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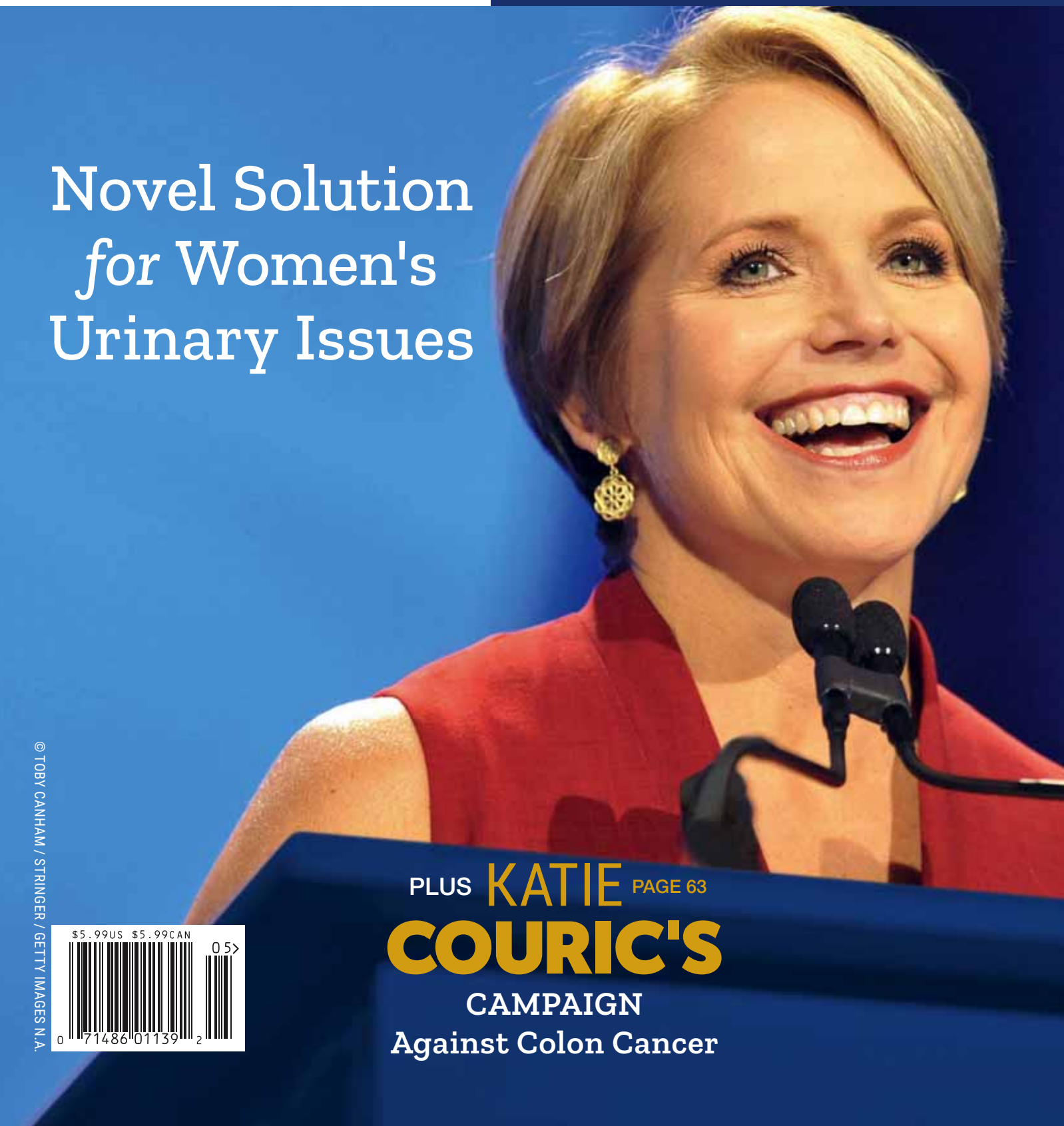

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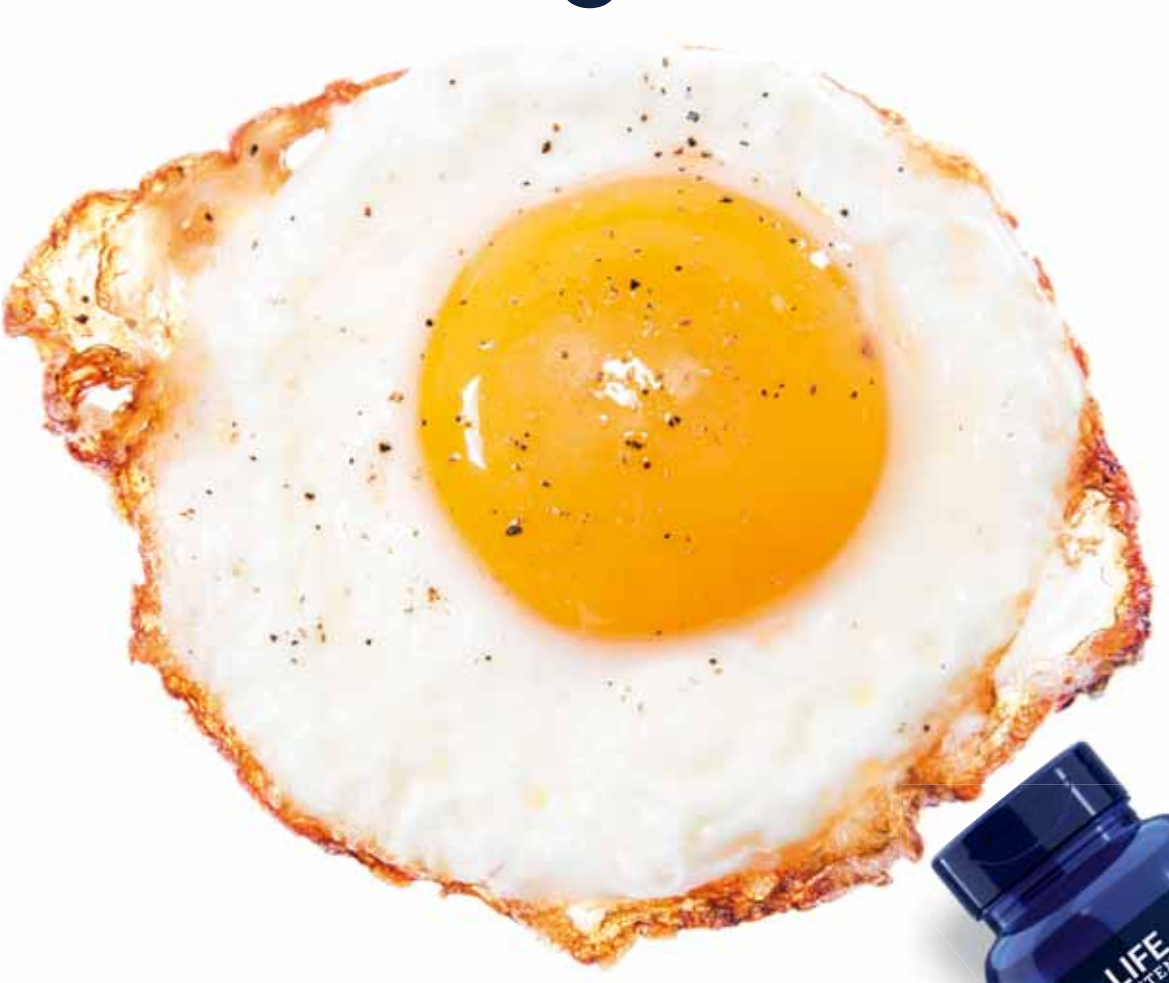

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ON THE COVER

URINARY SYMPTOMS in Women

A blend of **plant extracts** has been shown to *reduce* urinary episodes by **65%** in women, with **79%** reporting a feeling of significant benefit.

DEPARTMENTS

LIFE EXTENSION®

The Science of a Healthier Life®

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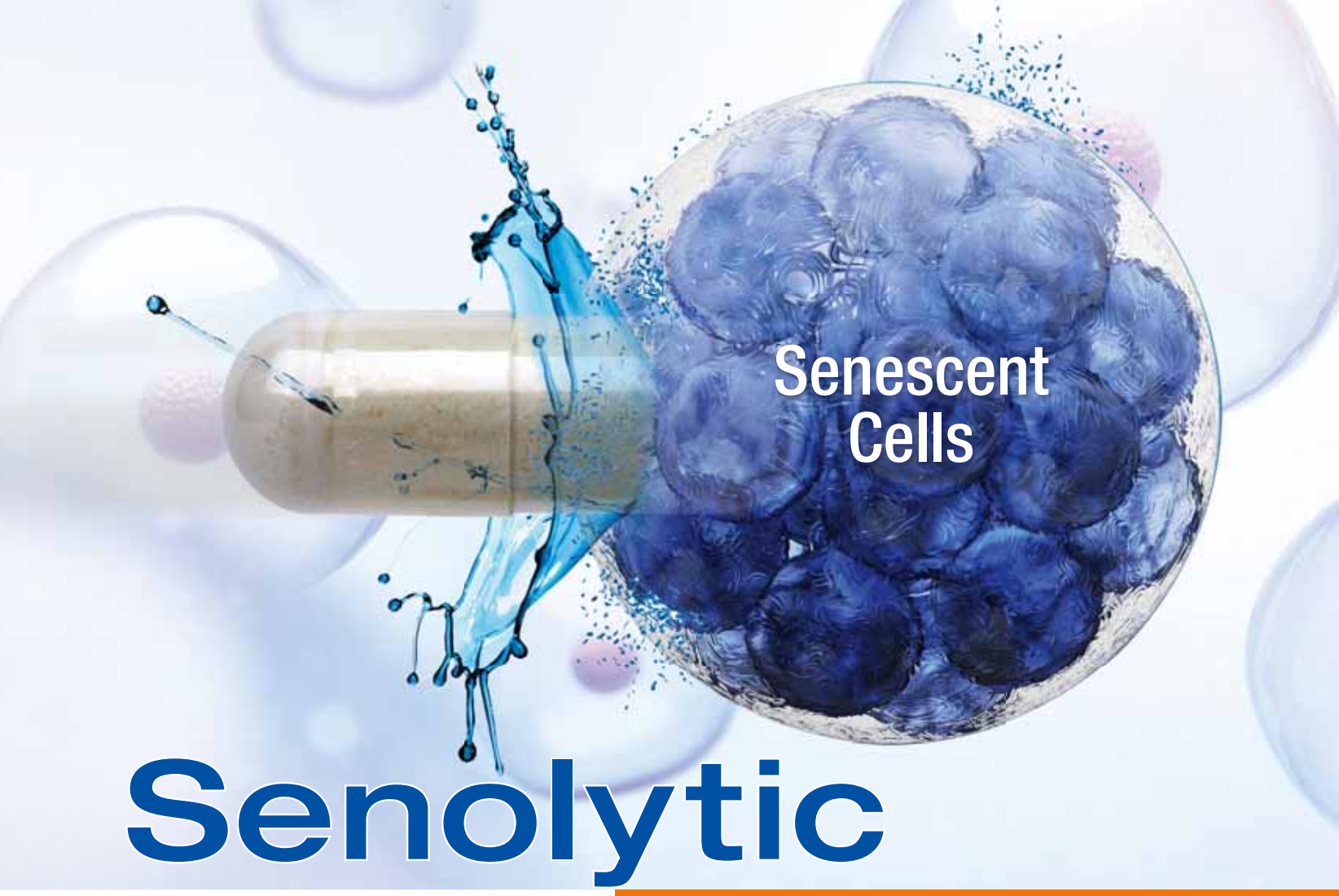

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Atherosclerosis in Sweden: Implications for Americans

WILLIAM FALOON

The **American Heart Association** published a report on a study that detected **atherosclerosis** in **42%** of **Swedish** study subjects without known **heart disease**.[1]

Compared to **Americans**, most **Swedish** citizens have lower vascular risks.[2]

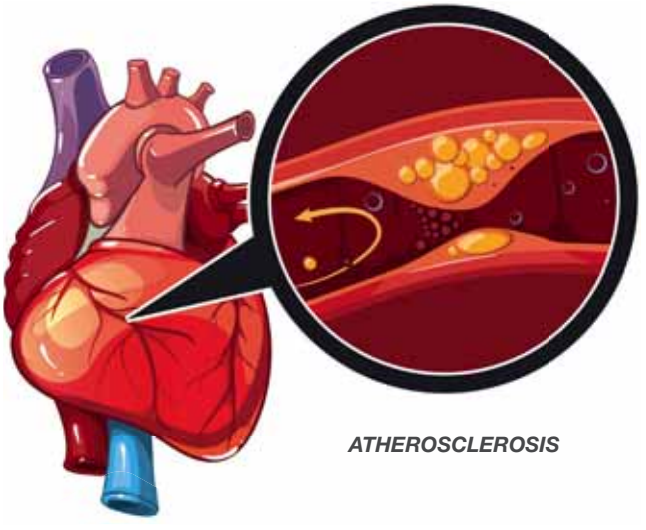
In 2019, the percentage of **obese** people in Sweden was **13.1%** compared to **40%** in the United States.[3]

Coronary **heart disease** deaths are **22.5%** *higher* in the **United States** than in **Sweden**.[4]

These data about artery disease in **Sweden** likely indicate *greater* **atherosclerosis** prevalence in the **United States**.

Autopsy studies on young Americans consistently show evidence of **atherosclerosis**.[5,6]

Recognized risk factors of severe **artery disease** include hypertension,[7-9] elevated lipids[7,10-12] diabetes,[7,13] and/or obesity.[7,14]



ATHEROSCLEROSIS

A common misconception is that **atherosclerosis** is a **modern-day** phenomenon.

Studies using high-resolution images of **mummified bodies** from different world regions reveal the opposite. **Atherosclerosis** has plagued mankind for thousands of years.[15]

Atherosclerosis is the term used to describe damage and obstruction that occurs in the linings of our arteries.[16]

When **arterial blood flow** is impeded or blocked, the result can be death or disability from a **stroke** or **heart attack**.[16]

A misconception about **atherosclerosis** is that it did not exist in prior historic eras. I've heard so-called experts claim that people didn't suffer coronary artery disease in the past because their diets were so "natural."

These "experts" do not have sufficient data and have no basis to claim that atherosclerosis is a recent phenomenon. All they can cite is that few people developed **heart disease** in the past compared to today.

The reason more people weren't having **heart attacks** back then is that most died before the age of **40-60** from diseases that are now curable.

The advantage we have today is being able to delay **atherosclerotic** progression and reduce our risk of coronary **heart attack** and ischemic **stroke**.

Atherosclerosis in Ancient Cultures

A study published in **2011** found definitive or probable **atherosclerosis** present in **mummified** bodies that lived during every era of **ancient Egypt** studied.[17]

In **2013**, ***The Lancet*** showed that **mummified humans** dating back 4,000 years and spanning several geographic locations/cultures all suffered from ***clogged arteries***.[15]

According to the lead investigator of ***The Lancet*** study:

> ***"The fact that we found similar levels of atherosclerosis in all of the different cultures we studied, all of whom had very different lifestyles and diets, suggests that atherosclerosis may have been far more common in the ancient world than previously thought."***[15]
>
> —Randall Thompson, MD

Modern Era Atherosclerosis

A **2021 Swedish** study found a **1.8-times** greater prevalence of **atherosclerosis** in people aged **60-64** compared to those **50-54** years old.[1]

As we at ***Life Extension*** have long argued, **atherosclerosis** is a ***disease of aging*** that has long been prevalent.[18]

It took modern computed tomography **imaging** to document probable signs of **heart disease** in **34%** of mummified humans whose estimated mean age at death was **43** years. Those who died at an estimated mean age of **32** years were less likely to show signs of **atherosclerosis**.[15]

These findings suggest that **arterial disease** has always been widespread. The encouraging news is that methods to prevent and even reverse it have been validated in modern clinical studies.

What Caused Atherosclerosis In The Mummified Bodies?

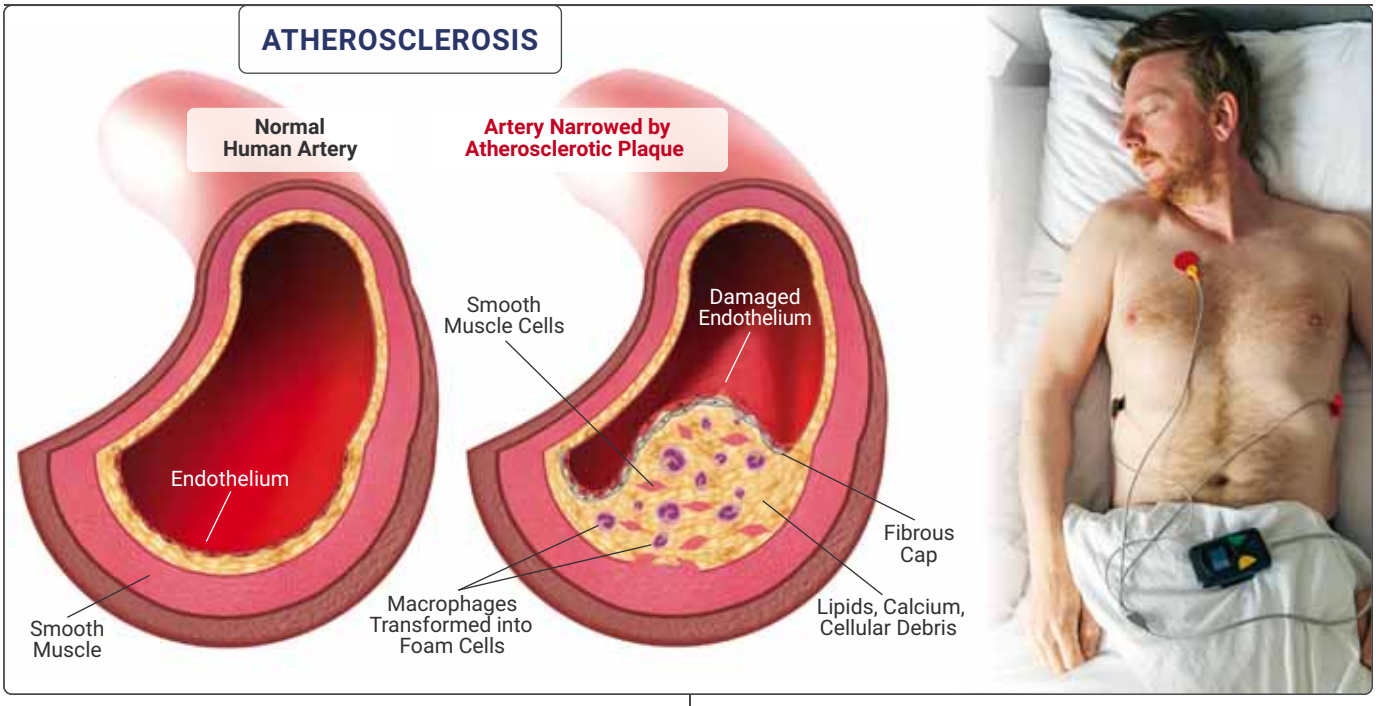
In seeking to identify what caused atherosclerosis in the mummified bodies, ***The Lancet*** researchers speculated that it could have been the high levels of **inflammation** these primitive people were exposed to from constant **infections** and a non-hygienic environment.[15]

People with severe inflammatory conditions (like rheumatoid arthritis[19,20] and lupus[21,22]) suffer *accelerated* atherosclerosis.

Multiple studies of modern people link **chronic inflammation** as an independent risk factor for **stroke** [22] and **heart attack**.[22-24]

One study investigated a large group of older individuals who were followed for **17** years. Those with the *highest* levels of inflammatory blood markers were over **three-times** more likely to suffer sudden **cardiac death** compared to people with the lowest levels.[25]

It's comforting to live in an era where **chronic inflammation** can be identified with **blood tests** and corrective actions taken to suppress elevated **inflammatory** markers.



Why Is Atherosclerosis So Common?

We know that multiple factors can alter arterial function and damage the delicate arterial lining (endothelium). These negative factors include excess dietary intake of the wrong kinds of fats,[26] sugars,[27] high salt intake,[28] and tobacco smoke.[29,30]

Most of us are born with an intact **endothelium** that lines our arteries and protects against the formation of **atherosclerosis**.

As we age, our arterial lining endures chronic insult from internal and external factors that results in endothelial damage leading to **atherosclerosis**. Progressing blockage of blood vessels results in decreased **blood flow** to the heart, kidneys, and brain.[18,31]

Health issues linked to atherosclerosis are a leading reason why most aging people die in the United States.[16]

Those who understand the many causes of **atherosclerosis** should not be surprised that it is so common. What's appalling is the number of people who continue to succumb to atherosclerotic diseases because of apathy and ignorance.

What Can You Do About It?

Endothelial dysfunction is one reason why **atherosclerosis** is such a common worldwide pathology.[31]

As the inner arterial wall (the **endothelium**) becomes **dysfunctional**, it enables **atherosclerotic** lesions to initiate, progress, and eventually occlude blood flow.[31]

As you will read on page 40 of this issue, a combination of low-cost nutrients has been shown to help modulate **endothelial dysfunction** and improve blood flow.

Annual Blood Test Sale

We at **Life Extension®** have long encouraged annual **blood tests** to screen for underlying arterial disease and take corrective actions when risk factors like homocysteine, C-reactive protein, and LDL are at dangerous levels.

Once a year, prices are **discounted** so our supporters can assess their status and initiate preemptive measures before illnesses strike.

On page 11 there is a description of the popular **Male** and **Female Blood Test** panels.

Commercial labs charge thousands for these tests, but readers of this publication obtain them for only **$224** during the **Blood Test Super Sale**.

To order the **Male** or **Female Blood Test Panel** at these low prices, call **1-800-208-3444** (24 hours) or visit: www.LifeExtension.com/sales/lab-tests

For longer life,

William Faloon, Co-Founder
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Homocysteine
Total Cholesterol
LDL (low-density lipoprotein)
HDL (high-density lipoprotein)
Triglycerides

GLUCOSE PROFILE
Insulin
Hemoglobin A1c
Glucose

MINERALS
Magnesium (serum)
Ferritin (measure of iron status)
Calcium
Potassium
Phosphorus
Sodium
Iron
Chloride

ORGAN FUNCTION
Kidney: creatinine, BUN, uric acid, BUN/creatinine ratio
Liver: AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase

COMPLETE BLOOD COUNT (CBC)
Blood proteins: albumin, globulin, total protein, albumin/globulin ratio
Immune Cells including: lymphocytes, monocytes, eosinophils, neutrophils, basophils
Red Blood Cells including: hemoglobin, hematocrit, MCV, MCH, MCHC, RDW
Platelets

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

CANCER MARKER
PSA (Prostate Specific Antigen)

FEMALE PANEL

CARDIAC MARKERS
C-Reactive Protein (high sensitivity)
Apolipoprotein B (ApoB)
Homocysteine
Total Cholesterol
LDL (low-density lipoprotein)
HDL (high-density lipoprotein)
Triglycerides

GLUCOSE PROFILE
Insulin
Hemoglobin A1c
Glucose

MINERALS
Magnesium (serum)
Ferritin (measure of iron status)
Calcium
Potassium
Phosphorus
Sodium
Iron
Chloride

ORGAN FUNCTION
Kidney: creatinine, BUN, uric acid, BUN/creatinine ratio
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COMPLETE BLOOD COUNT (CBC)
Blood proteins: albumin, globulin, total protein, albumin/globulin ratio
Immune Cells including: lymphocytes, monocytes, eosinophils, neutrophils, basophils
Red Blood Cells including: hemoglobin, hematocrit, MCV, MCH, MCHC, RDW
Platelets

HORMONES
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Free and Total Testosterone
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TSH (thyroid function)
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○ **ADVANCED OXIDIZED LDL PANEL* (LC100035)** This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic and cardiovascular disease as well as the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase, and Oxidized LDL.	$198.75
○ **OMEGA-3 INDEX COMPLETE** (LC100066)** Beneficial for everyone! People not taking omega-3/fish oil should check their baseline Omega-3 Index to see if it is in the desirable or concerning range. Those taking Omega-3/fish oil supplements should take the test to see if they need to adjust their dosage. You want to target a range of **8%-12%** for your Omega-3 Index score.	$74.25
CONDITION-SPECIFIC TESTS	
○ **PERSONALIZED AMINO ACID HEALTH ASSESSMENT** (LC100090)** An in-depth analysis of amino acid metabolism provides insight into various health concerns, such as maldigestion, GI dysbiosis, neurological issues and more, with a personalized report of diet and supplementation suggestions. Provided as an at-home urine collection kit.	$224.25
○ **ENVIRONMENTAL POLLUTANTS PROFILE**† (LC100089)** Toxic pollutants affect our bodies in several different ways. This test helps assess possible exposure to several common environmental pollutants by measuring their urinary metabolites.	$111.75

Know YOUR NUMBERS

SALE PRICE

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Convenient at-home test for blood levels of 8 important metals, providing insight into toxic metal burden and nutritional status with a quick and easy finger stick. Detects toxic metals: Lead, Mercury, Cadmium, Arsenic, Antimony and nutritional elements: Copper, Zinc, Selenium

TOXIC METALS PANEL (FECAL)† (LC100076)** $127.50
The results of fecal elemental analysis can help you identify and eliminate dietary exposure to toxic metals, while also assessing the body's natural excretion of metals. The panel tests Antimony, Arsenic, Beryllium, Bismuth, Cadmium, Copper, Lead, Mercury, Nickel, Platinum, Thallium, Tungsten, and Uranium.

NEUROTRANSMITTER PANEL-COMPREHENSIVE† (LC100085)** $221.25
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PRO7 ADVANCED NUTRIGENOMIC PROFILE (LC100097)** $224.25
Analyzes genetics in 7 key areas of health (methylation, neurotransmitters, mitochondrial health, detoxification, inflammation, and more) and provides genetically targeted nutritional suggestions.

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MALE BASIC HORMONE PANEL (LC100012) $56.25
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FEMALE ELITE PANEL* (LC100017) $431.25
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HEALTHY AGING PANEL-COMPREHENSIVE* (LC100026) $186.75
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COMPLETE HORMONE & METABOLITES PROFILE (HUMAP)† (LC900001)** NEW $224.25
Comprehensive assessment of hormones and their metabolites. This urine test helps assess how your body metabolizes hormones, providing insight into endogenous hormone secretion, supplemental hormone utilization, enzyme activity, oxidative stress.

CBC/CHEMISTRY/LIPIDS PANEL

These **CBC/Chemistry/Lipids Panel** tests are included in the popular **Male** and **Female Panels**, and other panels on this page so you don't have to order them separately.

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KIDNEY FUNCTION
BUN • Creatinine • BUN/Creatinine Ratio • Uric Acid

BLOOD PROTEINS
Total Protein • Albumin • Globulin • Albumin/Globulin Ratio

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

BLOOD MINERALS
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The price for the **CBC/Chemistry/Lipids Panel** alone is **$26.25. (LC381822)**

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

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** This test is packaged as a kit.
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In the News

Lithium Benefits Kidneys

New research published in the *Journal of Clinical Investigation* suggests that **lithium** may help protect against kidney decline.*

Inhibiting the **glycogen synthase kinase 3**-beta (GSK3-beta) enzyme in cells supports kidney health in preclinical models.

Lithium has been shown to inhibit **GSK3-beta**.

Researchers have also observed that psychiatric patients treated long-term with lithium carbonate exhibited better **kidney** function than age-matched patients who did not receive it.

Their research suggested that less than a third of the dose used for bipolar disorder significantly blocks GSK3-beta activity in the kidney.

Editor's Note: Lithium has been used for many years as a treatment for bipolar disorder, and more recently was also found to extend the lifespan of roundworms and fruit flies.

* *J Clin Invest.* 2022 Feb 15. ;132(4):e141848.

N-Acetylcysteine Could Help in Older Patients' Concussion Recovery

A pilot study revealed improvement in symptoms of concussion among older men and women with mild traumatic brain injury who received supplements containing N-acetylcysteine (NAC), the *Journal of Trauma Acute Care Surgery* reported.*

The study included 65 traumatic brain injury patients who were within three hours of trauma surgery service evaluation.

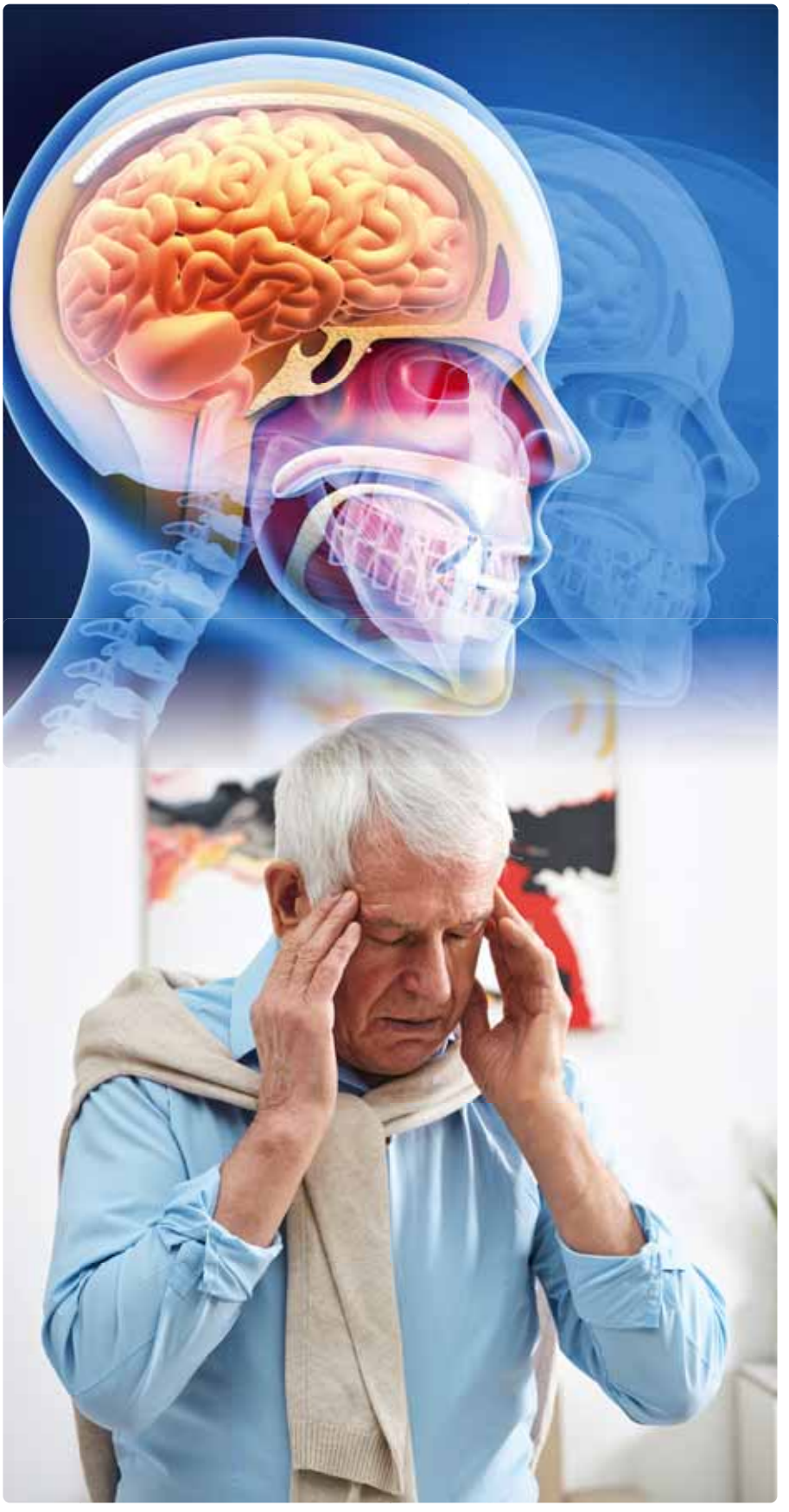
Thirty-four patients received standard treatments for traumatic brain injury plus **4 grams** of NAC within three hours of injury, followed by a 3-day period during which **2 grams** of NAC was administered twice per day and an additional 3 days during which **1.5 grams** of NAC was provided twice daily.

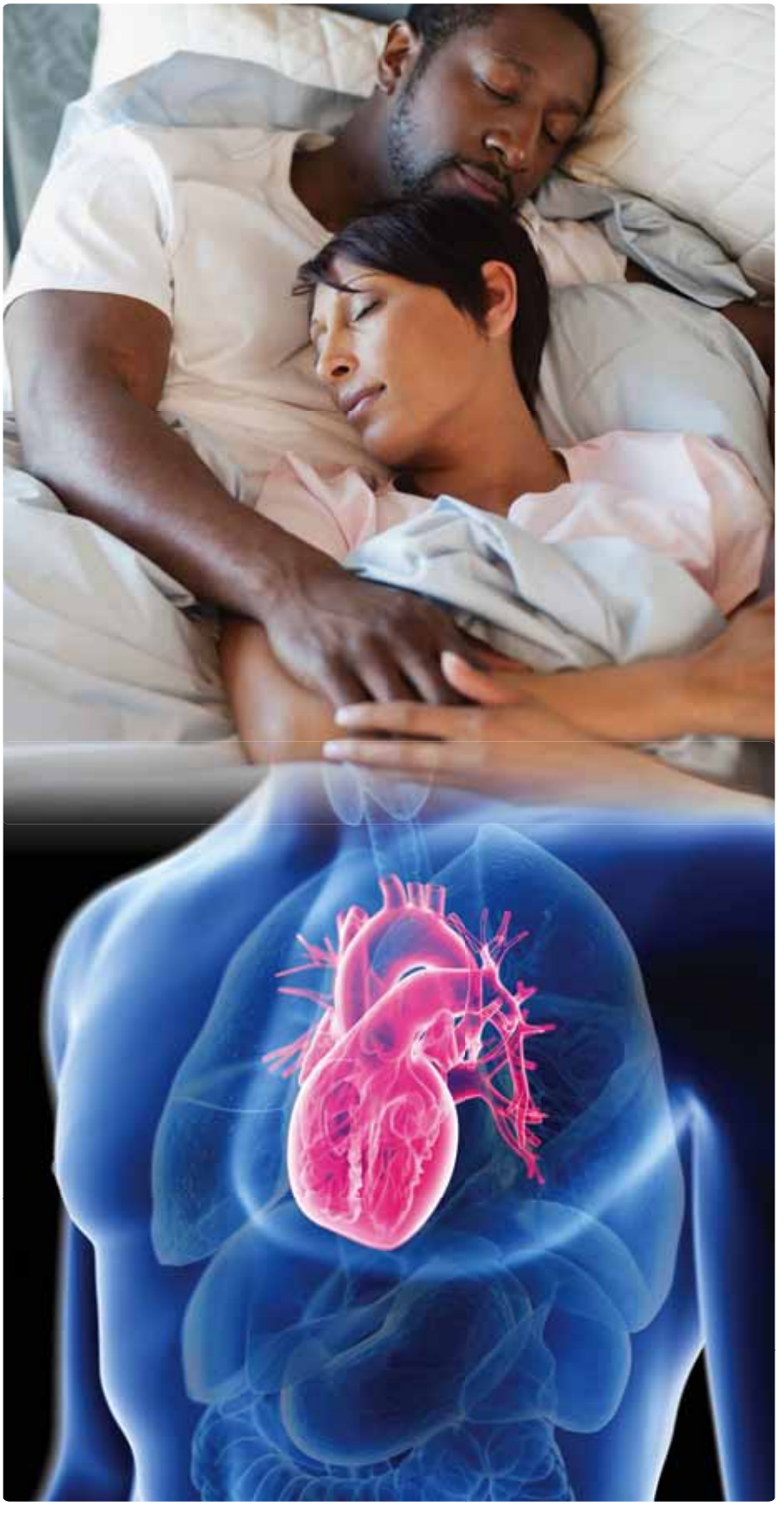
The remainder of the participants received standard treatment alone. Questionnaires that evaluated post-concussion symptoms were administered at the beginning of the study and at 7 and 30 days.

While questionnaire scores were similar at the beginning of the study, they were significantly better in the **NAC group** on days 7 and 30.

Editor's Note: The authors concluded that, "N-acetylcysteine was associated with significant improvements in concussion symptoms in elderly patients with mild traumatic brain injury. These results justify further research into using NAC to treat traumatic brain injury."

* *J Trauma Acute Care Surg.* 2022 Apr 8.





Melatonin Improves Heart Failure Patients' Lives

Stable **heart failure** patients with reduced ejection fraction (when left ventricle of the heart fails to contract normally) who consumed a nightly **melatonin** supplement, experienced a reduction in a marker of heart failure and better **quality of life** compared to patients who received a **placebo**, the journal *Clinical Cardiology* reported.*

The clinical trial included 85 patients who received **10 mg** melatonin or a placebo nightly for 24 weeks.

Levels of NT-pro BNP which, when elevated, may be an indicator of heart failure, were similar in the melatonin-supplemented group and the placebo group at the beginning of the trial.

At the end of the trial, NT-pro BNP declined to **221.1 ng/L** among participants who received **melatonin** compared to **332.1 ng/L** among those who received a **placebo**.

Lower **NT-pro BNP** blood levels are an indicator of reduced **heart failure** severity.

Editor's Note: Melatonin-supplemented participants also experienced significant improvements in clinical outcome, quality of life, and New York Heart Association classification of heart failure, compared to the placebo group.

* *Clin Cardiol*. 2022 Apr;45(4):417-426.

Compounds for Preserving Bone Health

Bone health is maintained by two key cells called osteoblasts, which differentiate into osteocytes (bone cells), and osteoclasts, which break down old bone so that osteoblasts can form new bone.

The health and function of osteoblasts and osteoclasts is regulated by pathways which have been found to be activated by 'cellular' proteins such as sirtuin 1, AMPK, and Nrf2.

Researchers have reviewed bone preserving mechanisms of specific nutrients that regulate these cellular proteins.*

SIRT1 is increased by melatonin, nicotinamide riboside, glucosamine and thymoquinone, found in black cumin seed oil. (Resveratrol long ago demonstrated potent SIRT1 activation.)

Nutrients such as gynostemma pentaphyllum and the drug metformin are compounds that activate AMPK.

Nrf2 regulates the cells' defense against oxidative stress. Lipoic acid, melatonin, thymoquinone, astaxanthin and sulforaphane can promote Nrf2 activity.

Editor's Note: "Regimens providing a selection of these nutraceuticals in clinically meaningful doses may have an important potential for preserving bone health," the authors concluded. "Concurrent supplementation with taurine, N-acetylcysteine, vitamins D and K2, and minerals, including magnesium, zinc, and manganese, plus a diet naturally high in potassium, may also be helpful in this regard."

* *Int J Mol Sci.* 2022 April 26;23(9):4776.

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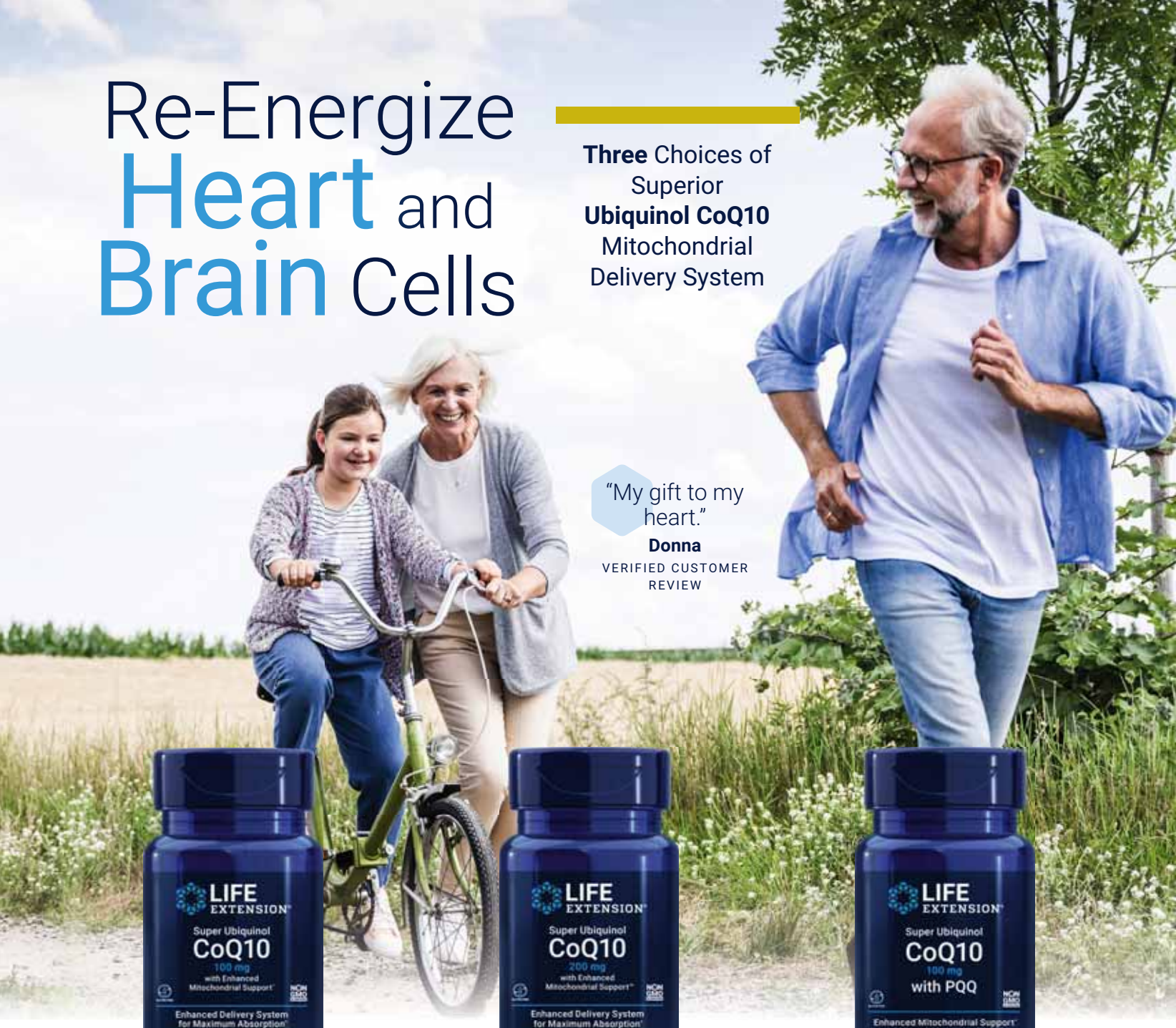

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Donna

VERIFIED CUSTOMER REVIEW

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Each bottle lasts 100 days.

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European Journal of Nutrition. 2011;50(5):387-389.

A Solution for Urinary Symptoms in Women

BY MICHAEL DOWNEY

For many women, frequent trips to the bathroom or needing to get up at night to urinate are a drain on quality of life.[1,2]

Even a good laugh can lead to urinary incontinence.

In an eight-week **clinical trial**, a blend of three **plant extracts** improved urination issues in women as follows:[3]

- Incontinence episodes were **reduced** by **65%**,
- Urinary urgency episodes **decreased** by **57%**,
- Nighttime urination episodes were **reduced** by **43%**, and
- Daytime urination frequency returned to **normal**.

A robust **79%** of women who took the blend reported a significant **benefit**, compared to **17%** who took a **placebo**.

Bladder Problems Worsen with Age

Urinary issues tend to become more common in women as they age. Onset of symptoms is usually observed over the age of 40.[4]

The prevalence and severity of symptoms are greater in women than in men. A population study with 40- to 99-year-old women participants from the U.S., UK, and Sweden revealed that:[5]

- **56%** experience **incontinence**,
- **36%** experience **urinary urgency**,
- **34%** experience **nighttime urination**, and
- **25%** experience **frequent urination**.

The median daytime urinary frequency is 3-4 hours (6-8 times daily).[6] Those afflicted with an overactive bladder have to go to the bathroom more frequently (**>8** times during the day and **>1** time at night).[2]

According to a study, *only* **46%** of symptomatic women have discussed any urinary concerns with their health care provider.[4] Many are self-conscious about these symptoms but assume they are an unavoidable part of aging.[7]

Those who do seek medical advice are often prescribed drugs with **minimal benefits** at best. For example, only about **13%** of participants taking drugs achieve urinary continence, and side effects prompt some patients to discontinue medication.[3]

In contrast, a clinical study found that a blend of **three plant extracts**[3] was well-tolerated by participating women, *improved* urinary symptoms, and significantly *improved* participants' quality of life.

How Does this Herbal Combination Work?

In a rat model of **overactive bladder**, the herbal blend reversed the alterations in various biomarkers in the urine and lining of bladder and muscle, leading to improvement of urinary symptoms in:[7]

- Storage phase (e.g., urgency, frequency, nocturia)
- Voiding/Post-voiding phase (e.g., hesitancy, intermittency, weak stream, dribbling post-voiding)

The researchers suggest that the ability of these **plant extracts** to favorably alter markers of urinary changes in the rat model may explain the clinically significant benefits observed in the **human** study.[7]

Twenty Years in Development

More than **20 years** ago, naturopath and medical herbalist Dr. Tracey Seipel began researching an effective solution to **urinary problems** for her patients.[8] She sifted through the medical literature on **plant compounds** that had been traditionally used to treat bladder issues and gradually began incorporating some into her clinical practice.[3]

Eventually, Dr. Seipel's experiential research allowed her to refine a treatment that included a blend of **three plant extract**s, each with a history of effectiveness and each from a different area of health care:

- **Horsetail** *(Equisetum arvense)* from Western herbal medicine,
- **Lindera** *(Lindera aggregata)* from Chinese medicine, and
- **Three-leaf caper** *(Crateva nurvala)* from Ayurvedic medicine.

Reduced Urinary Symptoms

To validate Dr. Seipel's research on the blend of three plant extracts, scientists designed a randomized, **placebo-controlled** trial.[3]

They enlisted 88 women with an average age of **62 years** who had at **least two** of the following symptoms:

- Daytime urination episodes of **10 or more** a day,
- Incontinence episodes of **one or more** per day,
- Urinary urgency episodes of **two or more** a day, and
- Nighttime urination episodes of **two or more** a night.

HORSETAIL

WHAT YOU NEED TO KNOW

The treatment group took **840 mg** of the extract blend in the form of two capsules once daily. After just **eight weeks**:[3]

- Daytime urination episodes were restored to normal levels, decreasing from an average of ***11.59 times*** a day to an average of just ***7.88 times*** a day.
- Incontinence episodes were reduced by **65%**, from an average of ***3.49 times*** a day to an average of only ***1.21 times*** a day,
- Urinary urgency episodes decreased by **57%**, from an average of ***3.77 times*** a day to an average of just ***1.61 times*** a day, and
- Nighttime urination episodes were reduced by **43%**, from an average of ***3.76 times*** a night to an average of ***2.15 times*** a night.

Improved Quality of Life

Women taking the plant extract also reported impressive improvements in quality-of-life questionnaires, including a:[3]

- **50% decrease** in overactive bladder,
- **39% decrease** in incontinence, and
- **39% decrease** in urogenital distress.

A remarkable **79%** of women who took the blend reported feeling a ***significant benefit***, compared to **17%** of women in the placebo group.

The extract blend produced these results ***without the side effects*** commonly seen with medications.[3]

Help For Women's Bladder Problems

- **Urinary symptoms** are common in women, especially after age 40. These include frequent urination, urinary incontinence, urinary urgency, and nighttime urination.
- A formula has been developed from extracts of **three** plants with a history of traditional use in addressing bladder disorders: **horsetail**, **lindera**, and **three-leaf caper**.
- In an animal model of overactive bladder, the herbal combination treatment reversed the detrimental shifts in bladder function parameters and in the levels of several tested biomarkers in the bladder epithelium and muscle.
- A placebo-controlled **clinical** trial has validated that this three-extract blend significantly improves urinary symptoms in women *without* harsh side effects.
- After eight weeks, this combination reduced daytime urination frequency to the ***normal level*** and incontinence episodes by **65%**. It also significantly reduced urinary urgency and nighttime urination and improved quality of life.

Summary

Urinary problems are common in women as they age and can impact the quality of their life.

In a clinical study, a blend of extracts from the plants **horsetail**, **lindera**, and **three-leaf caper** was shown to *reduce* daytime urinary frequency, urinary incontinence, urinary urgency, and nighttime urination in women.

These benefits translate into improved quality of life, without the adverse side effects of drugs commonly prescribed for these problems. •

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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Lower Urinary Tract Symptoms

- **Lower urinary tract symptoms (LUTS)** are divided into storage and voiding/micturition (urination) phases.
- Storage phase involves **overactive bladder (OAB)** and **stress incontinence (SI)**.
- **Overactive bladder (OAB)** is a group of urinary symptoms, defined as having an urgent need to empty the bladder during the day or night, with or without incontinence.
- Median daytime urinary frequency is **3-4** hours **6-8** times daily.[6]
- Those afflicted with an overactive bladder have to go to the bathroom frequently (**>8** times during the day and **>1** time at night), may leak urine into their clothes, and report feeling depressed, stressed, and sleep deprived.
- This could be due to overactivity of the bladder detrusor (a muscle lining the urinary bladder, that manages storage and voiding of urine).[2]
- **Stress incontinence** is another common bladder problem in which women leak urine while sneezing, laughing, or doing other physical activities.
- Voiding symptoms include hesitancy, straining, terminal dribbling, intermittency, and slow, weak and/or interrupted stream.[2]

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New Study Demonstrates Significant PAIN RELIEF

BY MICHAEL DOWNEY

Some nutrients can reduce existing inflammation, while others may help resolve inflammation.

Winding down the flow of inflammation at its source is vital to maintain healthy, functional tissues.[1]

Compounds that actively promote the resolution of inflammation are known as **specialized pro-resolving mediators** or **SPMs**.[2]

A clinical study published in **2022** demonstrates that taking **SPM precursors** along with bioavailable **curcumin** deliver significant relief of pain and discomfort.[3]

In just 30 days, the combination significantly reduced:

- **Total** pain,
- Pain **intensity**, and
- Pain **severity**.

After 60 days, a remarkable **79%** of participants had an improvement in **total pain**.

New Human Study

Curcumin, a compound found in the **turmeric** plant, is well-established as a particularly powerful **anti-inflammatory** and an important nutrient to reduce inflammation.[4,5]

Specialized pro-resolving mediators (SPMs) are compounds produced in the body that resolve inflammation, helping return inflamed tissues back to their healthy state.[2]

Scientists wondered whether combining **SPM precursors** with **curcumin** might more thoroughly reduce inflammation *and* thus have an impact on **pain**.

A **2022** open-label **clinical** pilot study recruited healthy male and female adults with mild to moderate pain.[3]

Every day for 60 days, 29 participants were asked to take:

- One softgel containing **500 mg** of a marine oil enriched with **three SPM precursors**, and
- One capsule containing **500 mg** of a highly bioavailable (absorbable) **curcumin**.

Participants completed **three** well-known questionnaires used to measure pain, quality of life, and overall health:

- Short-Form McGill Pain Questionnaire (**SF-MPQ**),
- Short-Form 36 Health Survey (**SF-36**), and
- Medical Symptoms Questionnaire (**MSQ**).

Compelling Results

The results of the study were published in *Translational Medicine Communications*, a peer-reviewed medical journal.

The **SF-MPQ** (Short-Form McGill Pain Questionnaire) responses showed significant *improvements* in all aspects of the questionnaire within **30 days**, especially in:[3]

- **Total** pain,
- Pain **intensity**, and
- Pain **severity**.

The **SF-36** (Short-Form 36 Health Survey) questionnaire showed significant *improvements* in:[3]

- **Four** aspects of physical health, especially **pain** and **physical function**, and
- Perceived health change.

The **MSQ** (Medical Symptoms Questionnaire) results showed:[3]

- Significant *reduction* in **joint/muscle pain**.

An impressive **62%** of participants had an improved **total pain** score at **30 days**, and **79%** of participants showed improvement in **total pain** at **60 days**.

No adverse events were reported.[3]

This strongly suggests that taking **SPM precursors** with a bioavailable form of **curcumin** delivers significant relief of **pain** and discomfort associated with inflammation.

Difference Between Anti-Inflammatories and SPMs

Curcumin and **SPM precursors** target inflammation in completely different ways.

Curcumin and other **anti-inflammatories** work to reduce body inflammation levels.

This is helpful but not enough to completely restore health, since inadequate resolution can lead to chronic inflammation, excessive tissue damage, and dysregulation of tissue healing, and may also lead to fibrosis.[6]

Hence, inflammation needs to be resolved, to get tissues back to their healthy, functional state.

Resolution of inflammation is a complex, active process guided by specific signaling compounds produced in the body.[7,8] Among these compounds are **specialized pro-resolving mediators**.

How SPMs Resolve Inflammation

SPM precursors are predominantly derived from **EPA** and **DHA**, the **omega-3** fatty acids found in fish oil.

The **precursors** needed to produce SPMs in the body include:[9]

- **18-HEPE** (18-hydroxyeicosapentaenoic acid),
- **17-HDHA** (17-hydroxydocosahexaenoic acid), and
- **14-HDHA** (14-hydroxydocosahexaenoic acid).

The marine-blend softgels used in the **2022** study provided a total of **300 mcg** of these three SPM precursors.[3]

These precursors are converted in the body into three different types of SPMs: **resolvins**, **protectins**, and **maresins**.[3,10]

These make up the bulk of the SPMs that target **inflammation**. They do so through three mechanisms:[10-12]

- ***Removing*** dead and dying cells, helping to clean up the aftermath of inflammatory cascades,
- ***Restoring*** inflammation balance by decreasing pro-inflammatory mediators and increasing **anti-inflammatory** compounds, and
- ***Renewing*** damaged tissue by promoting cellular **regeneration**.

WHAT YOU NEED TO KNOW

Targeting Inflammation to Stop Pain

- **Inflammation** is a major risk factor for age-related disease and degenerative disorders. It is also a source of pain.
- **Curcumin** is a well-known anti-inflammatory, working to *reduce* inflammation.
- Other compounds called **specialized pro-resolving mediators** (**SPMs**) *resolve* inflammation, shutting off inflammation and returning tissues to a healthy state.
- A new clinical trial shows that combining a highly bioavailable **curcumin** with marine oil enriched with **SPM precursors** significantly reduces subjective levels of **pain** and **discomfort**.

Evidence for Curcumin and SPM Benefits

Before researchers tested the *combined* effects of SPM precursors and curcumin, many studies had shown that each had benefits alone.

SPMS

Animal data showed promising results from the use of **SPMs**, including improvements in obesity-related **osteoarthritis**[13] and in inflammation-induced **neuropathic pain**.[14]

A clinical trial found that oral intake of **omega-3s** *increased* SPM levels in the body by **229%** and significantly lowered levels of the inflammatory marker **C-reactive protein**.[15]

Another clinical study showed that taking marine oil enriched with a combination of **SPM precursors** (including **18-HEPE**, **17-HDHA**, and **14-HDHA**) increased SPM levels and helped **resolve** inflammation.[16]

CURCUMIN

Curcumin is known for the **curcuminoids** and polyphenols found in the **turmeric** plant.[17]

A meta-analysis of eight human trials involving 606 patients found that curcuminoids significantly reduced pain severity from a variety of causes, including arthritis and muscle soreness.[18]

Another review paper concluded that curcumin was safe and has significant **anti-inflammatory** activity.[5]

Combining SPM precursors with a powerful anti-inflammatory like curcumin targets inflammation in multiple ways and results in clear pain reduction.

Summary

Curcumin is a powerful **anti-inflammatory** that reduces existing inflammation.

Specialized pro-resolving mediators (**SPMs**) help *resolve* inflammation, guiding tissues back to their healthy state.

A new **human** study shows that *combining* marine oil enriched with **SPM precursors** with a highly bioavailable **curcumin** improves subjective measures of **pain** and discomfort associated with inflammation. ●

Building a Better Curcumin

Due to poor **bioavailability**, a large portion of curcumin taken orally never gets into the bloodstream or reaches tissues.

In a major advance, scientists combined **curcumin** with a fiber called **galactomannan** that protects curcumin in the gut.

Clinical research demonstrates that taking the curcumin-galactomannan combination results in blood levels of free curcuminoids that are over **45-times greater** than in those who take pure curcumin alone.[19]

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

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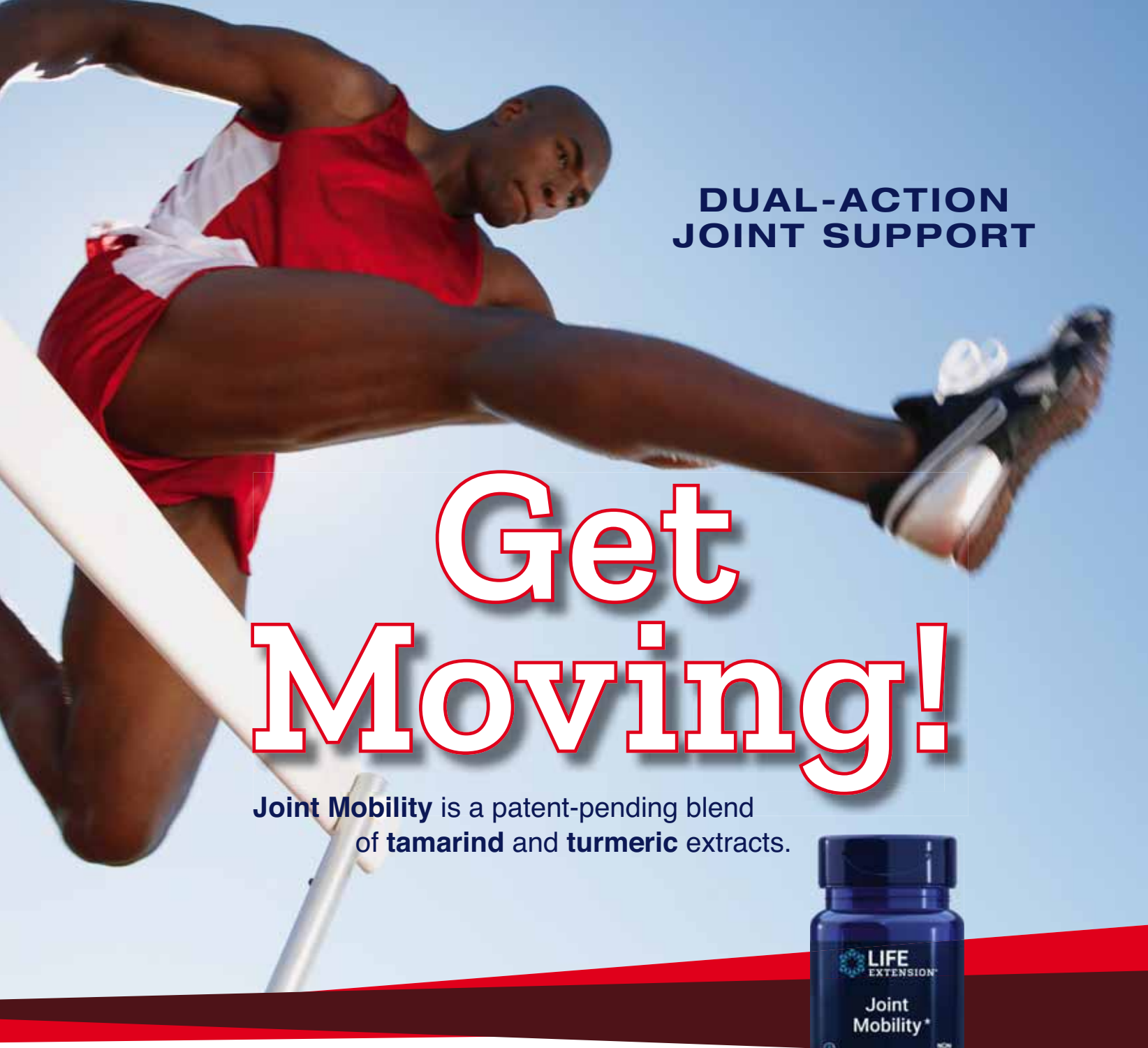

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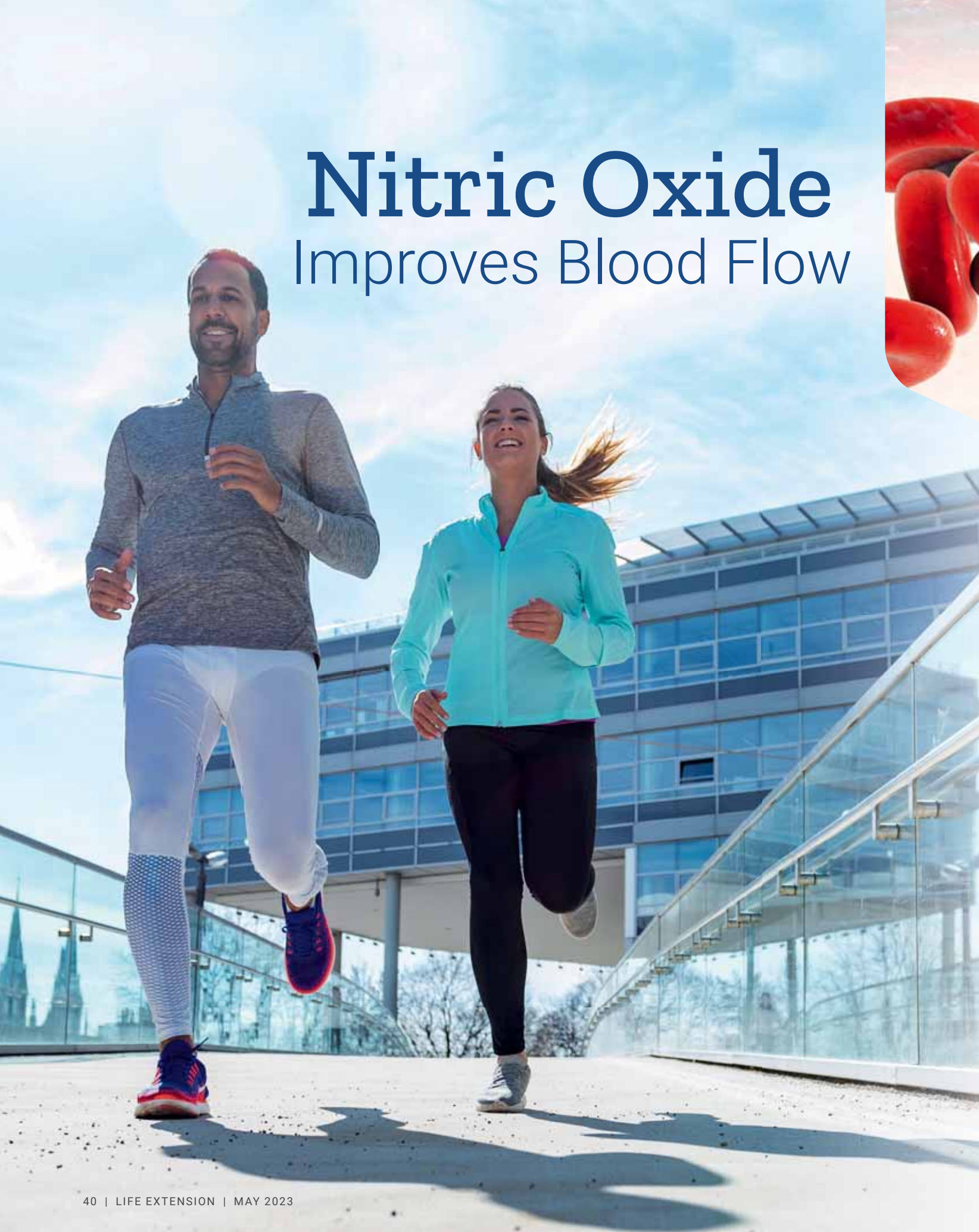


BY CHANCELLOR FALOON

Nitric oxide plays a major role in the *dilation* of blood vessels.

It is vital for maintaining healthy **blood flow**,[1] **blood pressure,**[2] and **platelet function**.[1]

The problem is that internal **nitric oxide** production *decreases* with age.[3,4]

Low nitric oxide is associated with an increased risk of **cardiovascular diseases,**[4] **cognitive decline**, and **dementia**.[4,5]

Nitric oxide has a short half-life. It gets metabolized and quickly eliminated from the bloodstream.[6]

Aronia berry and a long-acting form of **L-arginine** each work to boost and sustain *higher* **nitric oxide** production.

Importance of Nitric Oxide

Nitric oxide is produced by nearly every cell in the body.[7,8] It's needed to dilate **blood vessels**, allowing them to open up to increase blood flow.[9]

When we exercise[9,10] or travel to higher altitudes,[11] our bodies release *more* nitric oxide to relieve blood vessel constriction.[10]

Nitric oxide is also produced in our nasal cavity when we breathe through our nose. This helps to combat **viruses** and **bacteria**.[12,13]

The 1998 **Nobel Prize in Physiology or Medicine** was awarded to scientists who discovered its role in maintaining **cardiovascular health**.[14,15]

With age, nitric oxide levels decline. This can result in **endothelial dysfunction**, when these cells lining the inner walls of arteries don't work properly.[4] Blood vessels can't widen when needed, *reducing* blood flow.

That can lead to high blood pressure, atherosclerosis, abnormal clotting, and increased risk of **heart attacks**, **strokes**, and **sudden cardiac death**.

Endothelial dysfunction also increases the risk of **dementia** and **cognitive dysfunction**.[3,16,17]

Long-Acting Form of L-Arginine

For the body to produce nitric oxide, no compound is more important than the amino acid **L-arginine**. It is the direct **precursor** nutrient that blood vessels use to make **nitric oxide**.

In a clinical trial, patients with high blood pressure were given either a placebo or a single dose of **L-arginine**. Measurements were taken of **flow-mediated dilation**, how much a blood vessel **dilates** (widens) in response to an increase in blood flow.

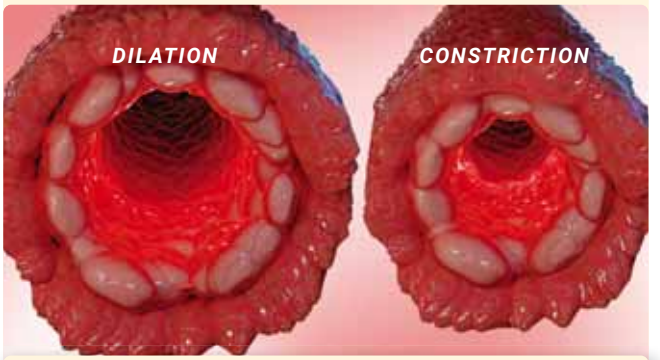
Participants who received the placebo had no change. But those given **L-arginine** had an average improvement in flow-mediated dilation from **1.7%** to **5.9%**.[18]

Considering that each **1%** improvement in flow-mediated dilation correlates with a **12%** lower risk of cardiovascular events, this suggests a potential **50%** reduction in risk for cardiovascular events.[19,20]

A drawback with L-arginine has been that it takes about an hour to take effect and it does not stay in the bloodstream for long.[21]

But scientists have developed a more **bioavailable** (more enters circulation and can have an effect) form of L-arginine called **inositol-stabilized arginine silicate**. It works within just **15 minutes** and sustains L-arginine levels for up to **six hours**.[21,22]

Flow-Mediated Dilation



Flow-mediated dilation is the change in diameter of blood vessels in response to increased blood flow (such as exercise or high blood pressure).

It can assess vascular function and cardiovascular risk in an individual.

Research indicates that for every **1%** increase in brachial artery flow-mediated dilation, the risk of cardiovascular events is reduced by **0.87%.**

Inositol-stabilized arginine silicate appears to keep L-arginine levels *higher* for longer periods because it inhibits the enzyme **arginase**, which breaks down L-arginine.[23]

This stabilized L-arginine form has demonstrated clinical benefits that standard L-arginine hasn't been shown to achieve.

In three recent randomized, controlled trials, **inositol-stabilized arginine silicate** improved working memory, processing speed, concentration, and other measurements of **cognition** in young adults.[24-26]

Effects of Aronia Berry

Aronia berries are native to North America and resemble cranberries. They have been thought of as a superfood due to their high content of vitamin C, **anthocyanins**, and other polyphenols.[27]

Research indicates that low flow-mediated dilation of blood vessels is associated with a high risk of cardiovascular events.[20] Research also suggests that **aronia berries** boost nitric oxide production by increasing the activation of an *enzyme* that converts **L-arginine** into endothelial **nitric oxide**.[28]

In a randomized, controlled trial, a daily intake of **500 mg** of aronia whole fruit berry and extract powder for 12 weeks resulted in a **1.2%** improvement in **flow-mediated dilation** compared to placebo.[29] This corresponds to a nearly **11% reduction** in the risk for cardiovascular events.[19]

In another clinical trial, 101 adults aged 40-60 years old were randomized to receive aronia berry extract or a placebo for **24 weeks**.

Cognitive function was assessed using tests including the **grooved pegboard test**, in which pegs must be precisely rotated to match a slot before they can be inserted.[30] This measures **psychomotor speed**, the ability to quickly think and then perform a motor action.

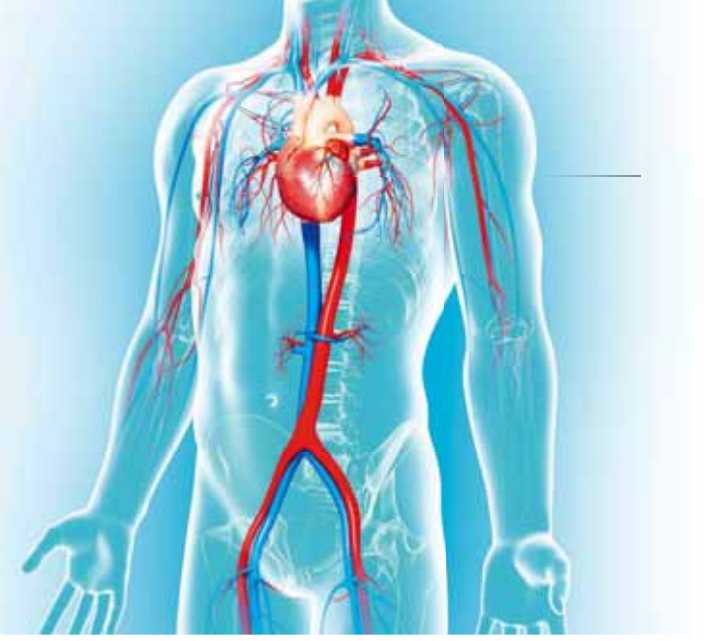
The results showed that those who received **aronia berry extract** daily had significantly *higher* scores on the test after just **six weeks** than those taking a placebo.

Taking **aronia** extract along with the new form of **L-arginine** may lead to even greater levels of nitric oxide production, maximizing the cardiovascular and cognitive benefits.

WHAT YOU NEED TO KNOW

Keeping Blood Vessels Healthy

- The endothelium is a layer of cells lining the inside of blood vessels. It produces **nitric oxide**, a molecule that signals the vessel to dilate, allowing blood to flow through.
- With age, nitric oxide production tends to decline, contributing to **endothelial dysfunction**. This can increase the risk of heart attacks, strokes, cognitive decline, and dementia.
- **L-arginine** is a precursor the body needs to make nitric oxide. A new form, **inositol-stabilized arginine silicate**, improves its bioavailability and supports higher levels in the bloodstream for a longer time.
- **Aronia berries** help activate the enzyme that converts L-arginine into nitric oxide.
- Taking oral L-arginine improves blood vessel dilation enough to correlate with a **50%** reduction in risk for **cardiovascular events**. It also improves several measures of cognition.
- In a clinical study, **aronia berry extract** also improved blood vessel dilation and significantly boosted scores on a test of cognitive function.
- Taking these two ingredients **together** may significantly boost nitric oxide production, reducing the risk for cardiovascular events and enhancing cognitive function.



Summary

Nitric oxide is needed to maintain the health of blood vessels. As production in the body decreases with age, the risk of **cardiovascular diseases** and **cognitive deficits** rises.

L-arginine and **aronia berry extract** have each been shown to *increase* nitric oxide production.

Research suggests that aronia berry increases the activation of an *enzyme* that converts the amino acid L-arginine into nitric oxide.

Clinical trials have shown that taking each has benefits for both **cardiovascular** and **cognitive** health.

Taking both together may result in ideal levels of nitric oxide production in the body for aging individuals. •

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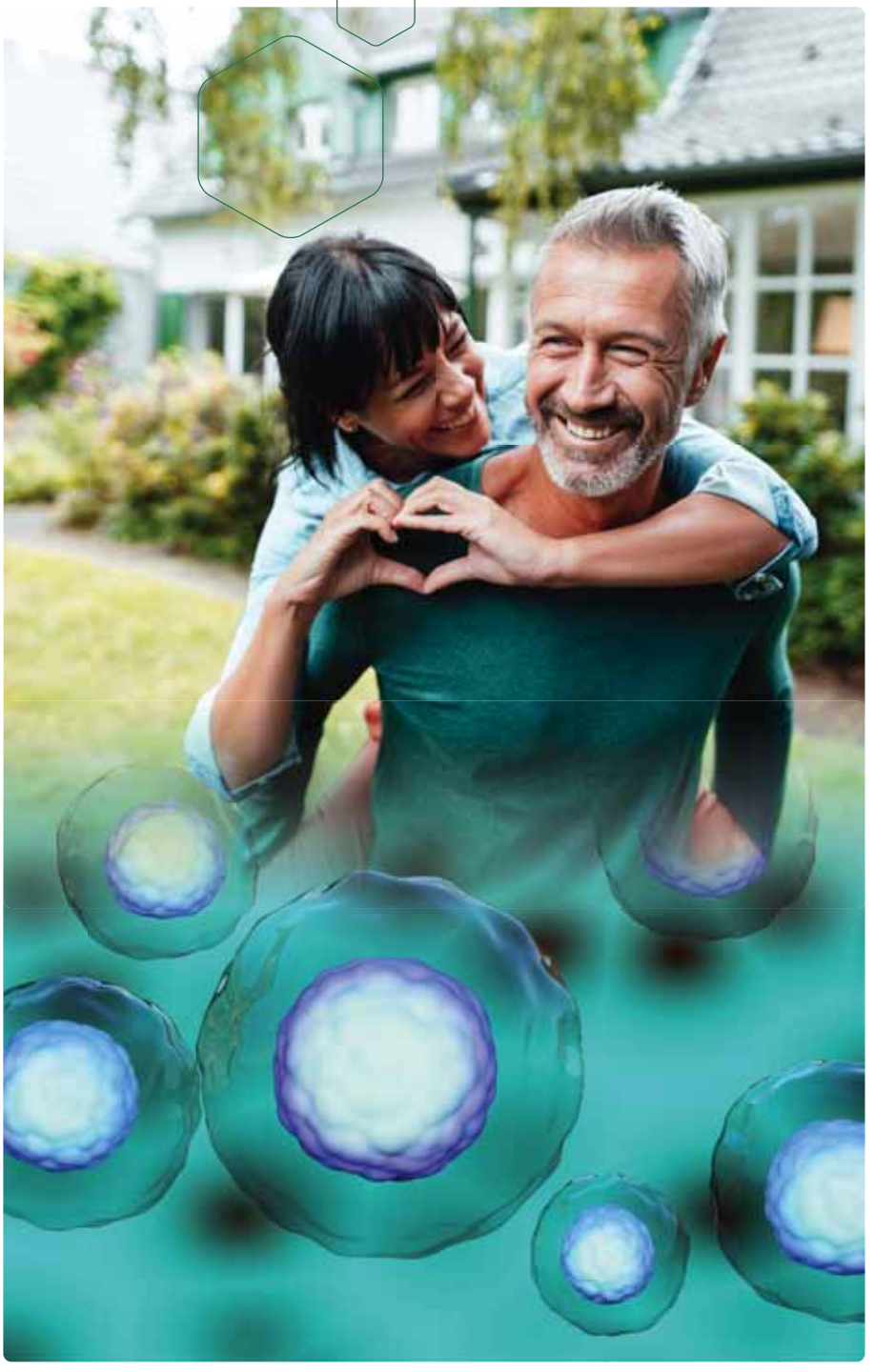
CAUTION: If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product.

What is D-Ribose?

BY LAURIE MATHENA



Normal aging results in a decline in muscle mass and energy production.[1,2]

This energy *deficit* has an impact on heart health, cognitive function, and lifespan.[2]

D-ribose helps restore **energy** production in the body.[3]

It is a building block of adenosine triphosphate (ATP), the energy source for every cell.[4]

By supporting the production of ATP, **D-ribose** can help replenish the metabolic energy needed by all cells, including those in major organs such as the **heart** and **brain**.[3]

ATP, Energy, and D-Ribose

Energy in the body is produced in the form of adenosine triphosphate, ATP.

This takes place in mitochondria (powerhouse in each cell). ATP is the primary energy source for most biochemical and physiological processes, such as growth, movement and homeostasis.[5]

Mitochondrial function declines with age[5,6] and other health conditions, such as heart failure, among others.[3] This results in loss of ATP production and decreased energy levels.[3]

Hope for Heart Failure

Heart failure means the heart muscle is failing to pump enough blood to meet the body's metabolic requirements.

In heart failure, D-ribose production falls in heart muscle cells.[3,7]

This leads to a *decrease* in **ATP** production, resulting in cellular energy deficiency in the muscle cells of the organs that need energy the most.[7]

Taking **oral D-ribose** can help create new ATP molecules and *restore* cardiac energy levels.[7,8]

Clinical trials have shown that D-ribose taken orally can ***improve*** **heart function** in heart failure patients.[9-11]

Lifestyle Modifications to Fight Fatigue[18]

A constant feeling of tiredness or weakness is called fatigue. It can affect anyone, and most adults will experience fatigue at some point in their life. Some lifestyle modifications that may help:

- Exercise: even a 15-minute walk can give you an energy boost.
- Lose weight if overweight.
- Get optimal sleep.
- Relieve stress: meditate, work out, do yoga, listen to music, have social support.
- Limit alcohol and caffeine intake.
- Stay hydrated.

People with heart failure taking D-ribose were shown to improve **blood flow** through the heart and body *and* boost the exchange of oxygen and CO2 through the lungs, leading to improvements in breathing parameters.

Another study showed the ability of D-ribose to reduce symptoms and improve quality of life in **heart failure** patients.[10]

In a review of studies in animals and humans, D-ribose has been shown to increase **ATP production** in heart muscle cells and improve cardiac function.

In clinical trials D-ribose enhanced cardiac function and improved quality of life in patients with heart failure.[7]

Fibromyalgia

There is evidence that **defective production of ATP** is the one potential culprit behind **fibromyalgia** (a condition that causes pain throughout the body)[12] and chronic fatigue syndrome.[13,14]

In an open-label, early study, patients with fibromyalgia or chronic fatigue syndrome took **5 grams** of **D-ribose** three times daily until they reached a total of **280 grams**.[14]

The participants reported significant improvement in all five categories on a standard questionnaire: energy, sleep, mental clarity, pain intensity, and well-being.

On average, patients reported a stunning **45%** increase in self-reported energy levels.

Restless Leg Syndrome

Restless leg syndrome is a disorder causing discomfort and pain in the legs. This condition progresses with age and often leads to insomnia. Disordered energy metabolism has been suggested as one possible cause of **restless leg syndrome**.

Based on that observation, researchers gave individuals with restless leg syndrome **5 grams** of **D-ribose**, three times per day. Remarkably, daytime symptoms were **completely eliminated**, and nighttime symptoms were *significantly reduced*.[15]

Exercise Performance

D-ribose is a building block of ***ATP***.[3] It may help speed muscle recovery after high-intensity exercise.

- In a double-blind cross-over study of 26 athletes, subjects were given either a dextrose sugar control or **10 grams** of D-ribose for two days. This was followed by three additional days of supplementation. During these three days, both groups underwent 60 minutes per day of high-intensity exercise. After five days, significant improvement in exercise performance and lower perceived exercise exertion were observed in the D-ribose group, compared to the **placebo** arm of the study.[16]
- In a study of healthy, active individuals, supplying fatigued muscle cells with D-ribose quickly restored **ATP levels** to normal.[17]

Summary

By restoring the body's ability to produce energy, **D-ribose** leads to improved function for organs such as the heart and muscles.

D-ribose intake is especially valuable for **heart failure** patients and has been shown to produce meaningful improvements in cardiovascular function.

Because **high doses** of **D-ribose** are needed, most people find it more efficient to take **5 grams** or more each day in a neutral-tasting **powder** form. •

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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What is ATP (adenosine triphosphate)?[3,4]

- ATP is a molecule carrying energy, found in every cell of the body; it is vital for energy production.
- It has a nitrogenous base (adenine), and a sugar (ribose), attached to three phosphate molecules.
- Cells need energy to perform cellular functions, such as growth, nerve impulse propagation, and muscle cell contraction.
- The energy is stored in phosphate bonds of ATP and is released when these bonds are broken by chemical processes.

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References

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

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How ApoE Testing Helps Gauge Disease Risk

BY RICHARD EDWINS

Many people worry about **Alzheimer's disease**.

Few know there's a simple **genetic test** that can tell you whether you're at increased risk of developing it.

Apolipoprotein E (**ApoE**) is a protein that helps carry cholesterol, fats and fat-soluble vitamins in the blood.[1] One **type** of **ApoE** helps predict one's risk for **Alzheimer's** dementia.

The **gene** that provides the instructions for making ApoE in humans has three different forms.

Studies have shown that *one* specific ApoE form increases risk for **Alzheimer's disease**[1-3] and is also associated with increased risk for **cardiovascular disease**.[1,3-5]

Another form of the gene *reduces* risk for Alzheimer's disease.[1-4,6]

Testing for different ApoE types is a tool that helps assess the risk of developing these conditions.

ApoE Types

The ApoE gene exists in three different forms:[2]

- **ApoE e3** is the most common type. About **60%** of the population has two copies of **ApoE e3**, one from each parent.
- **ApoE e4** is less common, and it is the problematic type. About **20%-30%** of people have one or two copies of this form.
- **ApoE e2** is the least common form. Only about **10%-20%** of people carry at least one copy of this gene.

Who Should Test?

The problematic **ApoE e4** form is present in approximately **25%** of the U.S. population.[9] Genetic testing for ApoE status can be done with a simple cheek swab from home.

ApoE status does not tell you if you will or will not develop Alzheimer's disease or other conditions, only whether you are at **greater risk** of having them.

If you are concerned about your risk of Alzheimer's or cardiovascular disease or have a family history of either, consider testing your ApoE status, the sooner the better, so preventative measures can be taken if ApoE e4 is detected.

Your physician can also discuss how you can use the test results to make lifestyle changes to minimize your overall risk.

ApoE Functions

ApoE is mainly synthesized in the liver, and it helps transport lipids, fat-soluble vitamins, and cholesterol into the lymph system and then into the blood.

In the brain, ApoE is mainly produced by **astrocytes** that help transport essential lipids and maintain healthy neuronal signaling.[7]

The three forms of ApoE have different lipid-binding capacities that involve their abilities to bind or clear **amyloid** beta **plaques** that form around nerve cells.[1,8,9]

ApoE genes function to help control brain inflammation,[7,9] and support removal of degenerated cell membranes and lipids that accumulate with aging.[8]

ApoE binds to LDL receptors in the liver to remove remnant lipoprotein particles (chylomicrons and VLDL) from circulation. Defects in ApoE result in an increase in plasma cholesterol and triglycerides due to impaired clearance of chylomicrons, VLDL and LDL.[10]

One distinct feature of Alzheimer's disease is the build-up of clumps of beta-amyloid in the brain. **ApoE** enhances beta-amyloid break-down, both within and between cells.

Unfortunately, the **ApoE e4** genetic variant is not as effective as the others at breaking down the beta-amyloid clusters, controlling brain inflammation, and protecting brain and nerve cells.[11]

Alzheimer's Risk

In population studies, the **ApoE** genetic type correlates with risk for **Alzheimer's disease** in the following ways:

- **ApoE e4**: The presence of even *one* copy of the **e4** form of the gene increases the risk of developing Alzheimer's disease.[2,3,6] Typical estimates suggest one **e4** gene increases the risk of Alzheimer's disease **two** to **three fold**, whereas having **two** copies (one from each parent) is associated with **8** to **12 fold** greater risk than average.[12]
- **ApoE e3**: This gene form is not considered to have any impact on risk for Alzheimer's disease.
- **ApoE e2**: The rarest form of the gene has been found to be protective, reducing risk of developing Alzheimer's disease.[1-3]

A study published in **2022** found that **ApoE e4** is linked to faulty cholesterol processing in the brain, which leads to defects in the protective coating around nerve fibers. That, in turn, may cause memory problems.[13]

Having the **e4 gene** does not mean someone *will* develop Alzheimer's disease. But it does mean there's an increased risk of developing it. It also means there's a greater risk of developing it at a **younger age**, and of having a **faster decline** in cognitive function as it progresses.[2,6]

A **genetic test** can identify which form of the ApoE gene a person has. Those who discover they're at *higher* risk can make changes to reduce *other* **risk factors** for Alzheimer's disease.[1]

Other Health Outcomes

ApoE status is associated with other health conditions.

Most notably, having the **ApoE e4** gene form is associated with *higher* cholesterol levels and increased risk of cardiovascular diseases.[1,3,5,10] It plays a role in glucose transport, neuronal signaling, and mitochondrial function. Independently, **ApoE e4** may trigger inflammatory response causing neurovascular dysfunction.[7]

Genetic testing can identify those at higher risk for these conditions, allowing them to monitor their health and make changes that could help ward off disease.

WHAT YOU NEED TO KNOW

What ApoE Genetic Testing Can Tell You

- **Apolipoprotein E (ApoE)** is a protein that helps carry lipids, fat soluble vitamins and cholesterol in the blood.
- Three forms of the gene for ApoE exist in humans: e4, e3, and e2.
- The **ApoE e4** form is associated with an *increased* risk of developing **Alzheimer's disease**.
- The rare ApoE **e2** form is associated with a *reduced* Alzheimer's risk.
- The most common form of the gene, ApoE **e3**, does not appear to have an impact on risk.
- The ApoE **e4** form is also associated with increased risk for other conditions, including **cardiovascular disease**.
- **Genetic testing** can identify which form of the ApoE gene people have.
- Those at higher risk for these conditions can consult with a doctor about making lifestyle changes to minimize overall risk.

Summary

Genetic testing to see which form of the **apolipoprotein E (ApoE)** gene you have can help assess your risk for certain chronic diseases, particularly **Alzheimer's disease**.

Having the **ApoE e4** form of the gene is considered a risk factor for Alzheimer's and heart disease. On the other hand, possessing a copy of the **e2** form indicates reduced risk of Alzheimer's disease.

Genetic testing can allow people at greatest risk for developing Alzheimer's and cardiovascular diseases to make healthy lifestyle choices to reduce the dangers. •

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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What Dietary and Lifestyle Changes Can Be Beneficial for Alzheimer's Disease? [14]

- The Mediterranean diet has been linked to a reduced risk of Alzheimer's and other neurodegenerative diseases.[14-16]
- Aggressive dietary interventions demonstrated to be efficacious in reversing early Alzheimer's dementia include eliminating red meat, processed foods, simple sugars and excess carbohydrates while increasing intake of healthy plant foods, fiber, overnight fasting, and exercise.[17,18]
- Low-calorie diets have been linked to a reduced risk of cognitive decline.[15]
- Avoiding smoking and protecting against hypertension, diabetes, dyslipidemia, and obesity, may help in the prevention of dementia.[15]
- Regular exercise may directly benefit brain cells by increasing blood and oxygen flow in the brain.[14]
- Limiting alcohol consumption.[16]
- Engaging in late-life cognitive activities–being intellectually engaged by keeping the mind active–may benefit the brain.[16]
- Supplement the brain with basic cognitive support–nutrients such as omega-3 fatty acids, curcumin, resveratrol, and magnesium.[15]

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KATIE COURIC
A Tireless Advocate for Colon Cancer Awareness

BY LAURIE MATHENA

From 1991-2006, Katie Couric was the face of morning television as the co-host of the *TODAY* show on NBC.

Today, she has become the face of something even more important: **colon cancer awareness**.

In 1998, colon cancer changed Couric's life forever when it claimed the life of her husband, Jay Monahan, at just **42** years old.

He was not diagnosed until it was in the advanced stages, and he died nine short months after.

Couric learned that **routine colon screening** could have saved her husband's life, and for the past 20-plus years, she has devoted her life to spreading awareness, promoting routine screening, and raising money for cancer research.

More recently, due to an alarming increase in colorectal cancer cases in people under 50, the recommendations for routine screening have been lowered from age 50 down to 45.

Now, Couric is stepping out in new ways to promote screening to a younger generation.

Spreading Awareness

In Couric's memoir, *Going There*, she gets deeply personal about the anger, frustration, hurt, and loss she experienced after her husband's diagnosis and untimely death.

She laments the signs she overlooked—the sensitive stomach, the fatigue, the weight loss.

She talks about her search for a cure, her bargains with God, and the regret she had that she and her young daughters (ages five and one at the time of Jay's death) wouldn't have more time with their father.

Ultimately, she determined to honor Jay's memory by becoming an advocate for cancer screening.

In 2000, Couric appeared before the U.S. Senate Select Committee on Aging in an effort to highlight the dangers of colon cancer and the importance of colon cancer screening.

"During this terrible struggle, I got a quick and painful education about this devastating disease. I learned that colon cancer is the second leading [cancer] killer. It kills more people than any other cancer,

with the exception of lung cancer," Couric said in testimony before the Committee. "But I also learned that it has a **90%** or better cure rate if detected early. That means that colon cancer screening is a critical weapon in the fight against a disease no one needs to die from."

That same year, she co-founded the National Colorectal Cancer Research Alliance (NCCRA) with anticancer activist Lilly Tartikoff and the Entertainment Industry Foundation.

The goal of the NCCRA was to fund research to develop better tests, treatments, and ultimately a cure—as well as to promote the life-saving value of screening.

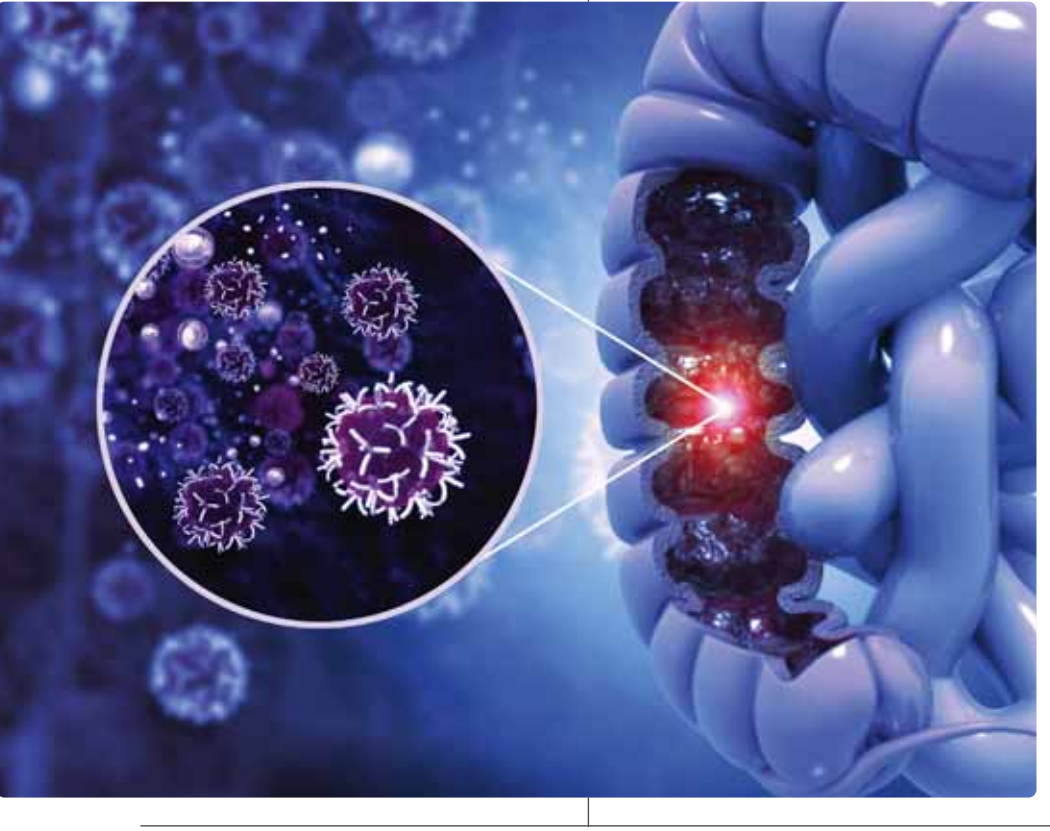
Nothing brought more awareness to the value of screening than when Couric herself underwent a colonoscopy live on the *TODAY* show.

"Of everything I've done in my career, here is the thing of which I'm most proud: Studying the impact a public figure can have on health issues, the University of Michigan reported a **20%** jump in colonoscopy screenings as a result of my airing the procedure. They called it the Couric Effect," she said in *Going There*. "But even more gratifying was unsolicited feedback from [my daughter] Ellie when she was just nine. 'Mom, I'm so proud of the work you're doing with colon cancer.'"

New Risks for a New Generation

Screening is critical because colorectal cancer typically doesn't cause symptoms until it has already grown or spread, according to the American Cancer Society.

By the time symptoms appear—such as a change in bowel habits, blood in the stool, persistent abdominal discomfort, and unexplained weight loss—the cancer is often in advanced stages.



"Jay never really had any symptoms of colon cancer," Couric said, "other than being tired all of the time, which we chalked up to a busy lifestyle, having young children, and his coast-to-coast trips providing legal analysis for NBC."

This is why colon cancer continues to be one of the deadliest cancers—but it is also one of the most treatable when caught early with screening.

Colon cancer rates have been declining *overall* since the 1980s, no doubt due in part to Couric's relentless campaigning for screening.

Unfortunately, during that same time period, there has been an alarming increase in younger adults.

In adults ranging from 20-55 years of age, colon cancer incidence has been increasing by **1%-2%** per year. Rectal cancer rates are rising even faster, at **2%-3%** per year.

According to research conducted by the American Cancer Society, people born after **1990** have **double** the risk of colon cancer and **quadruple** the risk of rectal cancer, compared to those born in 1950.

These increases have led the **U.S. Preventive Services Task Force** to change their screening guidelines from **50 years** old down to **45 years** old.

This change makes **45 million Americans** above the age of **45** eligible for screening.

*(**NOTE: LifeExtension®** has always advocated for **colonoscopy** screening to begin at **age 40**. We did not agree with conventional medicine's guidelines to begin screening at age 50 nor do we concur with **U.S. Preventive Services Health Task Force's** new recommendation to begin screening at age 45 instead of age 50.)*

Colon Cancer Screening at Home

With a new generation facing alarmingly increased rates of colorectal cancer, Couric is on a renewed mission to make the younger generation aware of the importance of early screening.

"Screening wouldn't have crossed our minds for Jay when he was diagnosed at 41," said Couric. "My hope is that we figure out a way to do even broader screening and that we can save even more lives. But until then, people need to pay attention, they need to talk to their doctors… And they need to get screened."

Couric, along with one of the organizations she co-founded, Stand Up To Cancer, is now promoting the at-home screening test, Cologuard®, in a national TV commercial.

This at-home test detects altered DNA or blood in stools and is **92%** accurate at detecting cancers. However, it only detects about **42%** of precancerous polyps. It also had a 13% false positive rate.

While this could be a stepping-stone for increasing awareness and compliance (due to its less invasive nature), a traditional **colonoscopy** remains the gold standard of testing.

Colonoscopies are more than **90%** effective at identifying colon cancer and the presence of precancerous polyps that can turn into cancers.

One study in the *British Medical Journal* found that getting a colonoscopy was associated with a **67%** reduced risk of dying from colorectal cancer.

In a recent interview with *TODAY*, Couric said, "The bottom line is that [early] screening saves lives. Early detection saves lives."

ALARMING TREND

While colon cancer death rates have fallen in the general population, largely due to better screening, it has risen in younger people.[1]

According to the American Cancer Society, **20%** of new colon cancer diagnoses are people under 55. In 2023, it is estimated that there will be **19,500** new cases in people under 50. To make matters worse, these cases in younger people are being diagnosed at a more advanced stage of the disease.[2] Doctors are perplexed by this alarming trend.

One answer is obesity and high body mass index. A recent meta-analysis found **30%** increased risk of colon cancer in males and **12%** in females with each 5-unit increase in body mass index.[3,4]

And obesity is increasingly prevalent in the young.[5]

More screening is needed at a younger age along with diet and lifestyle modifications. Screening recommendations by the American Cancer Society includes annual stool tests followed by a colonoscopy every five years.[2]

A Legacy to Be Proud Of

Beyond promoting early detection through screening, Couric has poured her efforts into finding a cure.

In 2008, she cofounded Stand Up To Cancer, a program whose mission is to raise funds to accelerate the pace of groundbreaking translational research that can get new therapies to patients quickly and save lives *now*.

Couric says that, to date, they've raised over **$600 million**, and have helped gain FDA approval for nine new cancer drugs.

"I don't like to think about my obituary too often," said Couric. "But when I do, I hope the first line will be 'Katie Couric was a tireless advocate for cancer awareness and research.'" •

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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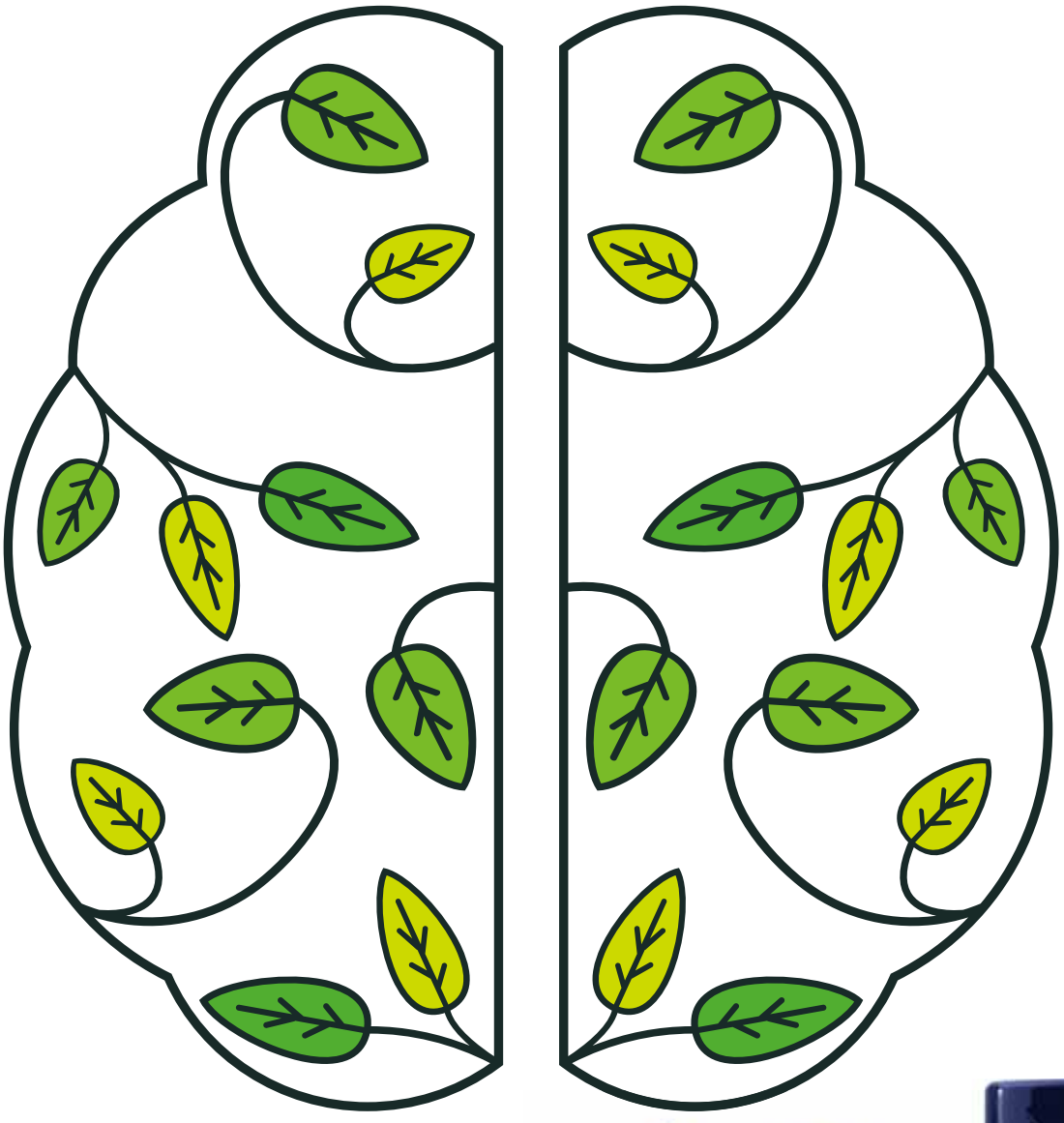

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Astaxanthin and the Liver

BY LISA STUART

Chronic liver disease is reported as one of the **15** leading causes of death in the U.S.

In the year **2020** it contributed to over **50,000** fatalities.[1]

These liver diseases include **nonalcoholic fatty liver disease**, alcoholic liver disease, viral hepatitis, and other toxic conditions.

A large proportion of the population is at risk of long-term liver damage.

Researchers are intrigued by animal, preclinical and human data about the carotenoid **astaxanthin** and its potential ability to protect the liver in multiple ways.[2-5]

Studies show that this plant carotenoid can help defend the liver against injury and may help ***reverse damage*** that has already been done.[2,3]

Astaxanthin has been studied for potential clinical benefits, including for eye,[6-8] heart,[8-10] and brain health.[8,11]

Protecting the liver is one more area where astaxanthin may prove valuable.[2]

Astaxanthin

Astaxanthin is a red carotenoid produced by marine microorganisms such as microalgae and phytoplankton. It is responsible for the pinkish color of shrimp, salmon, and flamingos, as a result of how much astaxanthin they consume.[10]

Astaxanthin is an anti-**inflammatory** and **antioxidant**.[10]

More recent research has found that astaxanthin protects against various forms of injury that can cause **chronic liver disease**.[2,3]

Role in Liver Fibrosis

Several factors can cause **liver damage**, including poor diet, metabolic disease, alcohol consumption, hepatitis viruses, and others. These lead to a cycle of chronic inflammation, and tissue destruction that over time can cause **liver fibrosis** (scarring).[12]

In the late stages of liver disease, this scarring becomes permanent. When large sections of the liver are replaced by scar tissue and can no longer function, it is known as cirrhosis. The end-stage result is **liver failure**. At this point, the only effective treatment is a liver transplant.[12]

Several *in vivo* and *in vitro* studies have found that **astaxanthin** is protective against **fibrosis**.[2,3,13,14]

With fibrosis, a certain type of liver cell becomes activated and begins synthesizing fibrous tissue. In animal models and human liver cells, astaxanthin ***prevents and reverses*** this process, blocking the activation of these cells *and* shutting down cells that have already been activated.[15,16]

The chemical carbon tetrachloride is a powerful **liver toxin**. It causes severe liver damage, leading to fibrosis.[17]

In an animal trial, with **liver damage** induced by this liver toxin, rats were given **astaxanthin** at a dose of **10 mg/kg**. After two weeks it was observed that the liver in the treatment group was protected from oxidative damage induced by the toxin, with a significant reduction of inflammation and fibrosis.[17]

Role in Fatty Liver Disease

A condition called **nonalcoholic fatty liver disease** causes the liver to accumulate **fat**, resulting in inflammation and damage that can lead to liver fibrosis and loss of function. More than **20%** of adults in the U.S. and North America may suffer from this condition.[18]

Preclinical studies show that **astaxanthin** may help to prevent or even reverse it.

Several rodent model studies have shown that astaxanthin can ***prevent*** and ***reverse*** the development of fatty liver changes. It also improved markers of metabolism and **insulin sensitivity**.[5,13,14,19-21]

One group of scientists studying different models of **fatty liver disease** in mice found that giving them **astaxanthin**:[5]

- Prevented fatty liver changes,
- Reversed existing changes, decreasing liver fat,
- Reduced inflammation and fibrosis, and
- Improved insulin sensitivity.

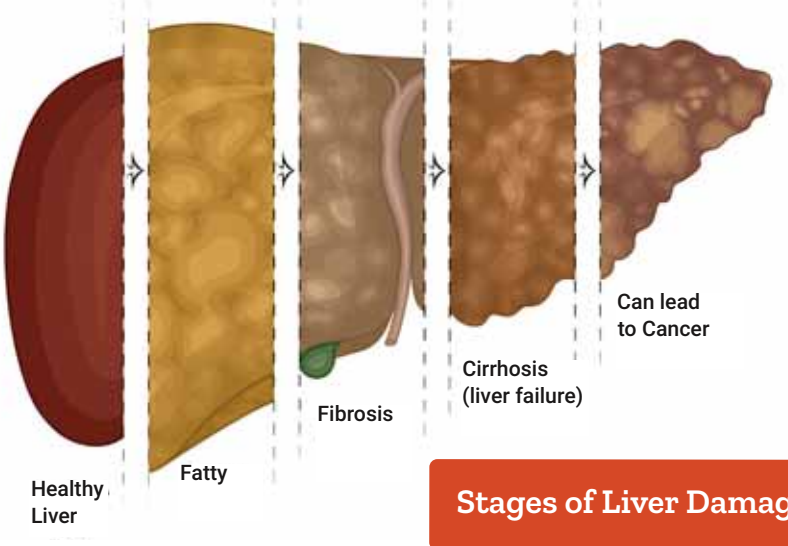
The same research group performed a preliminary study in **humans** with existing **fatty liver**. Subjects were randomized to receive either **12 mg** of **astaxanthin** per day for 24 weeks or a placebo. Compared to the **placebo**, astaxanthin was able to reduce liver fat and ***slow the progression*** of fatty liver.[5]

Several studies have illustrated some ways that astaxanthin can protect the liver.[2] In addition to shielding against oxidative damage and inflammation, it inhibits the signaling proteins **NF-kB** and **PPARs**, which are both drivers of liver inflammation and formation of fatty deposits. These effects can even help decompose existing fat droplets in the liver.[20,21]

Other Liver Benefits

Preclinical studies have found that astaxanthin administration holds promise for a wide range of liver disorders.[2]

- One notable example is **alcoholic liver disease**—multiple changes that are normally seen in the liver with excessive **alcohol** intake—including inflammation, fatty change, fibrosis, and mitochondrial dysfunction.



Stages of Liver Damage

Excessive alcohol intake over time is one of the most common causes of cirrhosis and liver failure. Several animal model studies have shown that **astaxanthin** protects against alcohol-induced liver damage.[22-27] It was shown in a mouse model that by improving gut health and reducing inflammation and oxidative stress caused by alcohol, astaxanthin guarded against liver damage.[26]

- In a study of mice on a high-fat diet, astaxanthin inhibited the increases in body weight, and reduced liver weight, liver triglyceride, plasma triglyceride, and total cholesterol.[28] This suggests astaxanthin might be of value in reducing the likelihood of obesity and metabolic syndrome
- Even in a study of healthy older women, astaxanthin reduced liver enzymes in the blood, which can be markers of **liver damage**.[4] This provides evidence that astaxanthin intake may protect the liver in people *with or without* any obvious signs of liver damage.

Conclusion

The carotenoid **astaxanthin** is a powerful antioxidant as well as an anti-inflammatory.

Preclinical models show that astaxanthin is protective of the **liver**, and some preliminary research in humans is also promising. Astaxanthin may guard against fatty liver changes, damage due to alcohol and other toxins, and liver fibrosis. •

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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Neuro-Mag®
The Smart Magnesium

SUPPORTS IMPROVEMENT IN OVERALL COGNITIVE ABILITY*

With age, **synapses** that connect our brain cells wither.

Formulated by **MIT** scientists, **Neuro-Mag® Magnesium L-Threonate** has been shown to improve **synaptic density** and other structural components of the brain.

Item #01603 • 90 vegetarian capsules
1 bottle **$30.75** • 4 bottles $27.50 each

GLUTEN FREE · NON GMO LE CERTIFIED

Item #02032 • 93.35 grams of powder
1 jar **$30.75** • 4 jars $27.50 each

For full product description and to order **Neuro-Mag® Magnesium L-Threonate** or **Neuro-Mag® Magnesium L-Threonate Powder**, call 1-800-544-4440 or visit www.LifeExtension.com

Reference: * *Gerontology.* 1996;42(3):170-80.

Munch

Crunch Digest Your Lunch

(Or breakfast, or dinner...)

Uncomfortable after eating?

Digestive enzymes are specialized proteins that help you break down the foods you eat.

Enhanced Super Digestive Enzymes combines 10 vegetarian-friendly enzymes to help you break down hard-to-digest foods and encourage a healthy gastrointestinal balance...so you can feel good after you eat!

Item #02021 • 60 vegetarian capsules

1 bottle **$16.50** • 2 bottles $15.75 each

NON GMO LE CERTIFIED

For full product description and to order **Ehanced Super Digestive Enzymes**, call **1-800-544-4440** or visit **www.LifeExtension.com**

"NAC is a powerful tool."

Maury

VERIFIED CUSTOMER REVIEW

TAP THE POWER OF
N-ACETYL-L-CYSTEINE
TO SUPPORT IMMUNE FUNCTION

N-Acetyl-L-Cysteine (NAC) has been shown to support healthy immune response and respiratory function.

NAC supports healthy levels of ***glutathione*** that helps promote a healthy **inflammatory response** and protect cells from **oxidative damage**.

For full product description and to order **N-ACETYL-L-CYSTEINE**, call 1-800-544-4440 or visit www.LifeExtension.com

Item #01534 • 60 capsules
1 bottle **$12**

4 bottles $10.75 each

GLUTEN FREE

NON GMO LE CERTIFIED

HIGHLY ABSORBABLE

ASTAXANTHIN

SUPPORTS
LIVER
HEALTH

ASTAXANTHIN is a carotenoid that benefits the liver, heart, skin, and immune system. Research suggests that astaxanthin can play a role in promoting cardiovascular health.[1]

Found naturally in seafood and algae, as little as **50%** of **astaxanthin** is normally ***absorbed*** in the bloodstream.[2,3]

Life Extension® combines **4 mg** of **astaxanthin** with a blend of four different **phospholipids**, which has been shown to enhance carotenoid ***absorption*** by **several-fold**.[4]

References

1. *Nutrients*. 2020 Jun; 12(6): 1896.
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For full product description and to order **ASTAXANTHIN 4 mg with Phospholipids**, call **1-800-544-4440** or visit **www.LifeExtension.com**

GLUTEN FREE

NON GMO LE CERTIFIED

Item #01923 • 30 softgels

1 bottle **$12**

4 bottles $10.50 each

PRODUCTS

ACTIVE LIFESTYLE & FITNESS

01529 Creatine Capsules
02020 Super Carnosine
02023 Tart Cherry with CherryPURE®
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

AMINO ACIDS

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
01827 Taurine
00133 Taurine Powder

BLOOD PRESSURE & VASCULAR SUPPORT

01824 Advanced Olive Leaf Vascular Support
02004 Arterial Protect
02497 Endothelial Defense™ Pomegranate Plus
56885 Natto Activ Cardiovascular & Respiratory Support
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 Chewable Tablet
02416 Bone Restore Elite with Super Potent K2
01727 Bone Restore with Vitamin K2
01725 Bone Strength Collagen Formula
01963 Calcium Citrate with Vitamin D
01506 Dr. Strum's Intensive Bone Formula
02417 Mega Vitamin K2
01476 Strontium Caps

BRAIN HEALTH

01524 Acetyl-L-Carnitine
01974 Acetyl-L-Carnitine Arginate
02419 B12 Elite
02510 Brain Fog Relief
01659 CDP Choline
02321 Cognitex® Basics
02396 Cognitex® Elite
02397 Cognitex® Elite Pregnenolone
01540 DMAE Bitartrate
02006 Dopa-Mind™
02413 Dopamine Advantage
01658 Ginkgo Biloba Certified Extract™
01527 Huperzine A
00020 Lecithin
02101 Memory Protect
00709 Migra-Eeze™
01603 Neuro-Mag® Magnesium L-Threonate Caps
02032 Neuro-Mag® Magnesium L-Threonate Powder
00888 Optimized Ashwagandha
01676 PS (Phosphatidylserine) Caps
02406 Quick Brain Nootropic
01327 Vinpocetine

CHOLESTEROL MANAGEMENT

01828 Advanced Lipid Control
01910 CHOL-Support™
01304 Theaflavins Standardized Extract
00372 Vitamin B3 Niacin Capsules

DIGESTION SUPPORT

02412 Bloat Relief
01736 Effervescent Vitamin C - Magnesium Crystals
02021 Enhanced Super Digestive Enzymes
02022 Enhanced Super Digestive Enzymes and Probiotics
02033 EsophaCool™
01737 Esophageal Guardian
01706 Extraordinary Enzymes
02100 Gastro-Ease™

ENERGY MANAGEMENT

01628C Adrenal Energy Formula • 60 veg capsules
01630C Adrenal Energy Formula • 120 veg capsules
00972 D-Ribose Powder
01473 D-Ribose Tablets
01900 Energy Renew
01544 Forskolin
01805 Ginseng Energy Boost
01869 Mitochondrial Basics with PQQ
01868 Mitochondrial Energy Optimizer with PQQ
01904 NAD^+ Cell Regenerator™ • 100 mg, 30 veg capsules
02344 NAD^+ Cell Regenerator™ 300 mg, 30 veg capsules
02348 NAD^+ Cell Regenerator™ and Resveratrol Elite™
01500 PQQ Caps • 10 mg, 30 vegetarian capsules
01647 PQQ Caps • 20 mg, 30 vegetarian capsules
00889 Rhodiola 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

01937 Mega EPA/DHA
02218 Mega GLA Sesame Lignans
01983 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 softgels
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

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™
02121 Homocysteine Resist
02508 Omega-3 Fish Oil Gummy Bites
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, 60 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 • 15 mg, 100 capsules
00335 DHEA • 25 mg, 100 capsules
00882 DHEA • 50 mg, 60 capsules
00607 DHEA • 25 mg, 100 vegetarian dissolve in mouth tablets
01689 DHEA • 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 and Resveratrol

IMMUNE SUPPORT

02411 5 Day Elderberry Immune
02302 Bio-Quercetin
02410 Black Elderberry + Vitamin C
02433 Echinacea Elite
01961 Enhanced Zinc Lozenges
01704 Immune Modulator with Tinofend®
02425 Immune Packs with Vitamin C & D, Zinc and Probiotic
02005 Immune Senescence Protection Formula™
01681 Lactoferrin (Apolactoferrin) Caps
02426 Mushroom Immune with Beta Glucans
01903 NK Cell Activator™
01394 Optimized Garlic
01309 Optimized Quercetin
01811 Peony Immune
01708 Reishi Extract Mushroom Complex
01906 Standardized Cistanche
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™
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
56886 Restore Activ Joint Muscle & Tissue
01203 Specially-Coated Bromelain
00407 Super Bio-Curcumin® Turmeric Extract

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
02430 Fast Acting Relief
00522 Glucosamine/Chondroitin Capsules
02420 Glucosamine Sulfate
02424 Joint Mobility
01600 Krill Healthy Joint Formula
00451 MSM (Methylsulfonylmethane)
02231 NT2 Collagen™

KIDNEY & BLADDER SUPPORT

00862 Cran-Max® Cranberry Whole Fruit Concentrate
01921 Uric Acid Control
01209 Water-Soluble Pumpkin Seed Extract

LIVER HEALTH & DETOXIFICATION

01922 Advanced Milk Thistle • 60 softgels
01925 Advanced Milk Thistle • 120 softgels
02240 Anti-Alcohol Complex
01651 Calcium D-Glucarate
01571 Chlorophyllin
02402 FLORASSIST® Liver Restore™
01541 Glutathione, Cysteine & C
01393 HepatoPro
01608 Liver Efficiency Formula
01522 Milk Thistle • 60 veg capsules
01534 N-Acetyl-L-Cysteine
01884 Silymarin
02361 SOD Booster

LONGEVITY & WELLNESS

00457 Alpha-Lipoic Acid
01625 AppleWise
02414 Bio-Fisetin
01214 Blueberry Extract
01438 Blueberry Extract and Pomegranate

02270 DNA Protection Formula
02431 Essential Youth - L-Ergothioneine
02119 GEROPROTECT® Ageless Cell™
02415 GEROPROTECT® Autophagy Renew
02401 GEROPROTECT® Stem Cell
02211 Grapeseed Extract
00954 Mega Green Tea Extract (decaffeinated)
00953 Mega Green Tea Extract (lightly caffeinated)
01513 Optimized Fucoidan with Maritech® 926
02230 Optimized Resveratrol Elite™
01637 Pycnogenol® French Maritime Pine Bark Extract
02210 Resveratrol Elite™
02301 Senolytic Activator®
01208 Super R-Lipoic Acid
01919 X-R Shield

LUNG HEALTH

02512 Healthy Lungs

MEN'S HEALTH

02209 Male Vascular Sexual Support
00455 Mega Lycopene Extract
02306 Men's Bladder Control
01789 PalmettoGuard® Saw Palmetto and Beta-Sitosterol
01790 PalmettoGuard® Saw Palmetto/Nettle Root Formula and Beta-Sitosterol
01837 Pomi-T®
01373 Prelox® Enhanced Sex for Men
01940 Super MiraForte with Standardized Lignans
02500 Testosterone Elite
01909 Triple Strength ProstaPollen™
02029 Ultra Prostate Formula

MINERALS

01661 Boron
02107 Extend-Release Magnesium
01677 Iron Protein Plus
02403 Lithium
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

02434 Calm-Mag
02312 Cortisol-Stress Balance
00987 Enhanced Stress Relief
01683 L-Theanine
02175 SAMe (S-Adenosyl-Methionine) 200 mg, 30 enteric coated vegetarian tablets
02176 SAMe (S-Adenosyl-Methionine) 400 mg, 30 enteric coated vegetarian tablets
02174 SAMe (S-Adenosyl-Methionine) 400 mg, 60 enteric coated vegetarian tablets
02429 Theanine XR™ Stress Relief

MULTIVITAMINS

02199 Children's Formula Life Extension Mix™
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
02428 Plant-Based Multivitamin
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 Discomfort Relief

PERSONAL CARE

02322 Hair, Skin & Nails Collagen Plus Formula
01278 Life Extension Toothpaste
00408 Venotone
02304C Youthful Collagen
02252 Youthful Legs

PET CARE

01932 Cat Mix
01931 Dog Mix

PROBIOTICS

01622 Bifido GI Balance
01825 FLORASSIST® Balance
02421 FLORASSIST® Daily Bowel Regularity
02125 FLORASSIST® GI with Phage Technology
01821 FLORASSIST® Heart Health
02250 FLORASSIST® Mood Improve
02208 FLORASSIST® Immune & Nasal Defense
02120 FLORASSIST® Oral Hygiene
02203 FLORASSIST® Prebiotic
02505 FLORASSIST® Probiotic Women's Health

SKIN CARE

80157 Advanced Anti-Glycation Peptide Serum
80165 Advanced Growth Factor Serum
80170 Advanced Hyaluronic Acid Serum
80154 Advanced Lightening Cream
80175 Advanced Probiotic-Fermented Eye Serum
80177 Advanced Retinol Serum
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
80179 Brightening Peptide Serum
80176 Collagen Boosting Peptide Cream
80156 Collagen Boosting Peptide Serum
02408 Collagen Peptides for Skin & Joints
80180 CoQ10 and Stem Cell Rejuvenation Cream
80169 Cucumber Hydra Peptide Eye Cream
02423 Daily Skin Defense
80163 Eye Lift Cream

80123 Face Rejuvenating Anti-Oxidant Cream
80109 Hyaluronic Facial Moisturizer
80138 Hydrating Anti-Oxidant Facial Mist
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
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
80162 Ultimate MicroDermabrasion
80173 Ultimate Peptide Serum
80178 Ultimate Telomere Cream
80160 Ultra Eyelash Booster
80113 Under Eye Refining Serum
80104 Under Eye Rescue Cream
80171 Vitamin C Lip Rejuvenator
80129 Vitamin C Serum
80136 Vitamin D Lotion

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
02503 Melatonin • 3 mg, 60 gummies
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
01721 Optimized Tryptophan Plus
01444 Quiet Sleep Melatonin • 3 mg, 60 veg capsules
01445 Quiet Sleep Melatonin • 5 mg, 60 veg capsules
02502 Rest & Renew

VITAMINS

01533 Ascorbyl Palmitate
00920 Benfotiamine with Thiamine
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
02244 Liquid Vitamin D3 • 50 mcg (2000 IU)
02232 Liquid Vitamin D3 (Mint) • 50 mcg (2000 IU)
01936 Low-Dose Vitamin K2
00373 No Flush Niacin
01939 Optimized Folate (L-Methylfolate)
01217 Pyridoxal 5'-Phosphate Caps
01400 Super Absorbable Tocotrienols
02334 Super K
01863 Super Vitamin E
02422 Vegan Vitamin D3
02028 Vitamin B5 (Pantothenic Acid)
01535 Vitamin B6
00361 Vitamin B12 Methylcobalamin
01536 Vitamin B12 Methylcobalamin • 1 mg, 60 veg lozenges
01537 Vitamin B12 Methylcobalamin • 5 mg, 60 veg lozenges
02228 Vitamin C and Bio-Quercetin Phytosome • 60 veg tablets
02227 Vitamin C and Bio-Quercetin Phytosome • 250 veg tablets
01753 Vitamin D3 • 25 mcg (1000 IU), 90 softgels
01751 Vitamin D3 • 25 mcg (1000 IU), 250 softgels
01713 Vitamin D3 • 125 mcg (5000 IU), 60 softgels
01718 Vitamin D3 • 175 mcg (7000 IU), 60 softgels
01758 Vitamin D3 with Sea-Iodine™
02040 Vitamins D and K with Sea-Iodine™

WEIGHT MANAGEMENT & BODY COMPOSITION

02479 7-Keto® DHEA Metabolite • 100 mg, 60 veg capsules
02207 AMPK Metabolic Activator
02504 Body Trim and Appetite Control
02478 DHEA Complete
01738 Garcinia HCA
02506 Mediterranean Weight Management
01432 Optimized Saffron
00818 Super CLA Blend with Sesame Lignans
02511 Thermo Weight Control
02509 Waistline Control™

WOMEN'S HEALTH

01942 Breast Health Formula
01626 Enhanced Sex for Women 50+
01894 Estrogen for Women
02204 Menopause 731™
02319 Prenatal Advantage
01649 Super-Absorbable Soy Isoflavones
02513 Women's Bladder Support
02507 Youthful Woman 40+ with B-Complex

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- 10 times the BIOTIN
- 10 times the SELENIUM
- 8 times the VITAMIN C
- 2.5 times the VITAMIN B3
- 2 times the VITAMIN D
- 3 times the VITAMIN E
- 3 times the VITAMIN B12
- 2 times the ZINC

GLUTEN FREE

NON GMO LE CERTIFIED

Two-Per-Day Multivitamin Tablets

Item **#02315** • 120 tablets (two-month supply)
1 bottle $18.38 • 4 bottles $16.25 each

Two-Per-Day Multivitamin Capsules

Item **#02314** • 120 capsules (two-month supply)
1 bottle $19.13 • 4 bottles $17 each

Each bottle provides a two-month supply.

"Covers all the bases."
Brian
VERIFIED CUSTOMER REVIEW

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

†**2023 Consumer Satisfaction, Rated #1 Catalog/Internet Merchant. Ratings based on results of the 2023 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com/survey.**

* Compared to CENTRUM Silver Adults 50+

CAUTION: Individuals consuming more than 50 mcg (2000 IU)/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

LIFE EXTENSION®

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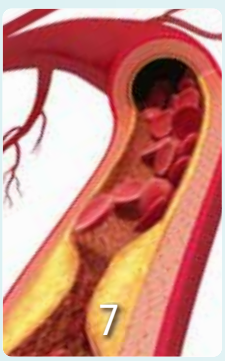

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