing Eye Cream
80142 Resveratrol Anti-Oxidant Serum
01938 Shade Factor™
02129 Skin Care Collection Anti-Aging Serum
02130 Skin Care Collection Day Cream
02131 Skin Care Collection Night Cream
80166 Skin Firming Complex
02096 Skin Restoring Ceramides
80130 Skin Stem Cell Serum
80164 Skin Tone Equalizer
80143 Stem Cell Cream with Alpine Rose
80148 Tightening & Firming Neck Cream
80161 Triple-Action Vitamin C Cream
80162 Ultimate MicroDermabrasion
80173 Ultimate Peptide Serum
80160 Ultra Eyelash Booster
80101 Ultra Wrinkle Relaxer
80113 Under Eye Refining Serum
80104 Under Eye Rescue Cream
80171 Vitamin C Lip Rejuvenator
80129 Vitamin C Serum
80136 Vitamin D Lotion
80102 Vitamin K Cream

SLEEP

01512 Bioactive Milk Peptides
02300 Circadian Sleep
01551 Enhanced Sleep with Melatonin
01511 Enhanced Sleep without Melatonin
02234 Fast-Acting Liquid Melatonin
01669 Glycine
02308 Herbal Sleep PM
01722 L-Tryptophan
01668 Melatonin • 300 mcg, 100 veg capsules
01083 Melatonin • 500 mcg, 200 veg capsules
00329 Melatonin • 1 mg, 60 capsules
00330 Melatonin • 3 mg, 60 veg capsules
00331 Melatonin • 10 mg, 60 veg capsules
00332 Melatonin • 3 mg, 60 veg lozenges
02201 Melatonin IR/XR
01787 Melatonin 6 Hour Timed Release 300 mcg, 100 veg tablets
01788 Melatonin 6 Hour Timed Release 750 mcg, 60 veg tablets
01786 Melatonin 6 Hour Timed Release 3 mg, 60 veg tablets
01721 Optimized Tryptophan Plus
01444 Quiet Sleep
01445 Quiet Sleep Melatonin

VITAMINS

01533 Ascorbyl Palmitate
00920 Benfotiamine with Thiamine
00664 Beta-Carotene
01945 BioActive Complete B-Complex
00102 Biotin
00084 Buffered Vitamin C Powder
02229 Fast-C® and Bio-Quercetin Phytosome
02075 Gamma E Mixed Tocopherol Enhanced with Sesame Lignans
02070 Gamma E Mixed Tocopherol/Tocotrienols
01913 High Potency Optimized Folate
01674 Inositol Caps Liquid Emulsified
02244 Liquid Vitamin D3 • 2,000 IU, 1 fl oz
02232 Liquid Vitamin D3 • 2,000 IU, 1 fl oz, mint
01936 Low-Dose Vitamin K2
01536 Methylcobalamin • 1 mg, 60 veg lozenges
01537 Methylcobalamin • 5 mg, 60 veg lozenges
00065 MK-7
00373 No Flush Niacin
01939 Optimized Folate (L-Methylfolate)
01217 Pyridoxal 5'-Phosphate Caps
01400 Super Absorbable Tocotrienols
02334 Super K
02335 Super K Elite
01863 Super Vitamin E
02028 Vitamin B5 (Pantothenic Acid)
01535 Vitamin B6
00361 Vitamin B12
02228 Vitamin C and Bio-Quercetin Phytosome 1,000 mg, 60 veg tablets
02227 Vitamin C and Bio-Quercetin Phytosome 1,000 mg, 250 veg tablets
01753 Vitamin D3 • 1,000 IU, 90 softgels
01751 Vitamin D3 • 1,000 IU, 250 softgels
01713 Vitamin D3 • 5,000 IU, 60 softgels
01718 Vitamin D3 • 7,000 IU, 60 softgels
01758 Vitamin D3 with Sea-Iodine™
02040 Vitamins D and K with Sea-Iodine™

WEIGHT MANAGEMENT & BODY COMPOSITION

00658 7-Keto® DHEA Metabolite • 25 mg, 100 capsules
02479 7-Keto® DHEA Metabolite • 100 mg, 60 veg capsules
01509 Advanced Anti-Adipocyte Formula
01807 Advanced Appetite Suppress
02207 AMPK Metabolic Activator
01823 CalReduce Selective Fat Binder
02478 DHEA Complete
01738 Garcinia HCA
29754 HCActive Garcinia Cambogia Extract
01292 Integra-Lean®
01908 Mediterranean Trim with Sinetrol™ -XPur
01492 Optimized Irvingia with Phase 3™ Calorie Control Complex
01432 Optimized Saffron with Satiereal®
00818 Super CLA Blend with Sesame Lignans
01902 Waist-Line Control™
02151 Wellness Code® Appetite Control

WOMEN'S HEALTH

01942 Breast Health Formula
01626 Enhanced Sex for Women 50+
01894 Estrogen for Women
01064 Femmenessence MacaPause®
02204 Menopause 731™
02319 Prenatal Advantage
01441 Progesta-Care®
01649 Super-Absorbable Soy Isoflavones

FEED YOUR BRAIN

SUPER SALE PRICING!

Item #02397 • 60 vegetarian tablets

1 bottle **$39.15**

4 bottles $36 each

SUPER SALE PRICING!

Item #02396 • 60 vegetarian tablets

1 bottle **$37.80**

4 bottles $34.20 each

For full product description and to order **Cognitex® Elite** or **Cognitex® Elite Pregnenolone**, call 1-800-544-4440 or visit www.LifeExtension.com

FOR OPTIMAL BRAIN HEALTH

Cognitex® Elite contains clinically studied brain-boosting nutrients in one advanced formula.

A new ingredient called **SIBELIUS™: Sage Extract** demonstrated improvement in attention and memory performance in healthy, older volunteers.

Cognitex® Elite provides ***all*** of these ingredients:

SIBELIUS™: SAGE extract (leaf)	**333 mg**
AuroraBlue® Wildcrafted Blueberry Complex	**200 mg**
Sensoril® Ashwagandha extract	**125 mg**
Phosphatidylserine	**100 mg**
Uridine-5′-monophosphate	**50 mg**
Vinpocetine	**20 mg**

Cognitex® Elite Pregnenolone contains these same powerful ingredients but with **50 mg** of pregnenolone added.

* **CAUTION:** Consult a physician or licensed qualified health care professional before using this product if you have, or have a family history of breast cancer, prostate cancer, or other hormone-sensitive diseases. Do not take this product if you have a history of seizures. Do not use if you are of childbearing age, pregnant or planning to become pregnant.

NEW!

Highly Absorbable
CURCUMIN

Curcumin Elite™ is a patented **extract** from **turmeric root** that provides **45 times** greater **free curcuminoid** bio-availability than standardized turmeric powder.

Curcumin Elite™ contributes to *higher* **blood levels** of bio-active curcuminoids that **stay in the body longer** to provide more health benefits.

Advanced Curcumin Elite™ contains the same optimal **500 mg** potency of **curcumin** with the *added* benefits of **ginger** and additional **turmeric** actives.

45 times Greater Bioavailability At a Lower Price

SUPER SALE PRICING!

Item #02407
500 mg, 60 vegetarian capsules

1 bottle **$21.60**

4 bottles $19.80 each

SUPER SALE PRICING!

Item #02324
500 mg curcumin + gingerol, 30 softgels

1 bottle **$18**

4 bottles $16.20 each

For full product description and to order
Curcumin Elite™ or **Advanced Curcumin Elite™**,
call 1-800-544-4440 or
visit www.LifeExtension.com

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LIFE EXTENSION®

The Science of a Healthier Life™

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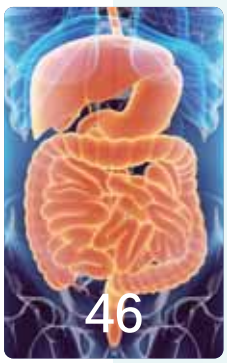

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