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October 2020

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A close-up photograph of a person's hands holding a bright red, glossy heart-shaped object. The background is a soft-focus blue grid pattern. A white ECG line is visible at the bottom of the frame, passing behind the heart.

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REVERSAL OF CALCIFICATION AND ATHEROSCLEROSIS

In addition to new published studies, a cardiologist observes reduced **arterial plaque** in patients taking two **plant extracts**.



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New human trials show *long-term* reductions in cardiovascular and all-cause mortality when elevated LDL cholesterol is reduced. On the flip side are data suggesting that statin drugs can be risky for heart failure patients. Learn safer ways to lower blood lipids.

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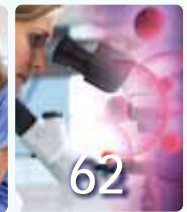
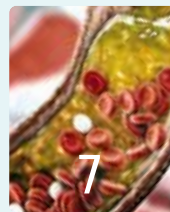
A **senolytic** cocktail eliminated harmful **senescent cells**, promoting cardiac **progenitor** cells that may help the heart heal itself.

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When Does Cholesterol Cause Heart Disease?

A genetic defect causes some Americans to have very high cholesterol levels.¹



WILLIAM FALOON

If these **high cholesterol** levels are not reduced, some victims require coronary artery **stents** or **bypass surgery** before age 50.¹

We present these data because there has been a debate about the **artery-clogging** risks posed by **LDL cholesterol** and its related sub-factors.

The public gets confused when they hear claims that **cholesterol** plays no role in coronary or cerebral **atherosclerosis**.

New studies show reductions in **cardiovascular deaths** and **all-cause mortality** over the **long term** when elevated **LDL** blood levels are reduced.^{2,3}

These recent findings validate the desirability of keeping **cholesterol-related** blood markers in **optimal** ranges.

Since the late 1960s people have become more heart-health conscious. This contributed to sharp declines in **midlife** heart attack and ischemic stroke prevalence.⁴

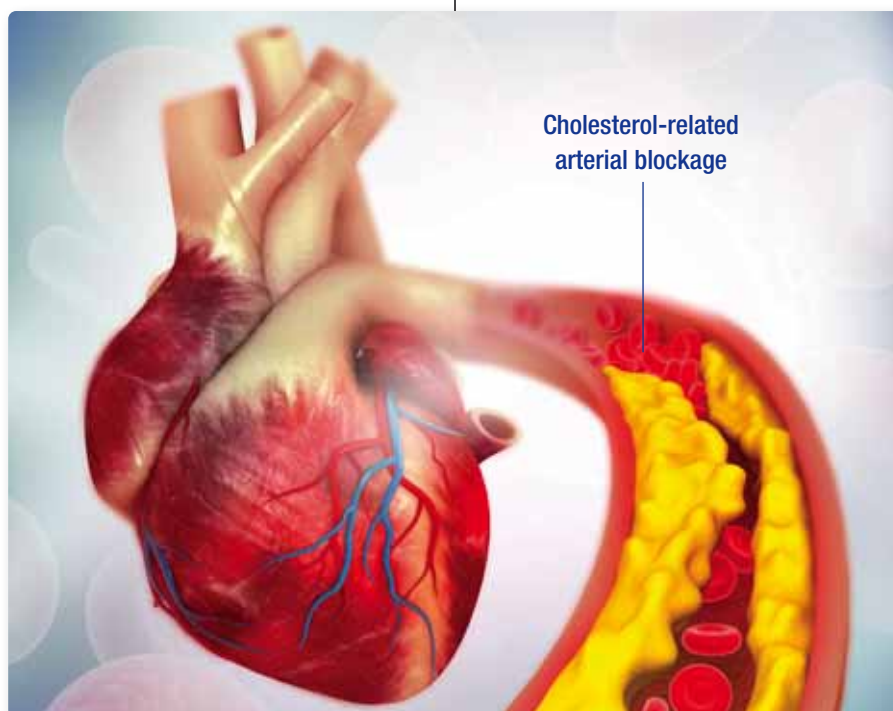
Today's dilemma is that those who escaped **arterial blockages** in

midlife are encountering these issues as they age past **70 years**.

We are seeing this in maturing people who have otherwise followed a heart-healthy lifestyle. They sometimes fall victim to occlusive vascular disorders later in life.

One culprit is elevated levels of small dense **LDL particles** and related blood **lipid** factors.^{5,6}

This editorial describes safer ways to bring dangerous lipids under control and new data about the risk **statin drugs** may pose to **heart failure** patients.



Back in the **1980s**, conventional cardiology did not consider **LDL cholesterol** (LDL) to be a risk factor until blood levels exceeded **159 mg/dL**.⁷

We at **Life Extension®** argued back then that the **optimal** LDL level was under 100 mg/dL.

We were challenged by both sides.

Many alternative practitioners did not believe **cholesterol** was related to **occlusive arterial disease**, while the conventional crowd stuck to the argument that only people with LDL levels above **159 mg/dL** were at highest risk.

The consensus today in most of the conventional world is that **LDL** blood levels should be below 100 mg/dL in normal aging people and below 70 mg/dL for individuals with higher atherosclerotic cardiovascular disease risk.

Some proactive cardiologists strive to use diet and medication to lower LDL to as little as **30 mg/dL** in an attempt to control risk and possibly reverse atherosclerotic disease.

Why the Debate?

It is true, as many have argued, that many heart attacks occur in people with normal cholesterol or LDL cholesterol levels.

This is because **cholesterol-related** atherogenic risk factors are not the *only* ones. Multiple other abnormalities increase the risk of atherosclerosis that can lead to a **heart attack** or **stroke**.

In other words, **arterial blockages** can be initiated and promoted by factors other than excess **LDL** and various related lipid imbalances.

While elevated **LDL** does not explain all heart attacks and strokes, the role of **blood lipids** cannot be overlooked.

Low HDL (protective form of cholesterol) combined with elevated LDL, small dense **LDL particles**, and **oxidized LDL** all contribute to arterial blockages.

The Statin Drug Dilemma

Statin drugs robustly lower **total cholesterol**, **LDL**, and in some trials **C-reactive protein**. Statins have demonstrated cardiovascular risk-reducing effects in certain specific but large populations.⁸⁻¹⁰

Statins can cause some people to suffer muscle pain (myalgia) and other **side effects** when used at the **higher** doses commonly prescribed.

One of the world's leading experts on **heart failure** and **CoQ10** has published data on the dangers that statin drugs may present for **heart failure** patients.

We present info in this month's issue of **Life Extension®** suggesting safer ways of lowering excess LDL without inflicting heart damage.

Practical Solutions

Other than in those with a **genetic** predisposition for very high cholesterol, artery-clogging **lipids** can be reduced by adhering to strict **dietary** patterns.

The problem is that few are willing to give up atherogenic **foods** that include saturated fats (and certain other fats like *trans-fat*) and high-glycemic starches/sugars.

A practical solution long advocated in this publication, and now supported by a recent clinical trial, indicates that one can achieve desired **LDL blood levels** by taking a modest statin dose and supplementing with **coenzyme Q10**.

Lower Dose Statin + CoQ10

A study published in **2019** evaluated participants who suffered from **statin-induced** muscle pain but needed a **statin drug** to control **LDL cholesterol**.

When the statin drug dose was reduced by **50%** and **CoQ10** supplementation initiated, patients experienced a **29% reduction** in





pain scores compared to baseline. They also achieved better **cholesterol** and **LDL** levels.¹¹

In this study, about **47%** of the statin drug users in the **CoQ10** group reported a reduction in muscle pain after three months, while only about **7%** of statin drug subjects taking **placebo** (no CoQ10) experienced pain relief.

This study used a less effective form of CoQ10 (ubiquinone) that does not boost CoQ10 **blood levels** as much as the **ubiquinol** form of CoQ10, but nonetheless demonstrated remarkable benefits.

CoQ10 Blood Levels

The average baseline CoQ10 **blood level** in this study (showing reduced statin side effects) was a low **0.759 ug/mL**. It increased to **0.875 ug/mL** in those supplemented with **100 mg** a day of **ubiquinone**.

Despite the modest **15%** boost in CoQ10 blood levels, reductions in statin-induced side effects occurred, along with reduced **total cholesterol** and **LDL** in **CoQ10**-supplemented patients who cut their **statin** dose in half.

This study shows that reductions in statin drug dose along with CoQ10 therapy can yield similar LDL-lowering benefits and mitigate statin-induced myalgia.¹¹

Not all data indicate that statin drug doses can be cut in half, which is why low-cost **blood tests** should be utilized to individually manage blood **lipid** levels.

Studies reported on decades ago in **Life Extension**® magazine indicate that people should strive for CoQ10 **blood levels** of around **3.0 ug/mL**.¹²

Those with heart failure should aim to achieve a CoQ10 **blood levels** of **4.0 ug/mL** and higher.¹³

Statin-Induced Cardiac Toxicity

One innovative cardiologist recently presented data on the impairment of heart muscle function due to **statins**.¹⁴

His hypothesis is based on the depletion of CoQ10 that happens in those taking a statin.

The heart muscle is dependent on CoQ10 to help produce energy, in the form of ATP, to function properly.

Any reduction in energy production can cause cardiac dysfunction.

The authors suggest the existence of a clinical entity designated **statin-associated cardiomyopathy** and define it as:

***“an impairment in heart muscle function secondary to statin drug therapy of a severity sufficient to cause HF [heart failure].”**¹⁴*

Heart failure patients should ask their cardiologists about reducing (or eliminating) **statin drug** use and increasing their intake of a highly **absorbable** form of **CoQ10** such as **ubiquinol**.

Landmark Findings on Heart Failure Patients

Peter Langsjoen, MD, is a practicing cardiologist based in Tyler, Texas. He has successfully used **high-dose** CoQ10 supplements to improve severe **heart failure** in his patients for decades.¹⁴⁻¹⁸

Dr. Langsjoen is a vocal critic of doctors who continue to prescribe **statin drugs** to **heart failure** patients without CoQ10 supplementation.

Statin drugs deplete the body's natural production of **coenzyme Q10**. This fact is universally accepted.

CoQ10 deficit inflicts horrific effects in cells throughout the body, particularly in the **heart, brain and kidneys**.^{11,19-23}

With **aging**, CoQ10 levels in the body decline.²⁴

Add the **CoQ10-depleting** impact of **statin drugs**, and the toxic impact of a CoQ10 deficit can become catastrophic.

Aging and Cardiovascular Disease

Elderly persons suffer epidemic **cardiovascular diseases** that include:

- Atrial fibrillation
- Aortic valve stenosis
- Slow or rapid heartbeat (bradycardia or tachycardia)
- Coronary artery and capillary occlusion
- Unstable atherosclerotic plaque
- Cerebral artery and capillary blockages
- Chronic heart failure
- Carotid artery stenosis
- Hypercoagulation
- Hypertension
- Vascular inflammation

Despite the frequency of cardiovascular disorders that occur in older population groups, the risk of **heart attack** and **stroke** in the elderly remains under-appreciated and under-treated.

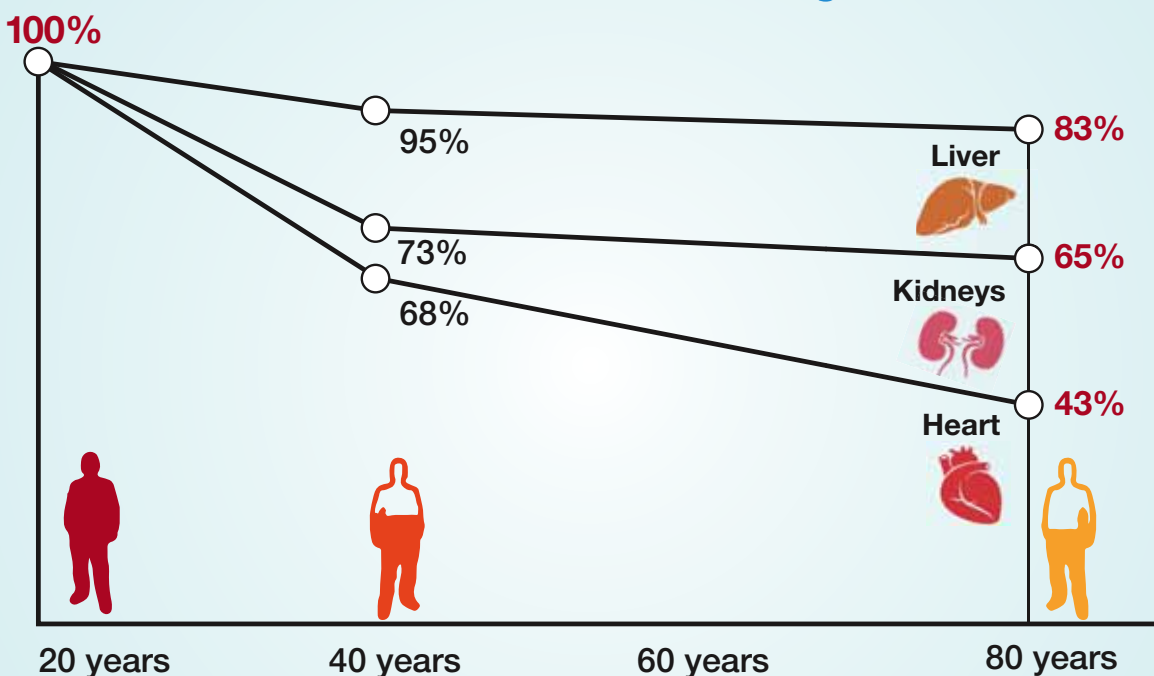
For decades, **Life Extension** has argued that **blood pressure levels** have been allowed to remain too **high** and urged customers to target their blood pressure below **115/75 mmHg**.

We fear the same may be true of **atherogenic** forms of **cholesterol**. Too many people are still neglecting to optimize their blood lipid levels.

Tell Your Doctor You Do Not Accept "Normal Aging"

Atherosclerosis is a pathological manifestation of **aging**.

CoQ10 Decline with Age



Coenzyme Q10 levels decline with aging. For example, the heart of an 80-year-old person may only contain 43% of the CoQ10 it had at age 20.

Source: *Lipids*. 1989 Jul;24(7):579-84.

It's even been observed in ancient mummified bodies. Since people before year **1900** often died under age 50, **heart disease** was not a leading cause of death as it is today (when lifespans often exceed 80 years in health-conscious individuals).

Adequate protection against heart disease requires **blood pressure** control along with optimal levels of artery-damaging blood **markers** such as:

- Homocysteine
- C-reactive protein
- Glucose
- Insulin
- Triglycerides
- Healthy omega ratios
- Cholesterol markers such as: total cholesterol, LDL, small, dense LDL particles, apolipoprotein B, and oxidized LDL.

Most of you make a concerted effort to maintain robust whole-body circulation. This not only reduces mortality risk, but also enhances quality-of-life including healthy **cognition**.

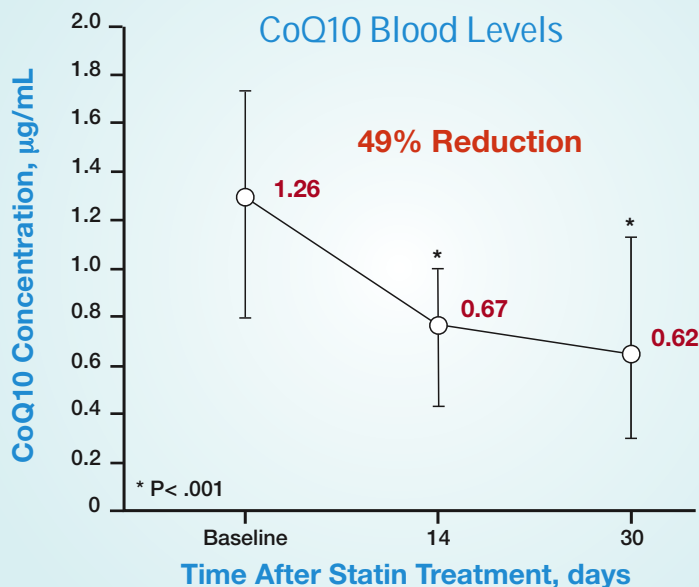
I hope the data presented in this issue of **Life Extension** magazine will motivate more readers to optimize ALL cardiovascular risk factors.

In This Month's Issue...

The article on page 50 describes Dr. Langsjoen's research into the **dangers of statin** drugs in patients with chronic **heart failure** and how **ubiquinol CoQ10** can enable dramatic improvements in these patients.

For those suffering advanced **heart failure**, the article on page 43

Statin Treatment Decreases CoQ10 Blood Levels



Source: Arch Neurol. 2004;61(6):889-892.

This study of people with an average age of 70 shows CoQ10 blood levels at baseline of 1.26 mcg/mL. Optimal levels should be between 2-3 mcg/mL. Statin drug use causes these already low CoQ10 blood levels to drop to 0.62 mcg/mL. According to cardiologist Peter Langsjoen, MD, heart failure patients should strive for CoQ10 blood levels of around 4 mcg/mL and higher.

describes an experimental hypothesis that involves the **removal of senescent cells** in the heart. Published data suggest that **toxic secretions** from senescent cells impede the ability of cardiac **progenitor** cells to regenerate damaged heart muscles.²⁵

If this concept proves effective, it might remove a biological roadblock that currently prevents cardiac function from being fully restored in **heart failure** patients.

According to a 2020 report by the **American Heart Association** **one million** Americans aged 55 and over are diagnosed with **heart failure** each year.²⁶

Much of this is **preventable** in those who maintain healthy coronary artery circulation by keeping vascular risk factors in **optimal** ranges.

As you will read in this month's issue, **statin drugs** are more **toxic** than most people realize, but so are atherogenic **LDL cholesterol** particles.

The encouraging news is that one can strike a **balance** to improve **LDL** status and reduce statin side effects, if a statin is needed.

The **Lab Test Super Sale** has been extended to **October 5, 2020**. To view the many tests included in the **Male** or **Female Panels**, please turn to the next page.

To order blood tests call **1-800-208-3444** (24 hours) or log on to: **LifeExtension.com/blood**

For longer life,

William Faloan, Co-Founder
Life Extension Buyers Club

Common Sense Understanding of the Science

For those who question the atherogenic impact of **cholesterol**, half of men with **familial hypercholesterinemia** who are untreated will have a **heart attack** or suffer **angina** before they turn **age 50**. Some suffer cardiac disease in their **20s**.¹

This genetic disorder (familial hypercholesterinemia) causes **total cholesterol** levels to exceed **300 mg/dL**.

Men with familial hypercholesterinemia get coronary artery disease **20 years earlier**, and women up to **30 years earlier** than normal individuals.¹

When heart attack prevalence peaked around year **1968**, cholesterol levels of around **300 mg/dL** were not uncommon.



Those with modestly elevated atherogenic **cholesterol factors** may prevent their need for coronary artery stents, aortic valve replacement, carotid endarterectomy, bypass surgery, and a host of other hospital treatments.

These conditions will likely develop if preventative steps are not initiated in those with blood lipid imbalances such as low HDL and elevated LDL.

Those seeking healthy longevity, such as readers of **Life Extension®** magazine, should optimize all known risk factors, including elevated LDL and related atherogenic factors such as excess **apolipoprotein B**.

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Commercial labs charge **over \$2,000** for blood tests needed to evaluate vascular, inflammatory, immune, and other degenerative risk factors.

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Homocysteine
C-Reactive Protein (high sensitivity)

LIPID PROFILE

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LDL (low-density lipoprotein)
HDL (high-density lipoprotein)
Triglycerides

METABOLIC PROFILE

Glucose
Insulin
Hemoglobin A1c
NEW Serum Magnesium
Kidney function tests: creatinine, BUN, uric acid, BUN/creatinine ratio
Liver function tests: AST, ALT, LDH, GGT, bilirubin, alkaline phosphatase
Blood minerals: calcium, potassium, phosphorus, sodium, chloride, iron
Blood proteins: albumin, globulin, total protein, albumin/globulin ratio

COMPLETE BLOOD COUNT (CBC)

Red Blood Cell count including: hemoglobin, hematocrit, MCV, MCH, MCHC, RDW
White Blood Cell count including: lymphocytes, monocytes, eosinophils, neutrophils, basophils
Platelet count

CANCER MARKER

PSA (Prostate Specific Antigen)

HORMONES

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DHEA-S
Estradiol (an estrogen)
TSH (thyroid function)
Vitamin D

FEMALE PANEL

CARDIAC MARKERS

Apolipoprotein B (ApoB)
Homocysteine
C-Reactive Protein (high sensitivity)

LIPID PROFILE

Total Cholesterol
LDL (low-density lipoprotein)
HDL (high-density lipoprotein)
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Blood proteins: albumin, globulin, total protein, albumin/globulin ratio

COMPLETE BLOOD COUNT (CBC)

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White Blood Cell count including: lymphocytes, monocytes, eosinophils, neutrophils, basophils
Platelet count

HORMONES

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Estradiol
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Total Testosterone
DHEA-S
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CAUTION: If taken in high doses, magnesium may have a laxative effect. If this occurs, divide dosing, reduce intake, or discontinue product.

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In the News



Sleep is Important for the Immune System

Getting adequate sleep is important for well-being and health in many ways. Recently, a major international, interdisciplinary workshop sponsored by the *National Institutes of Health* highlighted the importance of sleep for regulating the immune system. A summary of the workshop was published in *JCI Insight*.*

Lack of sleep has been associated with an increased vulnerability to infection, reduced antibody titers (a measurement of the level of antibodies in the blood) after vaccination, and reduced lifespan.

Sleep deprivation has been shown to reduce the efficacy of the flu vaccine. And animal studies have demonstrated that sleep is connected to the body's ability to resist infection.

Studies have revealed that sleep deprivation impairs the function of natural killer cells (part of the innate immune system). Lack of sleep also disrupts the circadian rhythm, which encourages inflammation and functional immunocompromise, making organisms more vulnerable to disease.

Editor's Note: The authors concluded that, "While connections to adaptive immunity and neuroinflammatory reflexes represent some highly opportune areas for study in the present, there are many areas of disease physiology for which the insights of circadian and sleep biology have yet to be considered."

* *JCI Insight*. 2020 Jan 16; 5(1): e131487.

Low Vitamin D Linked to Lower-Back Pain in Postmenopausal Women

A retrospective study reported in *Menopause*, the Journal of The North American Menopause Society, uncovered an association between deficient levels of vitamin D and disc degeneration, with resulting lower-back pain, in postmenopausal women.*

Researchers evaluated data concerning lumbar disc degeneration, serum 25-hydroxyvitamin D levels, and markers of bone turnover in 232 postmenopausal women.

Vitamin D levels of more than **30 ng/mL**, categorized as normal, were present in **12.5%** of the subjects, and severely deficient levels of less than **10 ng/mL** were found in **12.9%**.

Women who were severely deficient in vitamin D had higher scores for low-back pain and lower bone-mineral-density scores than the remainder of the participants. Decreased vitamin D levels were associated with increasing severity of disc degeneration.

Editor's Note: "Smoking, severe vitamin D deficiency, lack of vitamin D supplementation, high body-mass index, and osteoporosis are associated with a higher prevalence of moderate to severe pain," the authors concluded.

* *Menopause*. 2020 May;27(5):586-592.





Eating More Olive Oil May Lower Heart Disease Risk

Higher consumption of olive oil is associated with a lower risk of heart disease, according to a study published in the *Journal of the American College of Cardiology*.*

The study included more than 61,000 women from the Nurse's Health Study and over 31,000 men from the Health Professionals Follow-up Study. Both studies lasted 24 years, and people completed food-frequency questionnaires at the beginning of the study, and every four years thereafter.

The results showed that people with a *higher* intake of olive oil had a **14%** lower risk of cardiovascular disease and an **18%** lower risk of coronary heart disease, compared to those who consumed less.

Higher intake was defined as greater than **0.5 tablespoons** (or greater than **7 grams**) per day. In addition, replacing just **5 grams** per day of margarine, butter, mayonnaise, or dairy fat, with an equivalent amount of olive oil, was associated with a **5%** lower risk of cardiovascular disease, and a **7%** lower risk of coronary heart disease.

Editor's Note: Potent antioxidant compounds called polyphenols contribute many of olive oil's beneficial effects.

* *J Am Coll Cardiol.* 2020 Apr 21;75(15):1729-1739.

Adding Spices to Meals May Benefit Health

A recent study published in *The Journal of Nutrition* suggests that people may be able to lower post-meal inflammation by spicing up the food.*

In a crossover study, overweight men with risk factors for cardiovascular disease were provided with a high-fat, high-carbohydrate meal, with or without the addition of **two grams** or **six grams** of a mixture of basil, bay leaf, black pepper, cinnamon, coriander, cumin, ginger, oregano, parsley, red pepper, rosemary, thyme and turmeric. The experiment was repeated on two following days in which the administration of the meal/spice combinations were rotated among the participants to enable each to receive all three combinations during the study.

Blood samples collected prior to and hourly for four hours after the meal were analyzed for factors relating to inflammation. Four hours after consumption, the meal that contained **six grams** of the spices was associated with a reduction in the secretion of a proinflammatory cytokine known as interleukin-1beta.

Editor's Note: Postprandial proinflammatory cytokine secretion, which describes the increase in inflammatory factors that occurs after consuming a high-fat or high-carbohydrate meal, is associated with an elevated risk of cardiovascular disease.

* *J Nutr.* 2020 Jun 1;150(6):1600-9.



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

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2



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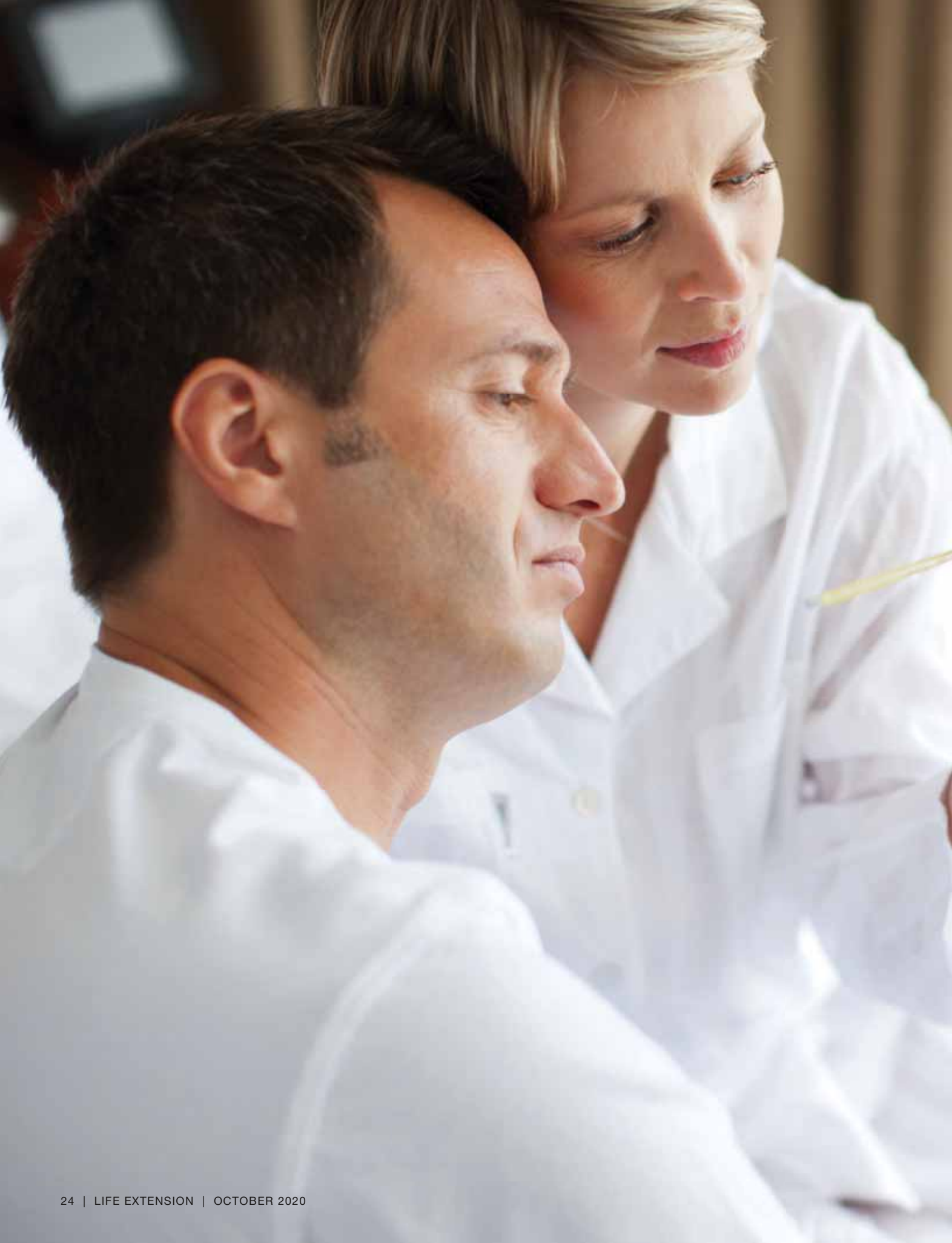
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Enhanced IMMUNITY *Against* ALLERGIES *and* COLDS

BY MICHAEL DOWNEY

Allergies and **colds** affect people of various age groups.

Drugs target symptoms without correcting underlying causes of these miseries.

Scientists have discovered two ingredients that *reduce the severity* of allergy and cold symptoms and help *prevent them* from occurring.

Human studies show that these ingredients lead to:¹⁻³

- **55% decreased** cold and flu occurrence,
- **43% fewer** days with nasal congestion,
- **17% reduced** duration of cold and flu-like symptoms, and
- **47% increased** salivary **immunoglobulin A**, an antibody that provides immune defense against viruses and bacteria.

This article describes how one may reduce frequency and duration of allergy and cold symptoms.



Colds, Allergies, and Other Infections

American adults get an average of **two to three colds** annually,⁴ and as many as **30%** of U.S. adults suffer from **allergies**.⁵

Sometimes it feels like we spend half our lives sneezing, coughing, and blowing our noses. This has a major impact on quality of life, but there's a more serious danger: Allergies have been associated with other conditions, such as asthma, and sinus and ear infections.^{6,7}

Preventing and Reducing Symptoms

Medications provide mild relief of symptoms but do nothing to reduce the number of colds and allergy bouts per year or how long they last.

Side effects from these drugs can include drowsiness, constipation, headaches, rapid heartbeat, and sleep problems.⁸ One class of allergy drugs, **anticholinergics**, has even been linked to an increased risk of Alzheimer's disease.⁹

Scientists have identified two ingredients that help prevent colds, flu, and allergic episodes, and lessen the severity and duration of symptoms when they *do* occur.¹⁻³

The ingredients are:

- A dried **yeast fermentate** and
- A probiotic called ***Lactobacillus rhamnosus* CRL1505**.

Each of these ingredients boosts activity of **immunoglobulin A (IgA)**, an antibody that provides immune defense against viruses and bacteria.^{3,10}

Discovery of Yeast's Immune Benefits

The immune effects of **yeast fermentate** were discovered by accident.

A company in Cedar Rapids, Iowa, had been producing a specialized yeast culture when it became apparent that its factory workers—who were exposed to the yeast daily through inhalation—were taking far fewer sick days than its office workers.

Scientists took note. A pilot study showed that, compared to the office staff, the factory personnel had significantly *higher* levels of **secretory IgA**, an **antibody** that blocks pathogens from penetrating **mucosal surfaces**.¹¹

They also had increased activity of **natural killer cells**, immune cells that can kill cells infected with viruses.¹²

The company went on to develop the **dried yeast fermentate** using a proprietary fermentation process and baker's yeast. At least six placebo-controlled **clinical trials** have since validated its protection against allergies and colds.^{1,2,10,13-15}

Defense Against Allergies

Scientists first conducted a small pilot study on 25 healthy individuals, giving them either a **placebo** or **500 mg** of dried **yeast fermentate** daily for five weeks during the beginning of allergy season.¹⁰

Seasonal allergies did not change in the **placebo** group.

In the group taking the **yeast fermentate** there were improvements. **Half** of the treated male volunteers reported a **complete absence of allergy symptoms**, which returned within two weeks once they stopped taking the yeast fermentate.¹⁰

Researchers then conducted a clinical study on 96 volunteers with a history of seasonal allergies and hay fever. Participants took either a placebo or **500 mg** of dried **yeast fermentate** once daily.¹

The first six weeks of the 12-week study took place during the year's highest pollen-count period. Compared to the placebo group, those taking yeast had **43% fewer days** with **nasal congestion**. They also had a reduction in the *severity* of runny noses and nasal congestion.

By the study's end, those taking yeast fermentate showed decreased levels of white blood cells in their nasal mucus, indicating reduced activation of allergy-triggering cells.¹

Yeast Fermentate Fights Colds and Flu

Scientists next set up two clinical studies to examine yeast fermentate's effect on **cold** and **flu-like** symptoms.

In the first, they gave a daily dose of **500 mg** of dried **yeast fermentate** to 116 people with a mean age of 37. The 12-week trial was conducted from January through March, during the height of cold and flu season.

At the end of the study, the yeast group had experienced a **13% reduction** in the occurrence of cold or flu-like symptoms (including headache, fever, general aches and pains, fatigue, nasal stuffiness, sore throat, cough, and chills) compared to the placebo group.¹⁴

The second study was virtually identical to the first, except that the 116 participants had an average age of 44. They received the same dosages of the dried yeast fermentate or a placebo and recorded the incidence and *duration* of symptoms.²

Compared to the placebo group, the yeast-treated group had **11% fewer** incidences of common cold or flu-like symptoms, and a **17% reduction** in the *duration* of symptoms.

WHAT YOU NEED TO KNOW

Defending Against Allergies, Colds, and Infections Year-Round

- Clinical studies show that a **yeast fermentate** and the probiotic ***Lactobacillus rhamnosus CRL1505*** decrease the frequency, duration, and severity of allergy and cold symptoms.
- These ingredients also boost **natural killer cell activity** and **immunoglobulin A (IgA)** immune defenses against viruses and bacteria.
- Combining these two ingredients provides a safe and effective way for cold, flu, and allergy sufferers to improve their quality of life and may reduce risk of infection.



How Yeast Fermentate Works

Antibodies called **immunoglobulin E (IgE)** are a main cause of allergy symptoms. IgE causes the body to release chemicals, such as **histamines**, that trigger an allergic reaction and produce symptoms that affect the eyes, nose, throat, lungs, or skin.

In the small pilot study that first showed **yeast fermentate's** ability to relieve allergy symptoms, blood levels of **IgE** steadily *increased* among placebo recipients as allergy season went into full swing, indicating heightened allergic responses.

In subjects taking the yeast, **IgE** levels barely changed, indicating a *reduced* allergic reaction.

The study concluded that **yeast fermentate** calms allergic responses by **stabilizing IgE** levels.¹⁰

Yeast's ability to help prevent colds and flu comes from a different property. When given a single dose of **500 mg** of dried yeast fermentate, volunteers had significantly *increased* activity of **natural killer cells** within just one hour.¹³ These immune cells specifically target and kill cells infected by viruses, such as those that cause colds and flu.

Healthy individuals given **500 mg** of yeast fermentate daily also had a significant *increase* in **salivary IgA**, which defends against viruses and bacteria, after eight weeks.¹⁰

A Probiotic's Cold and Flu Defense

Probiotics are beneficial live microorganisms. A specific strain of probiotic, the bacterium ***Lactobacillus rhamnosus* CRL1505**, was originally isolated from goat's milk by scientists in northwestern Argentina.¹⁶

A series of studies showed that it decreased **respiratory infections** in children. Results were so impressive, the government of Argentina has been proactively providing *L. rhamnosus* CRL1505 to over 300,000 school children annually since **2008**.^{3,16,17}

Preclinical studies show that this probiotic strain may help fight the viruses and bacteria that cause the **common cold, influenza, bronchitis, and pneumonia**.^{17,18}

A team of nutritionists, pediatricians, and immunologists designed a randomized, double-blind, placebo-controlled clinical trial. They enlisted 298 healthy male and female children between two and five years of age.³ This population is particularly susceptible to respiratory infections.

Five days a week, the treatment group was given **100 million CFU** (colony-forming units) of ***L. rhamnosus* CRL1505** in a yogurt drink. The **placebo** group received a drink without the probiotic.





After six months, when compared to the placebo group, the children in the **probiotic** group had experienced:³

- **49%** fewer infections,
- **55%** fewer cases of cold or flu,
- **46%** fewer cases of fever,
- **47%** increase in levels of salivary IgA, and
- **33%** less need for antibiotic use.

The treatment group also had **61% fewer** cases of **tonsillitis** and **pharyngitis**, an infection in the back of the throat.³

How the Probiotic Works

IgA antibodies are a major part of the immune system. Secreted from **mucous membranes** in the mouth, nose, and lungs, they bind to respiratory viruses, *blocking* them from invading human cells and producing symptoms of colds and flu.

Research shows that ***L. rhamnosus* CRL1505** significantly *increases* levels of secretory IgA,³ boosting the immune system's initial ability to fight cold and flu viruses.

Along with yeast fermentate, this probiotic has demonstrated a reduction in severity, frequency, and duration of cold and flu symptoms and may offer protection against infections.

Summary

Allergies and **colds** are more than an inconvenience. Human studies show that a **yeast fermentate** and the probiotic ***Lactobacillus rhamnosus* CRL1505** reduce the severity, occurrence, and duration of allergy, cold, and flu-like symptoms.

These two ingredients work in multiple ways to enhance **immune defenses** against viruses *and* bacteria.

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



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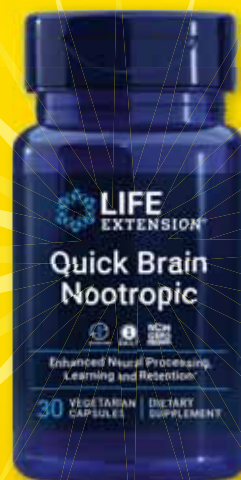
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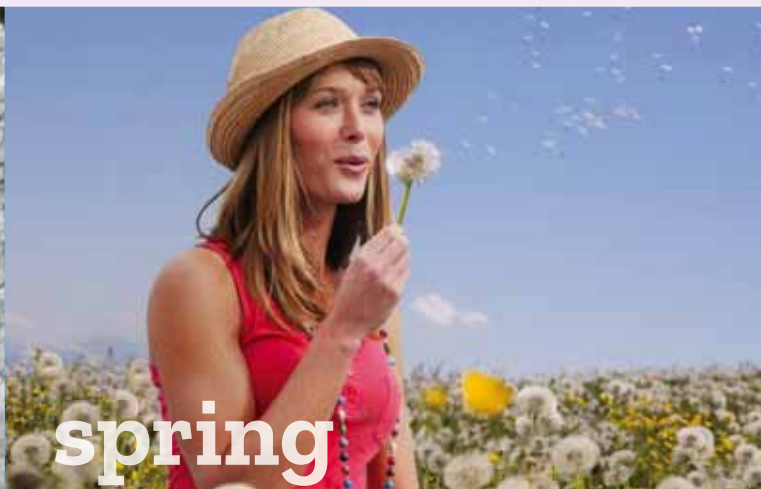
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Cardiologist Observes Improved Patient Outcomes & Reversal of Calcification and Atherosclerosis

JOEL KAHN, MD

I have devoted my career as a cardiologist to finding ways to treat **atherosclerosis**—the buildup of **plaque** in artery walls.

I've relied primarily on healthy lifestyle changes, diet, and supplements.

A few years ago, a **human** study found that a combination of two **plant extracts** significantly reduced **arterial plaque** in the carotid arteries when added to diet, exercise, and healthy lifestyle counseling.¹

I have recommended these plant extracts to thousands of patients and have seen the favorable results firsthand.

Larger studies provide new evidence that arterial **calcification** and blockages are reversible.



My Clinical Practice

I spent seven years after medical school completing my training in **interventional cardiology** or using catheters to treat heart disease.

Much of my practice involved inserting **stents** to prop open **coronary arteries** that were occluded with **atherosclerotic** plaque.

But three weeks into my first job, I decided there was a better, more comprehensive approach.

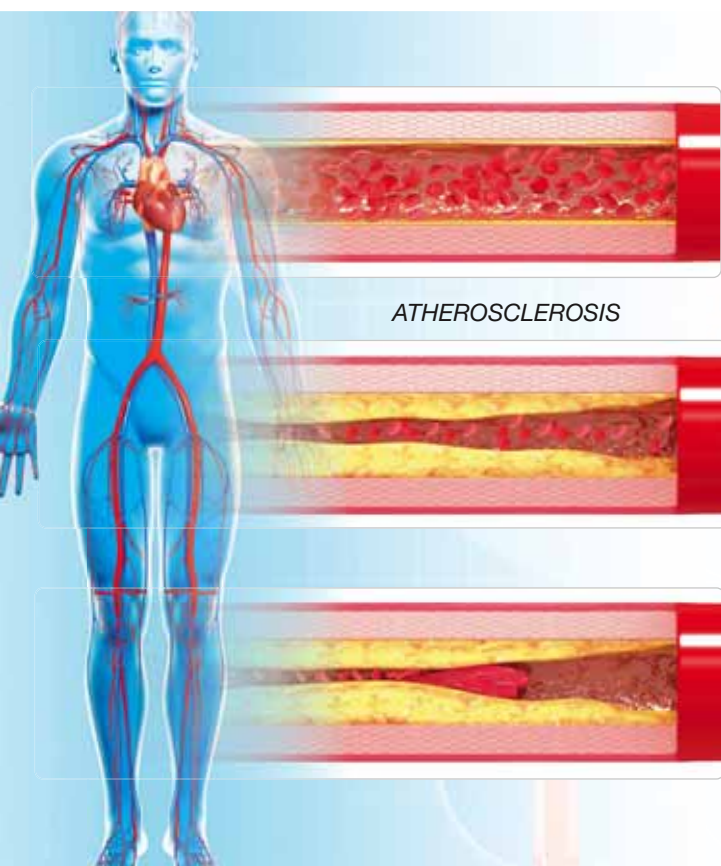
At that time, I read a study in a respected medical journal focusing on **atherosclerosis**, which often leads to heart attacks and strokes.

The study reported that atherosclerosis had been reversed using lifestyle and diet changes.²

Since then, I've combined **interventional cardiology** with a search for lifestyle and supplement-based methods to stabilize and reverse plaque buildup.

I was particularly impressed by a published study that reported on a combination of extracts of **French maritime pine bark** and an herbal extract called **Centella asiatica**.

When added to standard diet, exercise, and lifestyle counseling, these two **plant extracts** *improved* plaque stability and reduced size and numbers of **arterial plaques**.¹



The study involved 50 patients with plaque in the **carotid arteries**, which supply blood to the brain, neck, and face. These patients had no history of cardiovascular events, and did not have diabetes or metabolic problems.¹

Over the three-month study period, **pine bark + Centella asiatica** extracts reduced **carotid artery plaque** and lowered the **number of plaques** compared to a control group.

After these scientific findings were published, this **pine bark-Centella** extract combination became a routine part of my atherosclerosis reversal program.

The Evidence Mounts

I grew more convinced of the effectiveness of this plant combination when a larger, longer-term study was published in **2017**.³

This time, 391 subjects were followed for **four years**.

All had asymptomatic atherosclerosis of either the **carotid artery** or the **femoral artery** (which provides blood to the leg). Atherosclerotic lesions extended **50%-60%** into the arteries in at least one location.

Three treatment groups were formed. One was treated with extract of **pine bark** alone, another was treated with **pine bark** and **Centella asiatica**, and a third control group received no extracts. All groups received standard diet, exercise, and lifestyle counseling.

The rate of plaque progression, measured by ultrasound, was significantly lower in both treatment groups than in the control group. The group that took the *combination* of the two extracts had the *greatest* reduction in progression of plaque thickness and length.

The extracts also had a favorable impact on cardiovascular outcomes as follows:

- The occurrence of **angina**, chest pain caused by reduced blood flow to the heart, was less than **3%** in the two **extract** groups, compared with **6.25%** in control patients.
- The rate of **heart attacks** was significantly lower for the combination therapy.
- Events requiring **hospital admission** occurred in **16.4%** of control subjects, **8.9%** of subjects using only French maritime **pine bark** extract, and **just 3.3%** of patients using the combination of **pine bark** and **Centella extracts**.

Pine Bark - *Centella* Extracts in Practice

I have used this combination with countless patients in my clinic who have plaques clogging their carotid arteries.

I use the **carotid intima-media thickness** (ultrasound) test to identify and track carotid plaque status.

This test measures the thickness of the inner layers of the carotid artery, the **intima** and the **media**.⁴

Increased plaque means *greater* thickness, enabling this carotid ultrasound test to reveal atherosclerosis even in people with no symptoms.

I routinely observe reversal of plaque in patients taking the **pine bark + *Centella* extract** combination. I have even seen **arterial age** drop **10 to 20 years** after only one or two years of therapy.

Preventing Arterial Plaque Progression

My use of these extracts has recently expanded *again*, based on data published in **2020**.

This Italian trial involved 84 normal weight to mildly overweight subjects with asymptomatic **atherosclerosis** in their **carotid** and **femoral arteries**, determined by high-resolution ultrasound.

These atherosclerotic subjects were treated with similar interventions as the studies already discussed. The duration of this trial was three years.⁵

Patients with an atherosclerotic plaque that was blocking less than **50%** of an artery and those with an atherosclerotic plaque blocking more than **50%** of an artery were included in this trial.

All patients were given diet, exercise, and lifestyle counseling.

One group received no additional treatment, a second took **100 mg** a day of **aspirin**, and a third received the aspirin plus the combination of extracts of French maritime **pine bark (150 mg/day)** and ***Centella asiatica* (450 mg/day)**.

At the end of the three years, more than **20%** of patients in the **standard management** and the **aspirin** group had progressed to more severe and extensive atherosclerotic plaque.

Among patients treated with **aspirin + pine bark + *Centella***, only **5.3%** of patients experienced **plaque progression**.

In the diet, exercise, and lifestyle-counseling group, **22%** suffered a cardiovascular event requiring hospitalization. That number declined to **12%** in the **aspirin** group and to just **3.5%** in the group taking aspirin plus the two **plant extracts**.



WHAT YOU NEED TO KNOW

Reducing and Reversing Plaque Progression

- **Atherosclerosis** is the buildup of **plaque** in artery walls.
- A combination of two **plant extracts** significantly reduced **arterial plaque** in the carotid arteries.
- **French maritime pine bark-*Centella asiatica*** extracts prevent plaque progression.
- This combination of plant extracts may reverse the progression of **atherosclerosis**.

Oxidative stress, a driver of atherosclerosis, was measured in the blood of all subjects and was lower in the group taking the **pine bark** and ***Centella*** extracts. This makes sense since both these plant nutrients are free-radical scavengers.

Decrease of Coronary Artery Calcification

The same research team evaluated the efficacy of the **pine bark-*Centella*** combination in asymptomatic atherosclerotic patients with coronary artery **calcifications**.⁶

Patients with atherosclerosis in the **coronary arteries**—those that supply the heart with blood—can experience angina, shortness of breath, and even a heart attack.⁷

The study included three groups of 30 men each with asymptomatic **coronary artery calcifications**. Although they didn't have angina or shortness of breath, the **calcification** in their arteries indicated progressive atherosclerosis.

All subjects received standard diet, exercise, and life-style counseling and took **100 mg/day** of aspirin.

The first group received no additional treatment. The second added **150 mg/day** of French maritime pine bark extract. The third used the combination of **150 mg/day pine bark** and **450 mg/day of *Centella asiatica*** extracts.

After one year, there was a **35% increase** in the number of coronary artery calcifications in the group that received diet, lifestyle, and exercise counseling plus aspirin. In those also taking **pine bark** alone, new **calcifications** were **halted**.

In those using the **pine bark + *Centella*** there was a significant **10% decrease** in the number of **calcifications**, a remarkable result.

Testing in Patients with Stents

To evaluate the impact of **pine bark** and ***Centella asiatica*** extracts on atherosclerotic plaque progression in **stented arteries**, 160 stented patients with partial arterial blockage due to atherosclerotic changes (as determined by ultrasound) were grouped into one of three treatment arms.⁸

The study began 6-10 months after successful **stent** procedures, and patients were followed for 12 months.

All groups received diet, exercise, and lifestyle advice along with anti-platelet medication and low-dose statin. A second group received, in addition, the **pine bark extract**; and a third group received extracts of **pine bark** and ***Centella***.

After 12 months, progression of atherosclerotic lesions on inner artery walls occurred in **6.7 times more** patients in the diet, exercise, lifestyle, and medication only group compared to the group that also received the combined **pine bark + *Centella*** extracts.

In fact, in just one year, **nearly 60%** of patients in the group that did not receive **the plant extracts** had marked progression of their **atherosclerosis**.

By contrast, among subjects who received the additional **pine bark extract** without ***Centella***, only **18.5%** experienced atherosclerosis progression.

Most remarkable of all, though, were the results in the **pine bark + *Centella*** extracts group. Just **8.9%** of these patients had progression of **atherosclerotic plaques**.

In both groups that received extracts, there was a significant reduction in oxidative stress. No side effects or tolerability problems were observed with the plant extracts.

Summary

These studies consistently show that the combination of **French maritime pine bark** and ***Centella asiatica*** extracts slows and may reverse the progression of **atherosclerosis**.

The published findings reveal significant reductions in adverse **cardiovascular outcomes**.

I've observed these powerful results in my clinic as well.

The combination of these **plant extracts (pine bark + *Centella*)** has promise for millions of people with atherosclerosis. •

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

Joel Kahn, MD, is the founder of the Kahn Center for Cardiac Longevity in Bingham Farms, Michigan.

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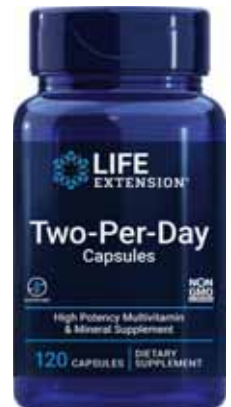
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* *Int Angiol.* 2014 Feb;33(1):20-6.

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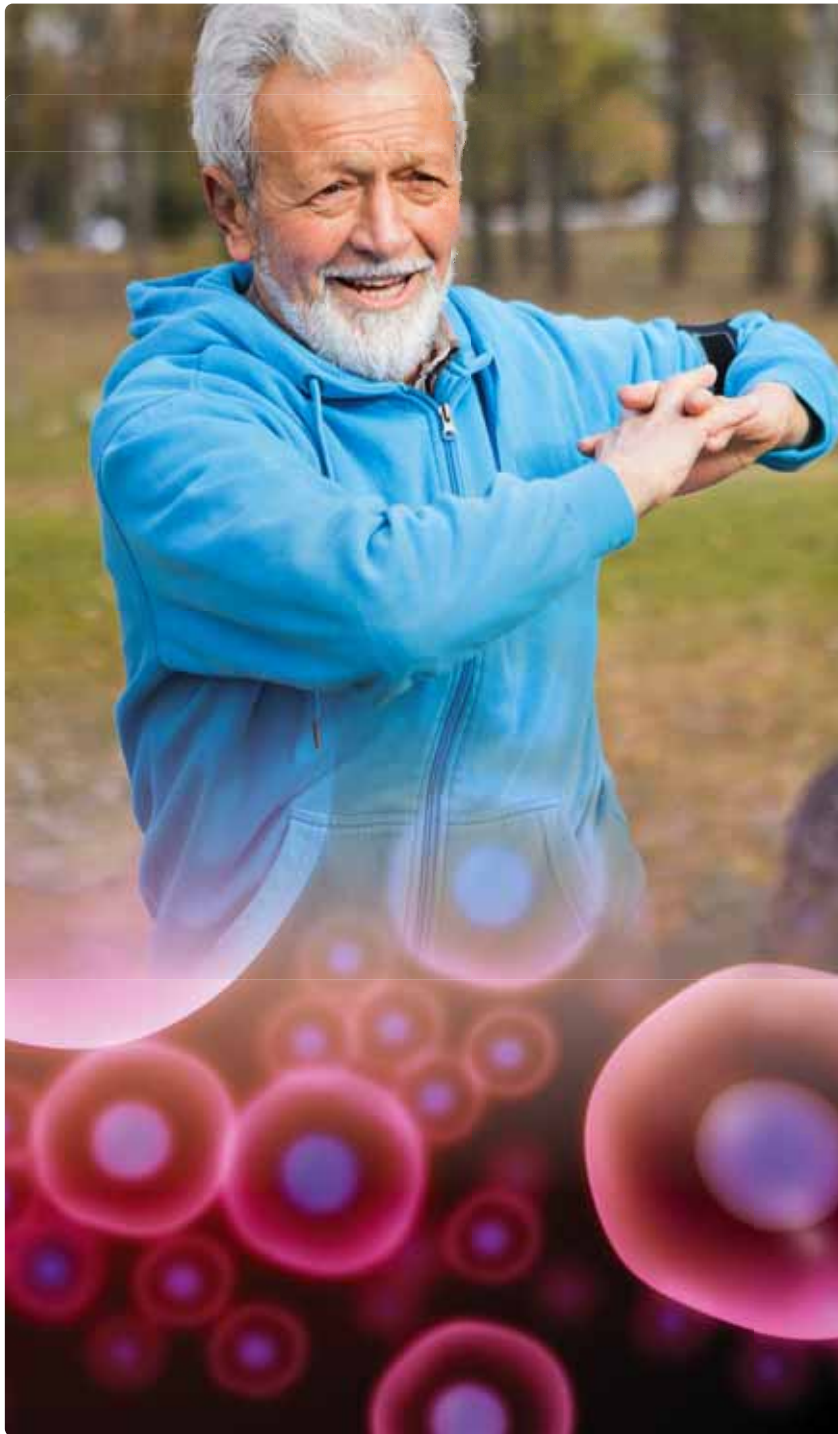
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Senolytics Offer New Hope for Heart Failure

BY JULIE RAINER



Heart failure occurs when the heart is unable to pump enough blood to fully oxygenate the body.

As it progresses, **heart failure** patients may lose the ability to walk, speak, or carry out basic activities without pausing for breath or stopping to rest.

In advanced stages, vital organs stop functioning. Unless the clinical course of chronic heart failure is reversed, death ensues.

According to a **2020** report by the *American Heart Association*, **one million** new heart failure cases are diagnosed in the U.S. each year.¹

Heart failure is associated with a cumulative burden of **senescent cells** that don't function normally. Instead, senescent cells emit **pro-inflammatory** and **protein-degrading** factors that damage healthy heart cells.

In a compelling study, researchers found that the senolytic cocktail of **dasatinib + quercetin** cleared **senescent cells** effectively in lab cultures of **human senescent heart tissue** and promoted survival of crucial **cardiac progenitor cells**.²

Senolytics are a promising therapy that may allow the heart to *heal itself*.

Senescent Cells Damage the Heart

Old, dysfunctional **senescent cells** contribute to heart failure and prevent damaged heart tissue from healing.^{2,3}

Among people older than 70 with cardiovascular disease, **more than half** of *cardiac progenitor cells*—cells capable of producing fresh, new heart muscle tissue—are **senescent**.²

In recent years, anti-aging research has increasingly focused on compounds called **senolytics** that remove **senescent cells** while leaving healthy cells to flourish.

Senolytics Slow Aging and Fight Disease

Many age-related diseases are associated with an accruing **senescent cell** burden.⁴⁻⁶

These aged, damaged cells accumulate in our tissues, refusing to die off. They instead secrete **inflammatory** molecules that damage surrounding healthy cells.

Within the last few years, scientists have discovered that compounds called **senolytics** have the power to selectively trigger senescent cells to self-destruct, while leaving most normal cells unharmed.

Using senolytics to eliminate those “zombie” cells improves health and extends life in animals.⁷

Decreasing the **senescent cell** burden has been shown to:

- Reduce glucose levels, raise insulin sensitivity, lower inflammation, and improve kidney and heart function in obese mice,⁸
- Restore memory loss in a mouse model of Alzheimer’s disease and decrease the toxic proteins that make up the amyloid plaques found in the brains of Alzheimer’s patients,⁹
- Increase lifespan, promote youthful body type, and reduce age-related diseases in mice, and¹⁰
- Reverse age-related damage to heart muscle, including stiffening and over-growth of tissue, in aged mice.¹¹

Senolytics were initially studied in animals or lab cultures.

Recent human studies on the experimental senolytic cocktail—**dasatinib** and **quercetin**—have shown some early promise as an effective clinical **therapy**.

The First Human Study

Dasatinib is a prescription drug developed to treat certain forms of leukemia.¹²

It is on the latest report of the World Health Organization’s Model List of Essential Medicines.¹³

Quercetin is a bioflavonoid found in apples, honey, berries, onions, red grapes, cherries, citrus fruits, green leafy vegetables, tea, and other food sources.¹⁴

The combination of these two compounds has been used as **senolytic therapy** to eliminate senescent cells in multiple animal and lab studies.¹⁵

Scientists at the **Mayo Clinic** expanded this research into patients with **idiopathic pulmonary fibrosis**. This progressive lung disease, once diagnosed, carries a median survival of 3.8 years in adults aged 65 and over.¹⁶

Cellular senescence has been identified as a major contributing factor to this disease.

In a three-week study, **100 mg/day** dasatinib and **1,250 mg/day** quercetin, taken three consecutive days per week for three weeks, improved:¹⁵

- Distance walked in six minutes,
- Speed of gait in a four-meter walk, and
- Time to complete five consecutive stand-up/sit-down cycles on a chair.





None of the subjects experienced adverse effects requiring discontinuation of treatment.¹⁵

Though it was a preliminary study, it showed that the dasatinib-quercetin cocktail may have a positive impact on health.

Dasatinib and Quercetin in Heart Failure

Intriguing evidence that senescent cells are involved in **cardio-vascular disease** has led scientists to look for ways to use senolytics to clear out those cells from heart muscle and restore youthful heart function.

In a compelling study, researchers from Kings College London and the Mayo Clinic tested the **dasatinib-quercetin** combination in lab cultures of **human senescent heart tissue**.²

The combination not only cleared senescent cells effectively, but also promoted survival of crucial **cardiac progenitor cells**, those that produce fresh, *new* heart muscle tissue.²

The researchers also tested the dasatinib-quercetin cocktail in an animal model of age-related human **heart failure**.

Previous mouse studies showed that this combination led to decreased numbers of senescent cells in heart muscle, aorta, lung, liver, bone, fat, and skeletal muscle.²

The treated mice also showed a burst of growth of fresh, new heart muscle cells that was accompanied by a sharp decrease in **fibrosis** (stiffening and thickening) of the main pumping chamber of the heart.²

In other words, the dasatinib-quercetin combination effectively cleared out senescent heart muscle cells, showing great promise for the maintenance of a healthy **heart** function.

Urgent Need for Clinical Trials

Chronic heart failure remains a major threat for older Americans.

We've recently learned that aging heart muscle, like other tissues, is riddled with old, damaged cells that weaken cardiac function and contribute to heart failure.

Multiple studies show that removing **senescent cells** can make room for healthy, tissue-healing cells to emerge and function normally.

Studies indicate that a combination of two compounds, the drug **dasatinib** and the plant pigment **quercetin** may be effective in treating people suffering chronic **heart failure**.

Clinical trials are urgently needed as over 80,000 Americans die each year of heart failure.¹

Continued on next page.



Summary

At this point, the dasatinib-queretin combination is still experimental. Anyone who uses it should report results to **Life Extension®** so we can include them in future issues.

Those concerned about taking a chemotherapy drug like **dasatinib**, even on the limited basis used in experimental research, have been using a black tea extract called **theaflavins** combined with high-dose **quercetin** on a once-weekly basis. **Theaflavins** function via some similar mechanisms as does **dasatinib**.^{17,18}

Even more exciting, anticipated later this year is the introduction of **bioavailable fisetin**, a plant extract that some scientists believe may be the most effective **senolytic** compound.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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* *Aging Cell*. 2015 Aug;14(4):644-58.



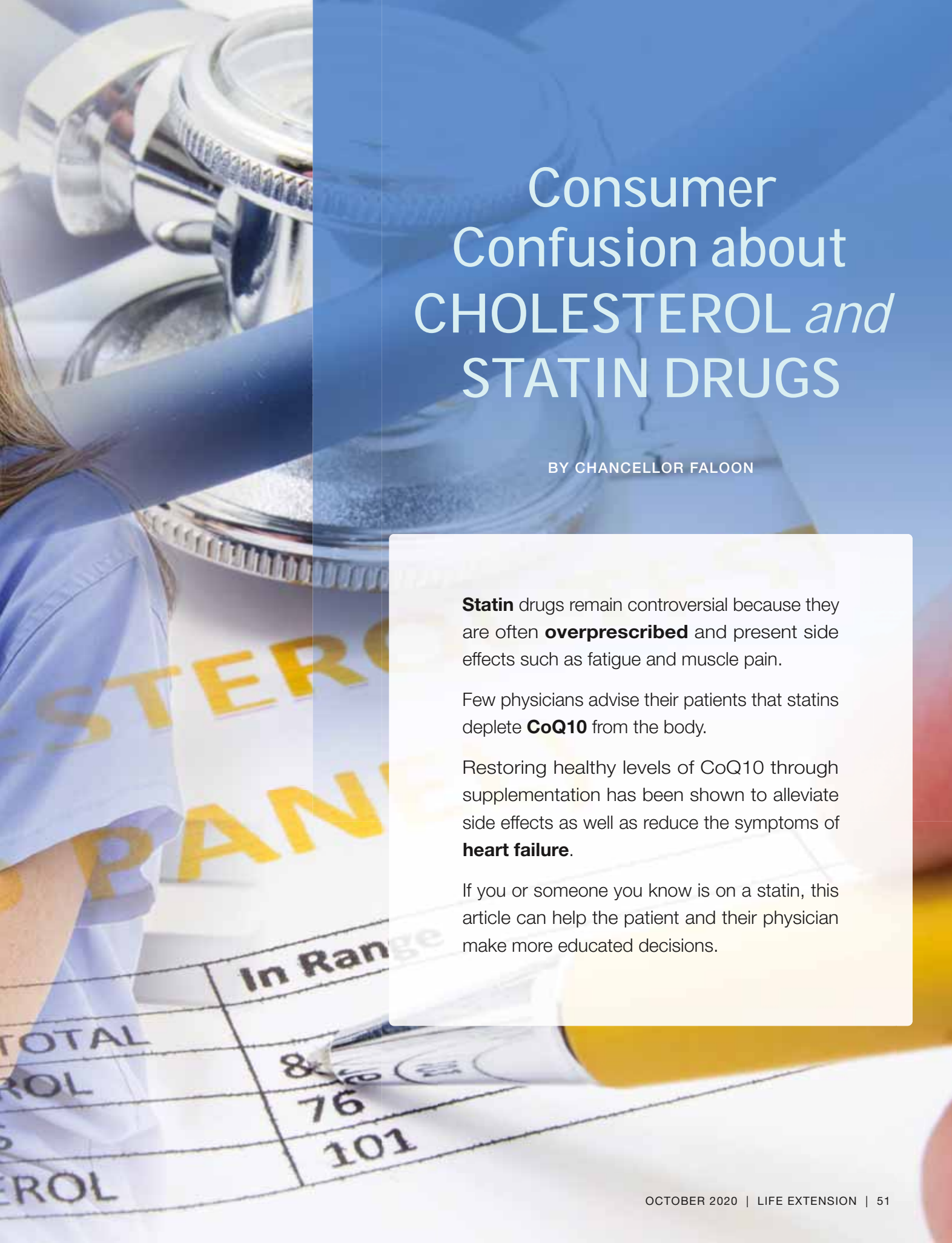
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Consumer Confusion about CHOLESTEROL *and* STATIN DRUGS

BY CHANCELLOR FALOON

Statin drugs remain controversial because they are often **overprescribed** and present side effects such as fatigue and muscle pain.

Few physicians advise their patients that statins deplete **CoQ10** from the body.

Restoring healthy levels of CoQ10 through supplementation has been shown to alleviate side effects as well as reduce the symptoms of **heart failure**.

If you or someone you know is on a statin, this article can help the patient and their physician make more educated decisions.

Statins and Heart Disease

Heart disease encompasses a range of cardiac disorders that include:

- Chronic **heart failure**
- **Coronary artery disease**
- **Valvular disease** (such as aortic stenosis)
- Sudden **heart attack**

Maintaining healthy levels of **cholesterol** is one way to help lower these risks.

There are people who question the evidence for the causal role of **LDL** cholesterol in atherosclerotic disease.

There is also disagreement about exactly which patient populations benefit most from cholesterol-lowering-type drugs called **statins**.

Concerns raised about **statin drugs** include:

- In people without known heart disease, there does not appear to be a mortality benefit with statin drugs, and the harms can outweigh the benefits,^{1,2}
- Clinical trials of statins are largely industry-sponsored, and the original data in those studies are mostly unavailable to researchers,^{2,3} and

- Lifestyle factors including tobacco usage, unhealthy diet, and sedentary lifestyle are thought to account for as much as **80%** of cardiovascular risk.^{2,4}

The sum of published research shows that:

- Simple ways exist to diminish the most common statin-drug side effect,
- In high-risk individuals, statins *do* reduce heart disease deaths and mortality from other causes, and
- Comprehensive evaluation and control of cholesterol *and other* risk factors achieve the greatest reduction in heart disease risk.

Aging often results in an increase in **cholesterol**. This age-related increase in cholesterol is primarily composed of small, dense LDL particles, especially those oxidized, which promote the formation of harmful plaque in the arteries.⁵

As the decades add up, the damage inflicted by these cholesterol particles injures blood vessels, eventually obstructing blood flow to the heart muscle, brain, and other organs.⁶

If an aging individual with poor and worsening cholesterol does not want to make radical **lifestyle** and **dietary changes**, then proper **statin drug** therapy (usually at a much lower dose than commonly prescribed) should be considered.





Reducing Statin Side Effects

Cholesterol is carried through the blood by transporters called **lipoproteins**, of which **LDL** (low-density lipoprotein) is one.

Statins lead to robust reductions in **LDL (“bad”) cholesterol** and decreases in **C-reactive protein**, a marker of **inflammation**.⁷

Statins have clearly defined benefits for **high-risk** individuals, but their use in **prevention** in **low-risk** individuals is not supported by that science.

Researchers and clinicians have pointed out that in individuals at low risk of cardiovascular events, side effects of statins outweigh benefits.^{1,8}

Life Extension® was among the first to note that **statin drugs** were being overprescribed, often at unnecessarily **high** doses.

Statins deplete the body’s levels of **coenzyme Q10**, which causes many outward side effects, like muscle pain (myalgias) along with potential multi-organ damage.

Evidence also shows that statins interfere with the synthesis of **vitamin K2**.^{9,10}

The encouraging news is muscle pain caused by statins can be significantly **reduced** with the addition of **coenzyme Q10**.¹¹⁻¹⁴

The statin-induced decrease in **coenzyme Q10** and **vitamin K2** can be corrected by taking supplemental **CoQ10** and **vitamin K2**.

WHAT YOU NEED TO KNOW

Cholesterol and Statins

- **Statins** have clearly defined benefits for individuals at high risk for cardiovascular events.
- Statins lead to significant reduction in **LDL (“bad”) cholesterol**.
- The body’s levels of **coenzyme Q10** are depleted by statins.
- Low **CoQ10** blood levels have been associated with *higher* mortality in **heart failure** patients.
- Statins interfere with the synthesis of **vitamin K2**, which helps promote arterial health.

CoQ10 Provides Support

A meta-analysis published in **2018** combined the results of **12 randomized, controlled trials** that included a total of **575** patients.

This study concluded that **coenzyme Q10 (CoQ10)** supplementation ameliorated the muscle pain, cramps, weakness, and tiredness associated with **statin** drugs. It also showed that **statins** reduce CoQ10 levels by **16%-54%**.¹⁴

In high-risk individuals (which includes a significant portion of the aging population), statin drugs help protect against cardiovascular disease,¹⁵ including coronary artery occlusion and cerebral vascular insufficiency. In some observational studies, statin use showed potential in slowing aortic stenosis progression.¹⁶ **Statins** also reduce CoQ10 levels.¹¹



New Data Support CoQ10's Protective Effects

A clinical trial published in 2019 (after the 2018 meta-analysis showing the CoQ10 protective effect in statin users), demonstrated another approach to protect against statin-induced myalgia:¹¹

Cut the statin drug dose in half.
+
Add a **CoQ10** supplement.

In this study, 60 patients were selected who were all **statin intolerant** and had elevations in blood biomarkers (creatinine kinase and liver transaminases) which have been correlated with statin-induced muscle pain.

After patients were taken off statins for a month, they were then put back on a **half-dose statin** for a month. At that point they were randomized to receive either **100 mg of CoQ10** (ubiquinone) or a placebo. The difference was dramatic:

In the group that received the CoQ10, **46.6%** reported a reduction in pain scores.

In the group that received the placebo, only **6.6%** reported a reduction in pain scores.

Blood markers of **organ damage** sometimes seen in **statin drug** patients decreased significantly in the **CoQ10** group, while there was no significant change in biomarkers of muscle, liver, or kidney damage in the placebo group.

At the end of the study, participants in the CoQ10 group also had **lower LDL** and **total cholesterol** compared to the placebo group (not receiving CoQ10), and they accomplished this with just half the **statin dose** they were previously taking!

Low CoQ10 blood levels have been associated with **higher mortality** in **heart failure** patients.¹⁷

Continuing research shows that **CoQ10** supplementation can effectively boost levels of this heart-essential nutrient, improving outcomes for heart failure patients.

In a recent study, researchers selected 142 patients who developed **heart failure** while on statins.¹²

Of these patients, **94%** had **diastolic heart failure** (inability of their left ventricle to relax normally and properly fill) and **6%** had **systolic heart failure** (lack of their left ventricle contracting normally and pumping blood out into circulation).

The patients were taken off **statins** and put on an average dose of **300 mg/day** of **CoQ10**. The study primarily used the **ubiquinol** form of CoQ10, which is more readily **absorbed** into the bloodstream than ubiquinone.

By the end of follow-up (mean 2.8 years) the number of patients who had no limitations of physical activity increased from **8%** to an astounding **79%**.

For the patients with **diastolic** heart failure who received CoQ10, at final follow-up:

- Approximately **34%** had **complete normalization** of diastolic function,
- **60%** had sustained improvement in diastolic function, and
- **25%** showed improvement but not normalization of diastolic function.

For the patients who had **systolic** heart failure, **ejection fraction** increased by a mean of **12%**.

Ejection fraction is the percentage of blood pumped *out* of the heart's left ventricle with each beat. Measuring this percentage is essential to the proper evaluation and management of those with systolic heart failure.¹⁸

Why Early Statin Trials Were Short Term

Some critics of statins contend the research does not consistently show they reduce cardiovascular or all-cause **mortality**.

However, real-world obstacles stand in the way of **long-term**, placebo-controlled human trials designed to test the effects of statins or other interventions on **mortality**, which is the proof we need to establish a life-extending benefit.

A study evaluating **human mortality** would require many decades to produce meaningful results. Humans live longer than lab animals, which makes us more difficult to study, and makes such research prohibitively costly.

Other factors add to the complexity. People often change their diet, exercise, and lifestyle habits. Compliance with any nutritional or pharmaceutical intervention tends to be inconsistent. Additional confounding factors that are difficult to control are stress levels, environment, and individual genetics.

For these reasons, long-term, randomized, placebo-controlled trials of potentially life-extending interventions—such as statins—present an enormous challenge to the scientific community.

Newer Trials Show Reduced Mortality

But statin critics may be overlooking **newer** studies that *are* showing meaningful mortality benefits.

One large-scale meta-analysis published in **2016** showed that statins were significantly more effective for patients in reducing the odds of dying from coronary heart disease and from **any** cause, compared to control groups.²¹

Specifically, statin users had **31% lower** odds of dying from **coronary heart disease** and **16% lower** odds of dying from **any cause**, compared to controls.

20-Year Study Yields Robust Mortality Benefit

A study published in **2017** was one of the first to truly examine the impact of **statin** use over the **long term**.

This study analyzed evidence *after* the termination of a randomized, placebo-controlled statin trial. One arm of this study evaluated the effects of **statins** in men with LDL of **190 mg/dL** or higher and without preexisting vascular disease.

This analysis divided a total of 5,529 men into two groups, those with LDL levels under **190 mg/dL** and those with LDL levels at **190 mg/dL** or higher.

The randomized, controlled phase of this trial was about **five years** and used a statin drug called **pravastatin**.

What makes this study significant is that the observational follow-up on patients was an additional **15 years**, meaning the whole study population was followed for **20 years**.²²

Merck Received Patent for Combined Statin-CoQ10 Drug, but Never Brought it to Market

Merck and Co., Inc. is one of the world's largest pharmaceutical companies. It was the first to introduce a statin drug, called **lovastatin** (Mevacor®), in the 1980s and then another statin called **simvastatin** (Zocor®) in the 1990s.

In 1989, the company filed for a patent on a drug that **combined** **CoQ10** with a **statin** to reduce statin side effects. In 1990, they were awarded that patent, which was scheduled to expire in 2009.¹⁹

Merck never proceeded with clinical trials needed for FDA approval.

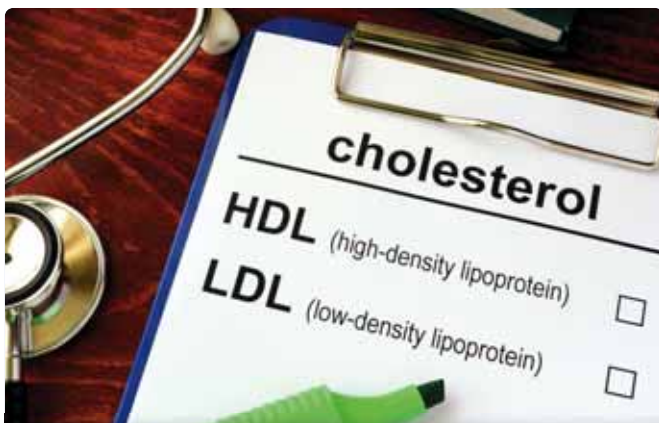
They may have decided that it was not worth spending hundreds of millions of dollars to conduct clinical trials and then develop a drug with CoQ10. Statin drugs are cheap to produce compared to coenzyme Q10, which is relatively expensive.

Merck's patent, however, kept other drug companies from pursuing a combination statin-CoQ10. Still, a survey published in 2015 reported that **71%** of cardiologists recommend CoQ10 to some of their patients.²⁰



At the end of the **20-year** follow-up, an analysis was done comparing the placebo group to men with **LDL \geq 190 mg/dL** and originally assigned to the **pravastatin** group in the initial trial. Here are the findings over this **20-year** period:

- The risk of coronary heart disease mortality was reduced by **28%** in pravastatin drug users,
- There was a **19%** reduced risk of major adverse cardiovascular events (defined as the composite of cardiovascular death, non-fatal heart attack, and non-fatal stroke), and
- Cardiovascular death was reduced by **25%** and all-cause mortality by **18%** respectively, in people remaining on pravastatin over this **20-year** period.



In the participants whose LDL was lower than **190 mg/dL**, deaths from all causes including cardiovascular disease were also lower in the **pravastatin** group compared to the placebo group. The participants with **LDL \geq 190 mg/dL** had greater reductions in cardiovascular and all-cause mortality from **pravastatin** treatment compared to **placebo**.

The average LDL cholesterol level dropped by **23.3%** from its baseline value in the treatment group of those with **LDL \geq 190 mg/dL**.

This **23.3%** reduction is still a considerable distance from what is generally accepted as a healthy **LDL range**, which is below **100 mg/dL** for primary prevention of cardiovascular disease in people with low risk.²³

For people with high risk, such as individuals who have already suffered a cardiovascular event, some experts recommended that they achieve LDL levels below **70 mg/dL**.²⁴

If LDL cholesterol had been brought down even further in the patients in the **20-year** study using **pravastatin**, the risk of cardiovascular events and all-cause mortality would likely have fallen with it.

It is important to note that these relatively recent studies were published *after* many decades of criticism were lodged against **statin drugs**.

No one questions the side effects statins can inflict. Much has to do with excess dosing and prescribing statins to patients who did not need them, and not advising patients to supplement with **CoQ10** and **vitamin K2**.

Increased Risk When LDL Particles Are Small and Dense

A high number of **small, dense LDL** particles has been associated with elevated heart disease risk.³⁰

The reason is that circulating, small, dense LDL particles easily penetrate and damage the blood vessel wall. In addition, they are more prone to atherogenic modification, including oxidation.³¹

Oxidized LDL damages the delicate endothelial cells lining the blood vessel wall.³² Once the integrity of the endothelial barrier is compromised, additional oxidized LDL accumulates behind the arterial wall.

A critical step in the development of atherosclerosis is the adhesion of **monocytes** (a type of white

blood cell) to the **endothelial cells** that line the artery walls.^{33,34}

These monocytes enter the blood vessel lining and develop into **macrophages** whose job is to engulf **oxidized LDL** cholesterol. Accumulation of oxidized LDL particles in the macrophage leads to the formation of **foam cells**.^{33,34}

The accumulation of foam cells, along with the proliferation of smooth muscle cells and excess connective tissue, are key drivers of **atherosclerosis**.^{33,34}

Foam cells play a central role in the **inflammation** that drives the **atherosclerosis** process.³⁵

Statins Improve Health Outcomes in US Veterans

A new study published in July 2020 in the *Journal of the American Medical Association (JAMA)* found that statin use was associated with substantial reduction in **all-cause mortality**.³⁹

The study recruited **326,981 veterans** with a mean age of 81 years and followed them for a mean of 6.8 years from a clinical visit.

Compared to non-statin drug users, **statin use** was associated with a **25% reduction** in all-cause mortality, **20% reduction** in cardiovascular mortality, and an **8% reduction** in a composite of atherosclerotic cardiovascular events.

Multiple Risk Factors for Cardiovascular Disease

There are some patients with high LDL cholesterol who do not have cardiovascular disease, while some with lower cholesterol do have it. These paradoxical findings have led some to downplay the risks posed by elevated **LDL cholesterol**. However, this does not mean that cholesterol plays no role in cardiovascular disease.

People sometimes forget that there are **multiple risk factors** contributing to the threat of every illness, and cardiovascular disease is no exception.

Scientific data accumulated over decades demonstrate that excess **LDL cholesterol** is one of the primary culprits.⁶

Impact of Apolipoprotein B

Apolipoprotein B is found on all non-HDL-cholesterol-carrying lipoprotein particles, such as LDL and VLDL.²⁵

High apolipoprotein B is a recognized marker for damage to arterial walls and risk of atherosclerosis. This is important because the basic laboratory tests for lipids, including LDL, HDL, and total cholesterol and triglycerides, often don't give the full picture of cardiovascular disease risk.

Research on certain populations shows a correlation between maintaining lifetime low levels of **apolipoprotein B** and a roughly **90% decreased** risk of coronary artery disease.²⁶

Elevated **apolipoprotein B** is a more reliable marker for cardiovascular disease than **LDL, HDL, and total cholesterol**.^{6,27-29}

Despite intensive educational efforts, **apolipoprotein B** blood tests are not routinely incorporated into primary care medicine. The tragic result is a failure to prevent heart attacks, strokes, and other occlusive arterial diseases.

For **Life Extension®** readers, this problem was resolved when **apolipoprotein B** was added to the comprehensive **Male** and **Female Panel** blood tests they undergo each year.

Summary

Published data define the importance of maintaining optimal **LDL** and **HDL cholesterol** levels to lower heart disease risk.

Statins can help keep cholesterol levels in optimal ranges in those for whom diet and lifestyle measures aren't enough.

To achieve the most significant heart disease risk reduction, one must monitor and address every risk factor related to heart diseases. That includes testing for **apolipoprotein B** and other atherogenic risk factors.

Controlling the vascular damage created by elevated **LDL cholesterol** levels is challenging. Altering one's diet to reduce excess **saturated fat** intake might enable a **lower statin drug** dose to achieve optimal cholesterol levels.^{4,36-38}

Anyone using a statin must ensure their **coenzyme Q10** levels are not compromised.

This can be achieved by taking **100-200 mg** a day of **CoQ10**, preferably the **ubiquinol** form. CoQ10 should be taken with the heaviest meal of the day that contains some fat, to facilitate its absorption.

Those with **heart failure** usually need to take around **400 mg** of **ubiquinol** a day to achieve optimal CoQ10 blood levels.

Recent data also point to the value of **vitamin K2** use with statin drugs. For those interested in supplementing with vitamin K who are taking Coumadin® or Jantoven® (warfarin), please discuss with your doctor first. The box on the next page describes what some warfarin users are doing to supplement with **low-dose** vitamin K2 under physician supervision.

These steps can lessen the side effects of **statins** and help to lower the risk of cardiovascular disease.

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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Vitamin K Antagonists, Food Sources of Vitamin K, and INR Variability

Warfarin is a drug that inhibits unwanted coagulation by interfering with vitamin K activity in the liver.

A frequently encountered problem with patients prescribed warfarin, a vitamin K antagonist, is the variability of INR.

INR (international normalization ratio) is a measurement of warfarin's effect upon the tendency of the blood to clot through the extrinsic clotting pathway. This can be due to variation of dietary intake of rich food sources of vitamin K (e.g. green leafy vegetables).

Too much vitamin K can diminish the anti-coagulant effects of warfarin and produce unstable INR measurements.

In patients receiving warfarin with a goal INR of 2-3, the addition of low-dose oral vitamin K supplementation may help increase INR stability.

Some published research suggests that low-dose (around 45 mcg) vitamin K may help improve the stability of INR measurements—however, such a strategy should only be contemplated after full discussion with a patient's physician and frequent blood testing (to include INR) to assess for the intended effect (i.e. INR stability).

Warfarin users seeking more details about this should log on to: LifeExtension.com/warfarin

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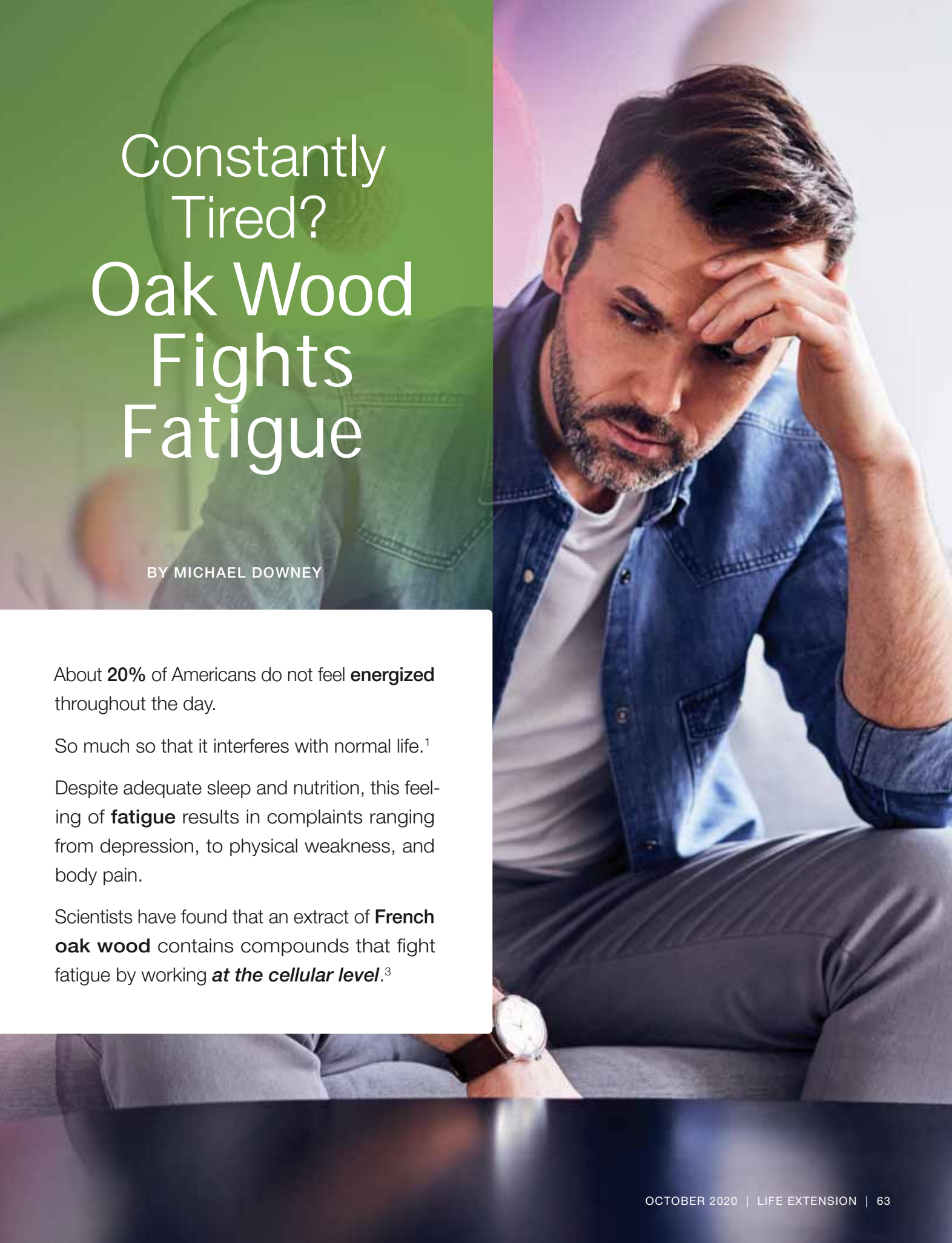
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Constantly Tired? Oak Wood Fights Fatigue

BY MICHAEL DOWNEY

About **20%** of Americans do not feel **energized** throughout the day.

So much so that it interferes with normal life.¹

Despite adequate sleep and nutrition, this feeling of **fatigue** results in complaints ranging from depression, to physical weakness, and body pain.

Scientists have found that an extract of **French oak wood** contains compounds that fight fatigue by working **at the cellular level**.³

In human studies, an **oak wood** extract reduced symptoms of fatigue, including **weakness** and **exhaustion**.³⁻⁵

Among the most significant results, this extract led to a:⁶

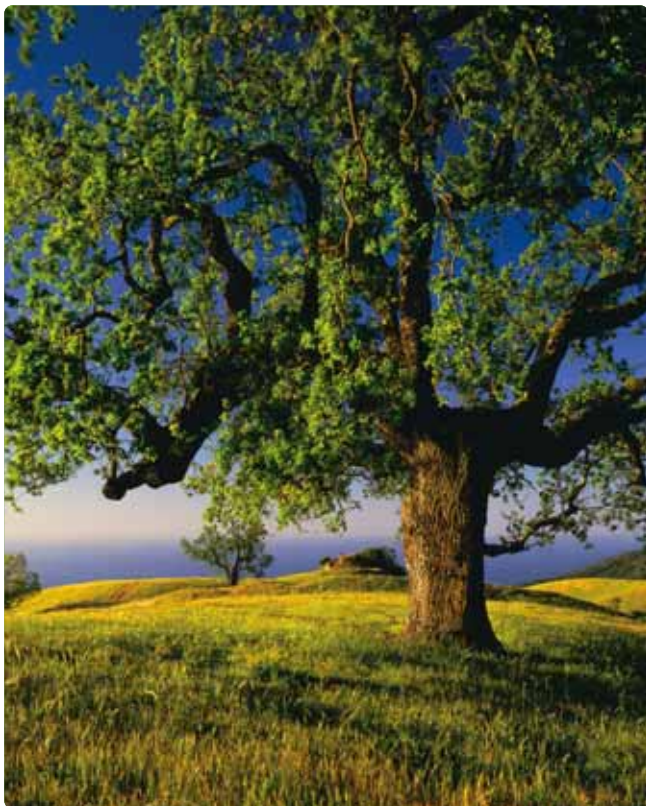
- **44%** reduction in un-refreshing sleep,
- **63%** reduction in muscle pain,
- **51%** reduction in joint pain,
- **51%** reduction in sensitivity to noise, foods, medications, and chemicals,
- **58%** reduction in depression, and
- **49%** reduction in mood swings.

This can help people with chronic fatigue syndrome or with less severe symptoms of fatigue.

How Oak Wood Works

Oak trees are known for their strength and durability. They can live for centuries.

Their resilience comes, in part, from their production of compounds called **roburins**. These are protective tannins found *only* in oak trees.⁷



Researchers have recently studied how **roburins** affect human cells.

They discovered that roburins modulate genes involved in the production of **ribosomes**,⁸ tiny cellular structures that create proteins and are closely involved in the functioning of every tissue, organ, and system.⁹⁻¹¹

Fighting Fatigue

A team of Italian scientists conducted a study to assess the effects of **oak wood extract** in people with fatigue.⁶

One group of patients was treated with **200 mg** daily of **French oak wood extract** for at least six months. A second group received no treatment.

The oak wood extract group experienced a:⁶

- **44%** reduction in un-refreshing sleep,
- **18%** reduction in weakness and exhaustion,
- **29%** reduction in short-term memory impairment,
- **63%** reduction in muscle pain,
- **51%** reduction in joint pain,
- **33%** reduction in headaches, and
- **47%** reduction in tender lymph nodes in the armpit and neck.

Untreated patients showed no significant changes.

The patients taking the oak wood extract were also found to have a:⁶

- **51%** reduction in sensitivity to noise, foods, medications, and chemicals,
- **38%** reduction in dizziness,
- **58%** reduction in depression,
- **49%** reduction in mood swings,
- **40%** reduction in weight fluctuation,
- **24%** reduction in alcohol intolerance,
- **39%** reduction in allergies, and
- **29%** reduction in visual disturbances.

The participants were then evaluated using a standardized **mood scale**.



WHAT YOU NEED TO KNOW

Oak Wood Relieves Fatigue

- Over 836,000 people in the U.S. may have chronic fatigue syndrome, a debilitating condition with no established treatment. Many people simply feel tired so much of the time that it interferes with their ability to function.
- Scientists have recently shown that compounds in oak wood extract known as roburins can help with the symptoms of chronic fatigue.
- These compounds boost production of ribosomes, our cellular protein factories.
- A standardized French oak wood extract has been shown in clinical trials to significantly alleviate many fatigue-related symptoms caused by a variety of conditions.

Patients taking oak wood extract had significant *reductions* in *negative* items such as feeling gloomy, fed-up, grouchy, sad, or tired.⁶

These patients also reported significant *increases* in *positive* items, like feeling active, happy, peppy, caring, calm, and loving.⁶

On this scale, average overall mood scores in treated subjects rose from **-6.93** at baseline to **+4.32** after six months. For the untreated group, the average score only rose from **-6.5** to **-3.4**.⁶

Alleviating Mononucleosis-Related Fatigue

It's often difficult to pinpoint a cause of fatigue.

But a common one is **infectious mononucleosis**, or "mono."

Though it's most widespread among teenagers, it can strike at any age, and affects older adults with intense symptoms such as fatigue and body pain.¹²

Scientists designed a **clinical study** to specifically evaluate the impact of oak wood on these symptoms.¹³

All enrolled patients had recently experienced an episode of infectious mononucleosis that led to fatigue, high levels of oxidative stress, feelings of unwellness, and diffuse body pain.

For four weeks, all patients received a program of diet and sleep hygiene counseling, along with a multi-vitamin supplement. One group also received **300 mg of oak wood extract** daily.¹³

After four weeks, reductions in fatigue, malaise, body aches, and swollen neck lymph nodes were all significantly lower in the **oak wood extract** group compared to controls. Additionally, participants who received oak wood extract were able to return to normal activities **44%** sooner than controls.

Also, after four weeks, high levels of oxidative stress were present in over **50%** of controls but in only **16.6%** of oak wood extract recipients. Importantly, levels of inflammation-related white blood cells were significantly lower after four weeks in the oak wood extract group, and fewer in the oak wood group had excessive numbers of leukocytes, a specific type of white blood cell.¹³

Targeting Burnout

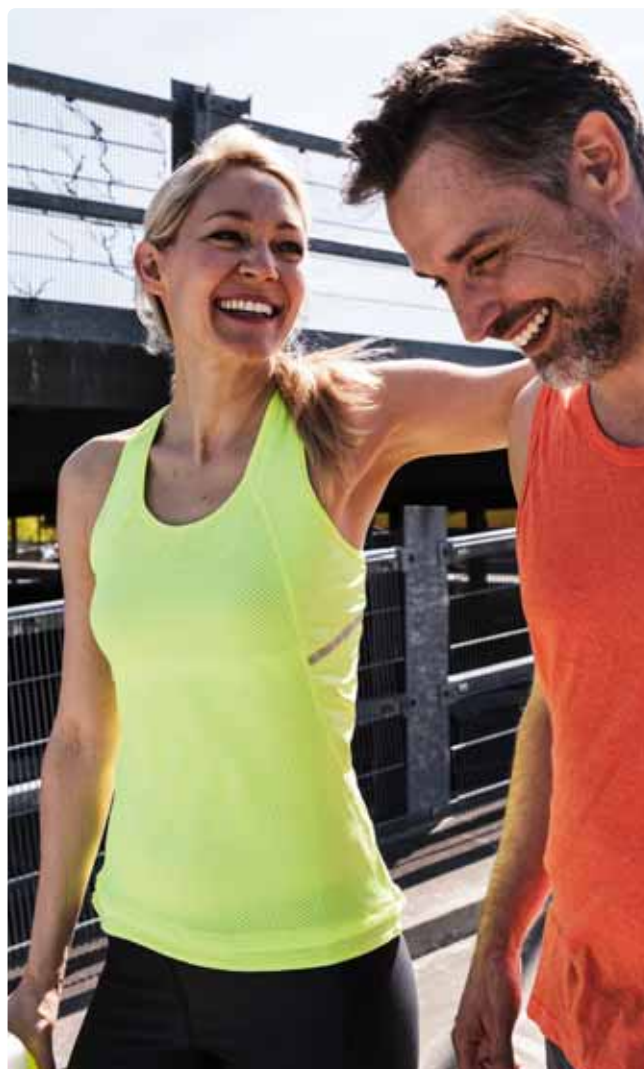
Fatigue and exhaustion are characteristic symptoms of **burnout**, a syndrome resulting from chronic workplace stress.¹⁴

To evaluate the effects of oak wood extract on this condition, scientists selected 108 people with **burnout syndrome**. For four weeks, half of them received **300 mg** of the extract daily, while the others did not. All 108 received dietary counseling, one gram of vitamin C per day, supplemental minerals including magnesium, and electrolyte drinks.¹⁵

The groups taking oak wood extract had improved symptoms. Compared to the untreated group, they showed:¹⁵

- Reduced strain from interactions at work,
- More effectiveness in their work and work relationships,
- Decreased emotional drain and intolerance,
- Decreased need for giving up,
- Higher levels of satisfaction, and
- Greater enthusiasm and interest.

Oxidative stress was also significantly reduced in the treated group.¹⁵



Summary

Roburins from **oak wood** boost production of **ribosomes** needed for cellular protein synthesis.

Daily doses of **200-300 mg of roburins** found in **French oak wood extract** have been shown to improve many **fatigue-related** symptoms and syndromes.

Human studies further demonstrate that this **oak wood extract** can reduce exhaustion, improve sleep, boost mood, and more. •

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

What Is Chronic Fatigue Syndrome?

In 2015, the Institute of Medicine (now called the National Academy of Medicine) proposed an updated set of diagnostic criteria for chronic fatigue syndrome.¹⁶

Three symptoms are required for diagnosis:

- A significant loss of the ability to engage in pre-illness levels of regular activities, that lasts for more than six months and occurs with serious and new-onset fatigue that isn't a result of exertion, and that is not resolved after rest.
- Post-exertional malaise* (PEM) – symptoms get worse after physical, mental, or emotional exertion at levels that, before the illness, would not have been a problem. PEM often causes relapses that can last days, weeks, or longer. In some patients, something as simple as sensory overload (light and sound) can cause PEM. PEM symptoms typically get worse 12 to 48 hours after the activity or exposure.
- Unrefreshing sleep* – patients with CFS may not feel rested or better even after a full night of sleep.

At least one of the following two manifestations must also be present:

- Cognitive impairment* – problems with thinking, memory, attention, coordination, and information processing. Cognitive problems can be made worse by exertion, effort, prolonged upright posture, stress, or time pressure, and may seriously compromise a patient's ability to work or attend school full-time.
- Intolerance of upright posture – certain symptoms get worse with upright posture, which can be measured with vital signs (heart rate and blood pressure, for instance), or head-up tilt testing. These symptoms include lightheadedness, fainting, increased fatigue, worsening of cognitive symptoms, headaches, or nausea. These symptoms improve, not necessarily completely, when lying down.

** These symptoms must be present at least half the time and be of moderate to severe intensity.*

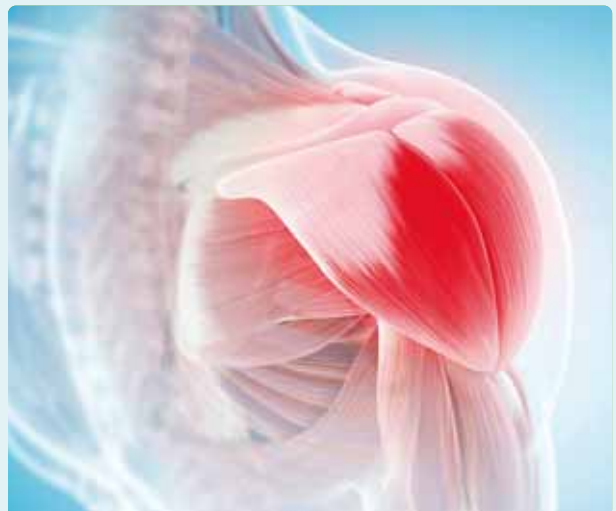
Additional common symptoms include:

- Muscle pain
- Joint pain without swelling or redness
- Headaches of a new type, pattern, or severity
- Swollen or tender lymph nodes in the neck or armpit
- A sore throat that is frequent or recurring
- Chills and night sweats
- Visual disturbances
- Sensitivity to light and sound
- Nausea
- Allergies or sensitivities to foods, odors, chemicals, or medications

Many patients have difficulty working, attending school, exercising, and carrying out daily activities.

Too often, doctors tend to overlook this condition, and up to **80%** of those suffering from chronic fatigue syndrome may not receive an accurate diagnosis. Some physicians even regard its symptoms as largely psychological or imagined.²

No effective drug exists to treat chronic fatigue syndrome. But French oak wood extract provides a safe way to relieve a number of these symptoms, without a prescription.



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^Δ 3-O-acetyl-II-ketoB-boswellic acid.

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|--|------------------|
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* J Agric Food Chem. 2014 Jan 15;62(2):443-53.



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Cancer, Incorporated

Inside Story of Corruption, Greed & Needless Deaths

BY RALPH W. MOSS, PHD



Dr. Ralph Moss is a renowned investigative medical journalist who has been exposing corruption within the cancer industry for over 40 years.

While working at Memorial Sloan-Kettering Cancer Center in the 1970s, he blew the whistle when the favorable results of a plant-based substance were covered up.

He was promptly fired.

Since that time, Moss has written 12 books and countless articles, and been featured on radio, webcasts, and TV shows, including “60 Minutes.”

In his latest book, ***Cancer, Incorporated***, Moss is once again calling attention to the corruption and lies that are the true “cancer” in the cancer industry, including the “revolving door” that exists between “**Big Pharma**” and the **FDA**.

He reveals the inside story of how the pharmaceutical industry has managed to manipulate every aspect of drug development and has bought and paid for good opinions about mediocre drugs by key oncology leaders.

He also provides evidence of how Big Pharma has paid millions to doctors to downplay drug side effects and play up non-existent benefits in rigged clinical trials.

In this interview with ***Life Extension***[®], Moss discusses how Big Pharma has hijacked the clinical-trial system, resulting in a flood of unproven, highly toxic, and outrageously priced drugs that have little to no benefit for the average patient.

—LAURIE MATHENA

LE: Are we making progress in the war against cancer?

Dr. Moss: We are told that steady progress is being made. In particular, it is said that the current system is producing effective ‘targeted’ drugs almost every day. New drugs are bringing a supposed “world without cancer” into view.

This is wishful thinking.

In fact, there is massive deception and manipulation underway, to convince us that steady progress is being made.

This is to get us to continue to consume—in fact, to demand—the products of the pharmaceutical industry, and to keep us from investigating less profitable treatments that could upset the multi-billion-dollar plans and ploys of the drug industry.

LE: What did a study published in the *Journal of Clinical Oncology* reveal about the effectiveness of conventional cancer drugs?

Dr. Moss: The authors reviewed 570 phase II single-agent studies involving over 30,000 patients, that were published between 2010 and 2012. They then looked at the response rates, progression-free survival and overall survival.

When it came to non-personalized cancer treatments, the results in numerous phase II trials were shocking:

1. The median overall response rate (tumor shrinkages) was **10.5%**.
2. The median progression-free survival was 2.7 months.
3. The median overall survival was 8.9 months.

Almost nothing that oncologists did would budge cancer’s stubborn bottom line.

But there was worse news. Even using the most advanced techniques, at some of the world’s finest hospitals, some patients were still dying from the treatment itself.

In these carefully controlled clinical trials, with billions of dollars riding on the outcome, the drug-related death rate on average was **2.3%**. The authors suggested the obvious, that this was “perhaps because of the known adverse effects often accompanying the administration of cytotoxic agents.”

LE: How has Big Pharma changed what it means for a drug to be “effective”?

Dr. Moss: Very few treatments are proven to deliver any actual benefit to cancer patients. That is because they are based on dubious measurements, or what scientists call surrogate endpoints.

The *NCI Cancer Dictionary* defines a surrogate endpoint this way: “In clinical trials, [it is] an indicator or sign used in place of another to tell if a treatment works. Surrogate endpoints include a shrinking tumor or lower biomarker levels. They may be used instead of stronger indicators, such as longer survival or improved quality of life, because the results of the trial can be measured sooner.”

The use of surrogate endpoints may increase the speed and efficiency of getting new drugs to market. But many experts warn that these surrogate endpoints have little or nothing to do with actual patient benefit.

From the beginning, shrinking tumors was not a major goal itself, but simply a convenient tool for tracking a drug’s contribution to the real goal, which is increased overall survival with a good quality of life.

Surrogate endpoints are thus not a sufficient basis for the FDA to approve a new drug. They are not true indicators of how well a treatment works but are in fact



unreliable substitutes that allow drug companies to gain rapid approval of unproven remedies.

LE: Why does Big Pharma rush the approval process, and why does the FDA allow accelerated approvals?

Dr. Moss: In drug development, every month counts.

The profitability of a new drug is based on the company's exploitation of its patents. A patent excludes anyone else from marketing that agent for 20 years. It is a legal monopoly. During that time, according to current U.S. law, one can charge patients whatever the market will bear.

It is not only cheaper to do smaller phase II trials, but such trials are much quicker to perform. A phase II trial generally takes about two years, while a phase III trial can take up to five. So, naturally, companies, and Big Pharma in general, are always trying to shorten the testing period by weakening the FDA's requirements of proof.

It is often claimed that the FDA lowered its standards in order to speed effective new drugs to market. This was the takeaway message from the HIV/AIDS pandemic.

But fewer than half of the cancer drugs it approves actually extend survival, even by as little as one month. The other approvals merely promote the bottom line of Big Pharma, while providing an illusion of effectiveness to patients and doctors.

Since 1992, [the FDA] has given accelerated approval to drugs based on dubious markers of alleged benefit.

Why have they lowered their standards in this way? To quote *MedPageToday*: "The FDA does not make decisions in a vacuum—it is under constant pressure from

Moss Reports

Dr. Ralph Moss is best known for his highly informative **Moss Reports**. These 500+ page documents include expert analysis on 38 of the most common types of cancer.

Each Moss Report covers topics ranging from conventional treatments to alternative treatments, and from naturopathy to supplements. They answer key questions like which hospitals are most experienced in specific kinds of cancer, the best diet for healing your body, and which supplements are the most beneficial.

Moss Reports are updated annually to ensure the most accurate, up-to-date information on the cancer industry.

For more information, visit www.MossReports.com.

politicians, pharmaceutical companies, and advocacy groups to speed up the drug approval process."

LE: How are clinical trials rigged against the older population?

Dr. Moss: Cancer is largely a disease of seniors. At the same time, seniors only represent one third of the adult participants in cancer clinical studies.

What impact does advanced age have on the outcome of trials? Elderly people in a clinical trial are at increased risk of more frequent and severe side effects and are therefore more likely to need delays in their treatment or might even drop out or die.

There is evidence that many cancer drugs do not work as advertised in older patients. For example, a 2018 study of the cancer drug Xeloda found that patients aged 70 years or older experienced more serious adverse effects than younger patients. The drug dosage had to be reduced in one-third of the younger patients versus in **82.5%** of the elderly ones.

In cases like this, the severe side effects of an experimental treatment almost certainly led to the death of

some older participants. Beside the human tragedy, this would depress the survival rate and possibly cause a delay, suspension or cancellation of the trial. Thus, a drug's proponents have a practical reason to keep the elderly out of their trial.

A 2018 study at The Mount Sinai Hospital, New York, found that elderly patients with metastatic bladder cancer who were treated in the community setting did much worse than patients enrolled in a clinical trial. Elderly patients treated in the community setting who were receiving chemotherapy had a survival of 8.5 months. But in the clinical trial, the median overall survival was 18.5 months.

At the very least, one cannot assume that a treatment that was approved based on a younger population will perform as expected in older people.

LE: Of course, there are financial ties between Big Pharma and medical doctors as well. Is anyone keeping tabs on this?

Dr. Moss: For details on payments by Big Pharma to American doctors you need to consult a U.S. government website named Open Payments.

Open Payments keeps track, to the penny, of the money that flows from Big Pharma to doctors and hospitals across the U.S. It makes that information freely available to the general public in an admirably transparent way. So, people who are interested in understanding oncology's relationship to Big Pharma should familiarize themselves with this invaluable site.

Dr. Vinay Prasad has called Big Pharma money paid to doctors "the cancer growing in cancer medicine." He does not exaggerate.

At this time, Open Payments provides information for the years 2013 through 2018. This shows that during this five-year period Big Pharma paid out \$43.22 billion dollars in numerous transactions with American doctors and hospitals.

To be clear, this is not a payment for goods or services in the normal sense. It is mainly for the purchase of goodwill.

LE: Do you have any specific suggestions for rooting out the corruption in the industry?

Dr. Moss: Open up the clinical-trial system. At the present time, as few as **41%** of adult cancer patients even qualify for clinical trials and fewer than **5%** participate. This means that patients in the general population cannot be sure that the results of clinical trials apply to them. By eliminating restrictive admission criteria, the number of potential participants could be greatly increased.

Use overall survival as the main endpoint. Progression-free survival and objective response rates may be useful surrogate endpoints in early stage or exploratory trials. But surrogate endpoints are an insufficient basis for the approval of new cancer drugs. Trials should be

patient-centered and should therefore focus on real benefits.

Withdraw approval of unproven drugs. The FDA should withdraw approval from any drug that has not been proven to actually help people live longer or better. This can be done, as former Commissioner Margaret Hamburg, MD, showed in the case of Avastin for breast cancer. There should be a housecleaning of unproven drugs by the FDA.

End drug industry corruption of the clinical-trial system. Make it illegal for the pharmaceutical industry to offer money to any doctor involved in a clinical trial. Anyone found hiding such payments should be barred from participating in future clinical trials and face criminal charges.

LE: The truth about cancer treatments seems pretty grim.

Dr. Moss: It is not my intention to discourage cancer patients from seeking effective treatments, but I also cannot be silent about Big Pharma's corruption of the oncology profession. Patients and caregivers deserve recommendations that are based on unimpeachable science, and not on research that has been compromised by the shady practices of giant drug companies.

As a patient myself, who has faced life-threatening cancer, I know that hope and morale are very important to one's peace of mind, and possibly to one's recovery as well.

In fact, four years ago, when my highly skilled and dedicated doctors were actively battling my cancer with me, the last thing I wanted to hear was anything negative about my treatment choices. But this story needs to be told.

I sincerely believe that we will never reach that universally desired "world without cancer" unless we root out the corruption that has overtaken much of the leadership of the oncology profession.

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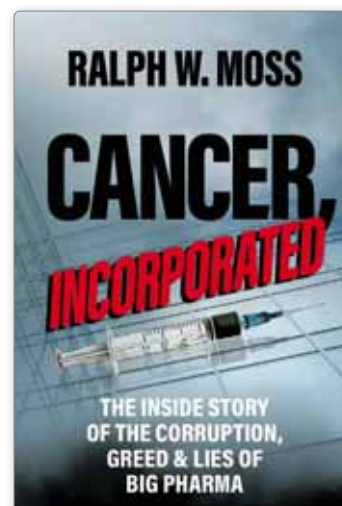
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Grow Fruit & Vegetables in Pots

BY AARON BERTELSEN



STUFFED ARTICHOKEs

Whether you're pinching a few sprigs of oregano to add to pasta sauce, gathering arugula and spinach for a leafy green salad, or simply enjoying cherry tomatoes straight from the vine—there's nothing quite like vine-ripened, freshly picked produce grown in your own garden.

Many people believe they don't have enough space to grow their own fruit and vegetables, but acclaimed gardener Aaron Bertelsen has just published a book showing that there's no place too small to grow your own produce.

Grow Fruit & Vegetables in Pots is a how-to book that gives detailed information on growing produce everywhere, from window boxes, to Juliet balconies, to back patios.

The book provides practical advice on gardening basics (including choosing the correct containers, soil, and equipment), directions on growing specific produce (including tomatoes, eggplant, arugula, basil, and 21 others), and 50 simple recipes that feature those home-grown ingredients.

Growing your own produce allows you to eat seasonally, reduce waste, and include more fruit and vegetables in your daily diet—and Bertelsen shows that it's something anyone can do.

The following pages contain four recipes from *Grow Fruit & Vegetables in Pots*, highlighting fresh ingredients like carrots, seasonal greens, fennel, dill, parsley, and many more.

—LAURIE MATHENA

OVEN-BAKED LENTIL SOUP WITH GREENS

SERVES 6-8

PREPARATION: 10 minutes

COOKING: 1 hour

2 litres/3½ pints (8 cups) chicken stock (broth) (or you could use vegetable stock/broth)

225 g/8 oz (1¼ cups) dried yellow split peas

225 g/8 oz (1¼ cups) dried green or brown lentils

4 carrots (about 450 g/1 lb), scrubbed, trimmed and chopped into 2.5-cm/1-inch pieces

4 celery stalks, chopped into 2.5-cm/1-inch pieces

1 leek, trimmed and chopped into 2.5-cm/1-inch pieces

2 bay leaves

1½ teaspoons ground cumin

½ teaspoon salt

1 teaspoon pepper

large bunch seasonal greens (about 250 g/9 oz), stripped away from any large stems, then sliced

chopped herbs, to garnish

crusty bread and butter, to serve (optional)

Preheat the oven to 180°C/350°F/ Gas Mark 4.

Put the stock (broth), dried peas and lentils, vegetables, bay leaves, cumin, salt and pepper into a large heavy casserole dish (Dutch oven) and stir to combine. Cover and bake in the oven for 1 hour, or until the peas and lentils are tender.



Remove from the oven and fish out and discard the bay leaves. Stir through the seasonal greens until wilted. Just before serving, garnish with chopped herbs, then ladle the soup into warmed soup plates and serve with bread and butter, if desired.

FENNEL, AUBERGINE AND ARTICHOKE CAPONATA

SERVES 4

PREPARATION: 20 minutes

COOKING: 25 minutes

4 tablespoons rapeseed
(canola) oil

½ onion, finely chopped

4 globe artichokes (or 200 g/7 oz
prepared artichoke hearts in
olive oil, drained)

lemon juice, to prevent dis-
colouration (if using fresh
artichokes)

2 cloves garlic, finely chopped

2 spring onions (scallions),
chopped

1 small fennel bulb, trimmed and
thinly sliced

1 aubergine (eggplant), peeled
using a vegetable peeler, then
cut into 1.5-cm/¾-inch dice

3 tomatoes, diced

4 tablespoons canned chopped
tomatoes

4 tablespoons red wine vinegar

2 tablespoons capers, drained
and rinsed

2 tablespoons toasted pumpkin
seeds

1 tablespoon finely chopped basil

1 tablespoon finely chopped flat-
leaf parsley

1 tablespoon finely chopped lemon
thyme

salt and pepper

toasted bread, to serve

Heat the oil in a large frying pan or skillet over medium heat. Add the onion, cover and leave for 10 minutes to sweat down, stirring every so often.

Meanwhile, prepare the globe artichokes, if using. Remove the leaves until only the innermost leaves and hearts remain. (You can keep the outer leaves to steam and then eat with vinaigrette or aioli – delicious.) Trim the stems and hard leaf remnants around the bottoms, and use a vegetable peeler to peel the stems, removing the tough exterior. Chop the hearts in half and use a spoon to remove the hairy chokes. Cut in half again so you are left with quarters of

artichoke heart. If you are not using them immediately, rub with a little lemon juice to stop discolouration.

Add the garlic, spring onions (scallions), fennel, aubergine (eggplant), tomatoes (fresh and canned), artichoke hearts, vinegar, capers and pumpkin seeds to the frying pan with the onion, cover and simmer for 10 minutes, or until all the vegetables are tender but not too soft.

Add the herbs and cook, uncovered, for another 5 minutes to allow the flavours to combine. Season with salt and pepper and serve warm or at room temperature, spooned over toasted bread.



SHAVED FENNEL AND APPLE SALAD WITH SMOKED MACKEREL

SERVES 2

PREPARATION: 15 minutes,
plus cooling

COOKING: 10 minutes

75 g/3 oz (½ cup) whole almonds,
with skins on

grated zest and juice of 1 lemon

2 small fennel bulbs, trimmed and
thinly sliced

2 apples, cored and diced

1 tablespoon capers, coarsely
chopped

1 bunch dill, coarsely chopped

1 bunch flat-leaf parsley, coarsely
chopped

175 g/6 oz smoked mackerel fillets

FOR THE VINAIGRETTE

1 tablespoon (apple) cider vinegar

juice of 1 lemon

1-2 tablespoons Dijon mustard

4 tablespoons olive oil

¼ teaspoon sugar

salt and pepper

Preheat the oven to 180°C/350°F/
Gas Mark 4.

Put the almonds into a small roasting pan with the lemon zest and juice. Place in the oven and roast until the nuts are browned, about 10 minutes. Let cool, then coarsely chop.



Make the vinaigrette. Whisk together the vinegar, lemon juice, mustard, oil and sugar in a small bowl. Season with salt and pepper, and add a little more lemon juice or mustard, to taste.

Put the chopped almonds, fennel, apples, capers, dill and parsley into a bowl. Break up the mackerel fillets into chunks and add to the salad. Pour over the vinaigrette, toss gently and serve.

STUFFED ARTICHOKEs

SERVES 6

PREPARATION: 20 minutes

COOKING: 30-35 minutes

6 large globe artichokes
juice of 1 lemon
100 g/3½ oz (1 cup) dried bread crumbs (preferably made with sourdough bread)
4 cloves garlic, finely chopped
good handful flat-leaf parsley, chopped
100 ml/3½ fl oz (scant ½ cup) white wine
good glug (1–2 tablespoons) of olive oil
200 g/7 oz podded (shelled) broad (fava) beans (½ cup prepared)
200 g/7 oz podded (shelled) peas (½ cup prepared)
salt and pepper

Wash the artichokes and remove the stems – you're trying to create a stable bottom so they can stand up when you put them in the pan. Slice about 2.5 cm/1 inch off the top of each artichoke, then use a spoon to scoop out its hairy choke.

Put the artichokes into a large pan of water with half the lemon juice. Bring to a boil, then reduce the heat and simmer for 7–10 minutes for younger chokes, longer for older ones. Test for doneness with a fork: the choke should be firm but soft. Drain. (The cooking liquid is useful as a base for stock/ broth or can be drunk for its health benefits.)

Meanwhile, prepare the filling. Put the breadcrumbs, garlic and parsley in a bowl with the wine, oil and the remaining lemon juice. Season well with salt and pepper and mix together thoroughly.

Place the artichokes upright in a shallow pan, making sure they are packed in snugly. Stuff the breadcrumb mix in between the leaves and also between the chokes themselves, packing it down.

Blanch the broad (fava) beans in a separate pan of boiling water for 3 minutes, then drain. When they are cool enough to handle, slip off the outer skins and mix with the peas. Stuff the bean and pea mixture in and around the artichokes.

Half-fill the pan with water (so the artichokes are half immersed) and place over low heat. Partially cover the pan and simmer for about 20 minutes, checking regularly that there is enough water that the chokes don't burn. The breadcrumbs will absorb the water, while the beans and peas steam.

Preheat the grill (broiler) to high. Using a slotted spoon, transfer the artichokes to a heatproof dish and grill for 10 minutes, or until the breadcrumbs are lightly browned.

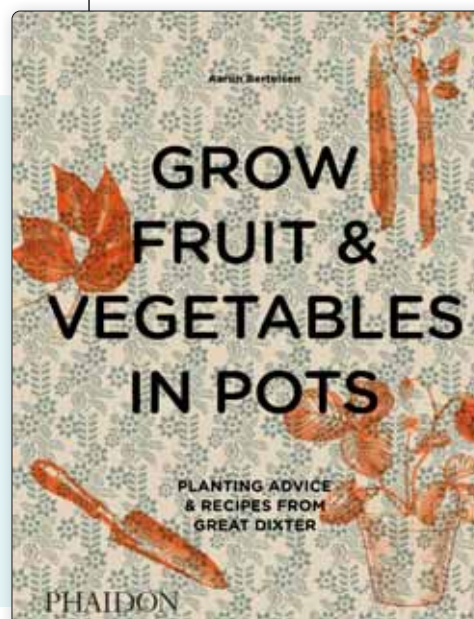
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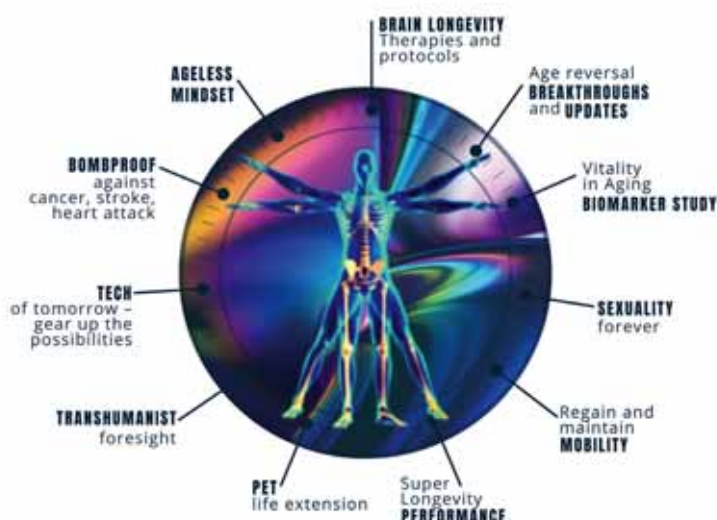
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Oregano

BY LAURIE MATHENA



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



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- 02004 Arterial Protect
- 70000 Blood Pressure Monitor Arm Cuff
- 70004 Blood Pressure Monitor Digital Wrist Cuff
- 02497 Endothelial Defense™ Pomegranate Plus
- 02320 NitroVasc™ Boost
- 00984 Optimal BP Management
- 01953 Pomegranate Complete
- 00956 Pomegranate Fruit Extract
- 02024 Triple Action Blood Pressure AM/PM
- 02102 VenoFlow™

BONE HEALTH

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

BRAIN HEALTH

- 01524 Acetyl-L-Carnitine
- 01974 Acetyl-L-Carnitine Arginate
- 01659 Citicoline® (CDP-Choline)
- 02321 Cognitex® Basics
- 02396 Cognitex® Elite
- 02397 Cognitex® Elite Pregnenolone
- 01540 DMAE Bitartrate (dimethylaminoethanol)
- 02006 Dopa-Mind™
- 02212 Focus Tea™
- 01658 Ginkgo Biloba Certified Extract™
- 01527 Huperzine A

- 00020 Lecithin Granules
- 02101 Memory Protect
- 00709 Migra-Eeze™
- 01603 Neuro-Mag® Magnesium L-Threonate Caps
- 02032 Neuro-Mag® Magnesium L-Threonate Powder
- 00888 Optimized Ashwagandha Extract
- 01676 PS (Phosphatidylserine) Caps
- 02406 Quick Brain Nootropic
- 01327 Vinpocetine

CHOLESTEROL MANAGEMENT

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

DIGESTION SUPPORT

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

ENERGY MANAGEMENT

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

EYE HEALTH

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

FISH OIL & OMEGAS

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

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

FOOD

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

GLUCOSE MANAGEMENT

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

HEART HEALTH

- 01066 Aspirin (Enteric Coated)
- 01842 BioActive Folate & Vitamin B12 Caps
- 01700 Cardio Peak™ with Standardized Hawthorn and Arjuna
- 02121 Homocysteine Resist
- 02018 Optimized Carnitine
- 01949 Super-Absorbable CoQ10 Ubiquinone with *d*-Limonene • 50 mg, 60 softgels
- 01951 Super-Absorbable CoQ10 Ubiquinone with *d*-Limonene • 100 mg, 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 (Dehydroepiandrosterone) 15 mg, 100 capsules
- 00335 DHEA (Dehydroepiandrosterone) 25 mg, 100 capsules
- 00882 DHEA (Dehydroepiandrosterone) 50 mg, 60 capsules
- 00607 DHEA (Dehydroepiandrosterone) 25 mg, 100 tablets (dissolve in mouth)
- 01689 DHEA (Dehydroepiandrosterone) 100 mg, 60 veg capsules
- 02368 Optimized Broccoli and Cruciferous Blend
- 00302 Pregnenolone • 50 mg, 100 capsules
- 00700 Pregnenolone • 100 mg, 100 capsules
- 01468 Triple Action Cruciferous Vegetable Extract
- 01469 Triple Action Cruciferous Vegetable Extract with Resveratrol

IMMUNE SUPPORT

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

INFLAMMATION MANAGEMENT

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

JOINT SUPPORT

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

KIDNEY & BLADDER SUPPORT

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

LIVER HEALTH & DETOXIFICATION

- 01922 Advanced Milk Thistle • 60 softgels
- 01925 Advanced Milk Thistle • 120 softgels
- 02240 Anti-Alcohol HepatoProtection Complex
- 01651 Calcium D-Glucarate
- 00550 Chlorella
- 01571 Chlorophyllin
- 01522 Milk Thistle • 60 veg capsules
- 02402 FLORASSIST® Liver Restore™
- 01541 Glutathione, Cysteine & C
- 01393 HepatoPro
- 01608 Liver Efficiency Formula
- 01534 N-Acetyl-L-Cysteine

00342 PectaSol-C® Modified Citrus Pectin Powder
01080 PectaSol-C® Modified Citrus Pectin Capsules
01884 Silymarin
02361 SOD Booster

LONGEVITY & WELLNESS

00457 Alpha-Lipoic Acid
01625 AppleWise Polyphenol Extract
01214 Blueberry Extract
01438 Blueberry Extract with Pomegranate
02270 DNA Protection Formula
02119 GEROPROTECT® Ageless Cell™
02133 GEROPROTECT® Longevity A.I.™
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
01637 Pycnogenol® French Maritime Pine Bark Extract
02210 Resveratrol
00070 RNA (Ribonucleic Acid)
02301 Senolytic Activator
01208 Super R-Lipoic Acid
01919 X-R Shield

MEN'S HEALTH

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

MINERALS

01661 Boron
02107 Extend-Release Magnesium
30731 Ionic Selenium
01677 Iron Protein Plus
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

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

MULTIVITAMINS

02199 Children's Formula Life Extension Mix™
02498 Comprehensive Nutrient Packs ADVANCED
02354 Life Extension Mix™ Capsules
02364 Life Extension Mix™ Capsules without Copper
02356 Life Extension Mix™ Powder
02355 Life Extension Mix™ Tablets
02357 Life Extension Mix™ Tablets with Extra Niacin
02365 Life Extension Mix™ Tablets without Copper
02292 Once-Daily Health Booster • 30 softgels
02291 Once-Daily Health Booster • 60 softgels
02313 One-Per-Day Tablets
02317 Two-Per-Day Capsules • 60 capsules
02314 Two-Per-Day Capsules • 120 capsules
02316 Two-Per-Day Tablets • 60 tablets
02315 Two-Per-Day Tablets • 120 tablets

NERVE & COMFORT SUPPORT

02202 ComfortMAX™
02303 PEA Discomfort Relief

PERSONAL CARE

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

PET CARE

01932 Cat Mix
01931 Dog Mix

PROBIOTICS

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

SKIN CARE

80157 Advanced Anti-Glycation Peptide Serum
80165 Advanced Growth Factor Serum
80170 Advanced Hyaluronic Acid Serum
80154 Advanced Lightening Cream
80155 Advanced Peptide Hand Therapy
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
80153 Anti-Aging Rejuvenating Scalp Serum
80176 Collagen Boosting Peptide Cream

80156 Collagen Boosting Peptide Serum
 80169 Cucumber Hydra Peptide Eye Cream
 80141 DNA Support Cream
 80167 Environmental Support Serum
 80163 Eye Lift Cream
 80123 Face Rejuvenating Anti-Oxidant Cream
 80109 Hyaluronic Facial Moisturizer
 80110 Hyaluronic Oil-Free Facial Moisturizer
 80138 Hydrating Anti-Oxidant Facial Mist
 00661 Hydroderm
 80103 Lifting & Tightening Complex
 80168 Melatonin Advanced Peptide Cream
 80114 Mild Facial Cleanser
 80172 Multi Stem Cell Hydration Cream
 80159 Multi Stem Cell Skin Tightening Complex
 80122 Neck Rejuvenating Anti-Oxidant Cream
 80174 Purifying Facial Mask
 80150 Renewing Eye Cream
 80142 Resveratrol Anti-Oxidant Serum
 01938 Shade Factor™
 02129 Skin Care Collection Anti-Aging Serum
 02130 Skin Care Collection Day Cream
 02131 Skin Care Collection Night Cream
 80166 Skin Firming Complex
 02096 Skin Restoring Ceramides
 80130 Skin Stem Cell Serum
 80164 Skin Tone Equalizer
 80143 Stem Cell Cream with Alpine Rose
 80148 Tightening & Firming Neck Cream
 80161 Triple-Action Vitamin C Cream
 80162 Ultimate MicroDermabrasion
 80173 Ultimate Peptide Serum
 80160 Ultra Eyelash Booster
 80101 Ultra Wrinkle Relaxer
 80113 Under Eye Refining Serum
 80104 Under Eye Rescue Cream
 80171 Vitamin C Lip Rejuvenator
 80129 Vitamin C Serum
 80136 Vitamin D Lotion
 80102 Vitamin K Cream

SLEEP

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

VITAMINS

01533 Ascorbyl Palmitate
 00920 Benfotiamine with Thiamine
 00664 Beta-Carotene
 01945 BioActive Complete B-Complex
 00102 Biotin
 00084 Buffered Vitamin C Powder
 02229 Fast-C® and Bio-Quercetin Phytosome
 02075 Gamma E Mixed Tocopherol Enhanced with
 Sesame Lignans
 02070 Gamma E Mixed Tocopherol/Tocotrienols
 01913 High Potency Optimized Folate
 01674 Inositol Caps Liquid Emulsified
 02244 Liquid Vitamin D3 • 2,000 IU, 1 fl oz
 02232 Liquid Vitamin D3 • 2,000 IU, 1 fl oz, mint
 01936 Low-Dose Vitamin K2
 01536 Methylcobalamin • 1 mg, 60 veg lozenges
 01537 Methylcobalamin • 5 mg, 60 veg lozenges
 00065 MK-7
 00373 No Flush Niacin
 01939 Optimized Folate (L-Methylfolate)
 01217 Pyridoxal 5'-Phosphate Caps
 01400 Super Absorbable Tocotrienols
 02334 Super K
 02335 Super K Elite
 01863 Super Vitamin E
 02028 Vitamin B5 (Pantothenic Acid)
 01535 Vitamin B6
 00361 Vitamin B12
 02228 Vitamin C and Bio-Quercetin Phytosome
 1,000 mg, 60 veg tablets
 02227 Vitamin C and Bio-Quercetin Phytosome
 1,000 mg, 250 veg tablets
 01753 Vitamin D3 • 25 mcg (1,000 IU), 90 softgels
 01751 Vitamin D3 • 25 mcg (1,000 IU), 250 softgels
 01713 Vitamin D3 • 125 mcg (5,000 IU), 60 softgels
 01718 Vitamin D3 • 175 mcg (7,000 IU), 60 softgels
 01758 Vitamin D3 with Sea-Iodine™
 02040 Vitamins D and K with Sea-Iodine™

WEIGHT MANAGEMENT & BODY COMPOSITION

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

WOMEN'S HEALTH

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

Immune Senescence Protection Formula

SUPPORT YOUR AGING
IMMUNE SYSTEM

Three natural plant extracts—**Cistanche**, **Pu-erh Tea**, and **Reishi Mushroom**—have been shown to support more youthful immune function.

Cistanche

- Supports longer lifespan in animals.¹
- Optimizes ratios for key cells that indicate a more youthful immune system.¹

Pu-erh Tea

- Boosts natural killer and naïve T cells while decreasing interleukin-6 (IL-6).²

Reishi

- Helps reduce biomarkers of immune senescence.³



Item #02005 • 60 vegetarian tablets

1 bottle **\$28.50**

2 bottles \$26.50 each



References

1. *Anti-Aging Med.* 2011;8(2):7-14.
2. *Food Chem.* 2012 Dec 15;135(4):2222-8.
3. *Am J Chin Med.* 2011;39(1):15-27.

For full product description and to order **Immune Senescence Protection Formula™**, call 1-800-544-4440 or visit www.LifeExtension.com

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

NEW PROBIOTIC BLEND FOR EVEN BETTER INTESTINAL HEALTH

DUAL ENCAPSULATION
DELIVERY



FORTIFY YOUR INTESTINAL FLORA

FLORASSIST® GI with Phage Technology now provides **seven** strains of probiotics *plus* **four** types of *phages* in one daily **dual encapsulated** vegetarian capsule.

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Item #02125 • 30 liquid vegetarian capsules
1 bottle **\$24.75**
4 bottles \$22.50 each





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