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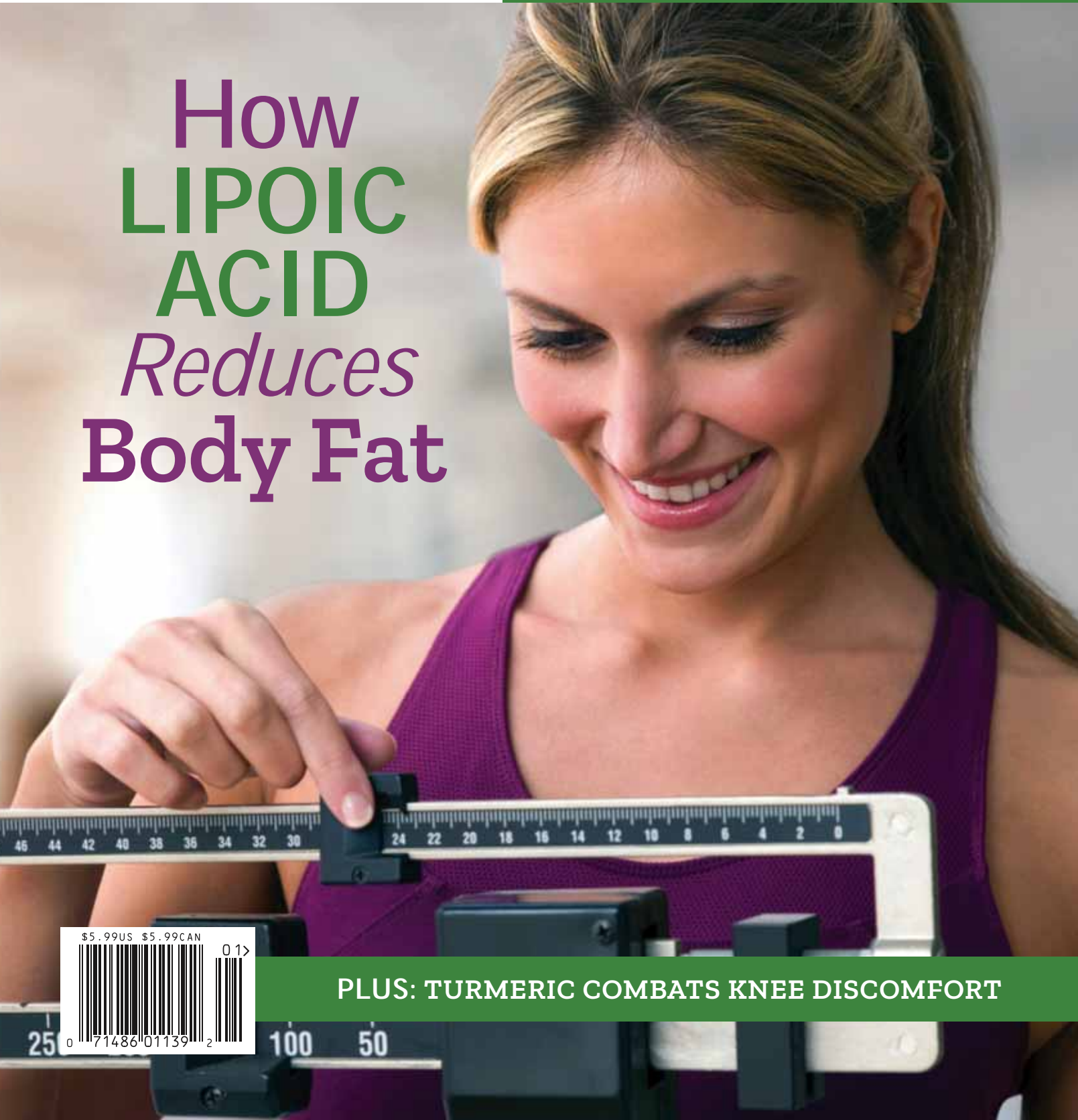
LifeExtension.com

January 2021

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HEALTH BENEFITS of 5% WEIGHT LOSS



WILLIAM FALOON



The article on page 24 of this month's issue describes a 2020 published study on the **weight loss** effects of R-lipoic acid.

At the end of the 24-week trial, **26%** of the participants using **R-lipoic acid** experienced at least a **5%** decline in body weight, with no changes in diet or physical activity.¹

Women experienced an average **6.5% reduction** in **body fat** and average **weight loss** of **3.2%**.¹

While this may not appear significant, the **health benefits** of a **5%-10%** weight loss are well established.

Improvements in **blood pressure**, **glucose**, **triglyceride**, and other disease risk measures occur in response to modest **weight loss**.^{2,3}

Aging is accompanied by buildup of **body fat** that accumulates over decades. Overweight and obese individuals often want solutions that do not yet exist.

Most readers of *Life Extension*[®] magazine correct one obesity factor by boosting cellular **AMPK** using supplements like *Gynostemma* extract and/or drugs like **metformin**.

Multi-modal approaches are often needed to achieve desired biological results.

This editorial describes additional fat loss approaches that also improve healthy longevity measures such as chronic inflammation.

DHEA and 7-Keto DHEA

DHEA is an adrenal hormone that declines with advancing age.

Low DHEA levels have been correlated with **higher** body weight and percent body fat.⁴ **DHEA restoration** can improve body composition and fat tissue distribution.^{5,6}

An analysis of four clinical trials found DHEA supplementation increased preservation of bone and muscle mass in aging women.⁷

One randomized controlled trial of **obese** postmenopausal women found that taking **100 mg** of a form of **DHEA** daily for three months resulted in greater **weight loss** and reductions in **waist circumference**, blood glucose levels, blood pressure, and other metabolic parameters.⁸

In a randomized controlled trial of 125 elderly men and women, **50 mg** of DHEA daily for two years lowered **visceral fat** mass, improved glucose tolerance, and decreased levels of inflammatory cytokines.⁹

Another trial found **50 mg** DHEA each day for six months led to reduced **abdominal fat** and improved insulin sensitivity.¹⁰

7-Keto DHEA is a metabolite of DHEA that has been suggested to have thermogenic properties that could increase energy expenditure.¹¹

In overweight subjects maintained on a calorie-restricted diet, seven days of treatment with **7-Keto DHEA** increased resting energy expenditure by **1.4%** (equivalent to an extra **115 calories** burned per day). Calorie-restricted subjects taking placebo saw their resting energy expenditure decrease by **3.9%**.¹²

When people go on diets, the reduced calorie intake can cause their cells to conserve energy. This decrease in **resting energy expenditure** impedes **weight loss** as cells hold on to stored **fat**. In this **7-keto DHEA** study, **resting energy expenditure** increased in people on a **calorie-restricted** diet.



In another randomized controlled trial, overweight volunteers taking **100 mg** of **7-Keto DHEA** twice daily lost more **weight** and **body fat** than the placebo group (**6.3 pounds** versus **2.2 pounds** taking placebo). Percent body fat was reduced **1.8%** in the **7-keto** group compared to **0.57%** in the placebo arm of the study.¹³

DHEA is taken by most readers of **Life Extension**[®] magazine in moderate doses (**25 mg/day**) based on its potential longevity benefits. To emulate published weight loss studies, **higher** doses of **DHEA (50-100 mg/day)** or **7-keto DHEA (100 mg twice daily)** may be considered.

DHEA has demonstrated a myriad of beneficial effects including reduced **inflammation**. Chronic inflammation contributes to numerous degenerative diseases.^{9,14-17}

Modest Effects of Green Tea

Green tea is rich in **polyphenols** and is well known for its **anti-inflammatory** effects.^{18,19}

Meta-analyses and reviews of randomized controlled trials indicate **green tea extract** may have a small, positive impact on body weight and fat mass in overweight and obese adults.²⁰⁻²³ The best results have been reported for those taking green tea extracts for at least 12 weeks.²¹

Thyroid Hormones Regulate Energy Expenditure

As we age, **hormone** levels undergo radical changes that contribute to accumulation of excess **body fat**.

Those with underactive **thyroid** hormones can gain weight even when reducing their calorie intake.

If a **blood test** reveals a **thyroid deficit**, this can be corrected with prescription medications like Cytomel[®] or Armour[®].

Underactive thyroid contributes to a host of problems including fatigue, depression, and elevated **LDL cholesterol**.

Effects of Intermittent Fasting in People:

IMPROVEMENTS IN THESE KEY HEALTH INDICES

- Abdominal fat • Blood pressure
- Stress resistance • Glucose regulation
- Heart rate • Endurance
- Cognition • Inflammation

The New England Journal of Medicine, Dec. 26, 2019²⁸



Green tea extracts inhibit activities of several digestive enzymes, potentially reducing the breakdown and absorption of **sugars** and **fats** from the intestines.²⁴

In addition, green tea has been shown to enhance the effects of exercise on fat burning.²⁵

Clinical trials using **green tea extracts** alone to achieve meaningful weight loss have been disappointing, but its many health benefits make it a good choice to consume before most meals to increase energy expenditure and slow carbohydrate absorption.^{20,26,27}

Intermittent Fasting

A review article in the **December 26, 2019** issue of the *New England Journal of Medicine* described a way to reduce **abdominal fat** that simultaneously improves virtually every measure of disease risk.²⁸

The box on the top of this column summarizes **human** benefits of **intermittent fasting** reported in the *New England Journal of Medicine*.

These robust benefits were not found in a study published **September 28, 2020** in the *Journal of the American Medical Association (JAMA)*.²⁹

This JAMA-published study was designed to examine the effects of intermittent fasting on weight loss and metabolic risk markers.

The intermittent fasting group in this trial lost a little weight over 12 weeks, while the three meal/day control group did not lose a statistically significant amount of weight. This study did not find a significant effect on metabolic risk markers.²⁹

We've identified reasons why the *JAMA*-published trial did not find the metabolic benefits reported in a review article published just 10 months earlier in the *New England Journal of Medicine*.

What we've long known about **time-restricted eating** (intermittent fasting) is that it does not induce much weight loss in those who do not also reduce their overall **calorie intake**.

The preponderance of published evidence supports the benefits of **intermittent fasting**, including improved glycemic markers such as **fasting insulin**, which can impede weight loss when elevated.³⁰⁻³²

Reducing Fasting Insulin

With age, our cells tend to become **resistant** to insulin, causing blood **glucose** and **insulin** to rise.

High blood insulin is associated with the development of **abdominal obesity** and cardiovascular problems that include **atherosclerosis**.^{33,34} Similarly, obesity is associated with excess insulin and reduced insulin sensitivity, both risk factors for **type II diabetes**.³⁵

The box at the top of the next page describes human benefits of **intermittent fasting** with one study showing a remarkable **57% decrease** in **fasting insulin** blood levels.²⁸

Improvements In Human Health in Response to Intermittent Fasting²⁸

HUMAN STUDIES SHOW REDUCED:³⁶

**Obesity • Dyslipidemia
Hypertension • Inflammation
Insulin resistance**

**ONE STUDY FOUND A 57% DECREASE
IN FASTING INSULIN LEVELS³⁷**

The New England Journal of Medicine, Dec. 26, 2019

How I Time Restrict on Most Days

Experts in the field of **intermittent fasting** suggest that a fasting window of **16-18 hours** most days can yield health benefits.

This is easy for me because I sleep away the first 8 hours of fasting and then wake up to plain tea or coffee to sip for the next 8-10 hours of non-stop work.

I've been doing this for over three years and the most striking result is my LDL/HDL ratio has inverted whereby my **HDL** is **higher** than **LDL** on recent blood tests.

Thirty years ago, my LDL was high (**160 mg/dL**) and HDL not particularly good.

The anti-aging strategies I've engaged in have helped me reverse this.

I've also been able to get off a blood pressure drug (telmisartan) in response to **NAD⁺** restoration and time-restricted eating on most days.

Back in **2002**, my systolic blood pressure reached **150 mmHg** and I initiated anti-hypertensive drug therapy. I no longer need this blood pressure drug.

As you can see by the chart at the end of this article, **blood pressure** normally increases as people age.

And as you might expect, my abdominal fat mass shrank **eight inches** in response to everything I have done since around **1998** to slow aging.

Those challenged to fully engage in **intermittent fasting** may find **nutrient cocktails** that can provide **similar** benefits as those described next.

Nutrients That Mimic Calorie Restriction

A study published in **February 2020** evaluated the effects of a cocktail of nutrients that **Life Extension[®]** readers take, such as:⁴⁰

- Omega-3s
- CoQ10
- Quercetin
- Resveratrol
- Vitamins D and K
- Lycopene
- Lutein
- Astaxanthin
- Citrus bioflavonoids
- Anthocyanins
- Lipoic acid

The purpose was to assess if this **nutrient** blend could mimic the beneficial effects of **calorie restriction** in mouse tissue and *C. elegans* models of aging.

In response to this **nutrient cocktail**, there were genetic-RNA coding changes in the heart, skeletal muscle and brain tissue from mice that mimicked those observed in the **calorie restricted** group.

Even more important, the *C. elegans* organisms receiving the **nutrient blend** had increased longevity and vitality analogous to the **calorie-restricted** group.

These findings provide some hope for those who find it difficult or intimidating to fast for 14-18 hours a day.

I am doing both (nutrients + intermittent fasting) to stay alive longer.

THE NEW ENGLAND JOURNAL OF MEDICINE STATES:

"Evidence is accumulating that eating in a 6-hour period and **fasting for 18 hours** can trigger a metabolic switch from glucose-based to ketone-based energy, with increased stress resistance, increased longevity, and a decreased incidence of diseases, including cancer and obesity."²⁸

Manage Your Expectations

On **January 1, 2021** millions of Americans will make a resolution to **lose weight** to improve their health and appearance.

Most people expect unrealistic results in response to whatever program they engage in. When the pounds don't quickly come off, most resume calorie overconsumption.

The article on page 24 describes the weight loss findings that occurred in people supplementing with **R-lipoic acid**, who were not advised to alter their diet and physical activity level.¹

I suggest that those seeking to shed **fat pounds** engage in some form of time restricted eating most days (14-18 hours), increase physical activity, supplement about **240 mg of R-lipoic acid** twice a day and consider increasing intake of **DHEA** or **7-keto DHEA** and *green tea*.

Don't expect immediate results, as the study published in **July 2020** showing **weight loss** in response to **R-lipoic acid** lasted 24 weeks.

I suggest making a New Year's resolution to cut out a few surplus calories, increase physical activity, and consider some form of time-restricted eating for potential lifesaving benefits.

Managing your weight loss expectations will enable more of you to stick with a program that may add many healthy years.

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William Faloon, Co-Founder
Life Extension Buyers Club



Severity of Hypertension Epidemic

"Uncontrolled **blood pressure** can lead to coronary artery blockage and stroke, as well as kidney disease, heart failure, and cognitive decline."³⁹

Journal of the American Medical Association (JAMA), October 7, 2020

As you can see from the chart below, most people over age 50 have high blood pressure:

PREVALENCE OF HYPERTENSION

Men aged 40-59	59.4%
Men aged 60 and over	75.2%
Women aged 40-59	49.9%
Women aged 60 and over	73.9%

SOURCE: NCHS, National Health and Nutrition Examination Survey, 2017–2018³⁸

Even modest **weight loss** can lower **blood pressure** to safer ranges.

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In the News



Turmeric Can Help Relieve Knee Pain

Pain due to osteoarthritis of the knee may be relieved with turmeric, according to the results of a randomized trial published in the journal *Annals of Internal Medicine*.*

The researchers noted that current pharmacologic therapies, including acetaminophen and non-steroidal anti-inflammatory drugs, are associated with adverse gastrointestinal, renal, and cardiovascular effects.

The trial included 70 participants with symptomatic knee osteoarthritis and swelling within the knee joint. They received either turmeric or a placebo for 12 weeks. Knee pain was assessed by responses to questionnaires, and swelling was monitored with magnetic resonance imaging (MRI) during the course of the study.

By the end of the trial, turmeric supplementation was associated with improvements in weight-bearing and non-weight-bearing knee pain, stiffness, function, and need for pain medication intake, compared with the placebo group.

Editor's Note: Turmeric is an extract of the root of *Curcuma longa*, a source of the compound curcumin.

* *Ann Int Med.* 2020 Sep 15.

Vitamin C May Help Preserve Muscle Mass

An association was found between *higher* intake of vitamin C and greater skeletal muscle mass in older men and women, according to an article published in the *Journal of Nutrition*. Loss of muscle mass that occurs during aging can lead to sarcopenia and diminished quality of life.*

The study included over 13,000 participants in the Norfolk cohort of the European Prospective Investigation into Cancer and Nutrition study.

Skeletal muscle mass was estimated using bioelectrical impedance analysis. Blood samples were analyzed for plasma vitamin C levels, and food diaries completed by the subjects provided information concerning vitamin C intake.

“We studied a large sample of older Norfolk residents and found that people with the highest amounts of vitamin C in their diet or blood had the *greatest* estimated skeletal muscle mass, compared to those with the lowest amounts,” reported coauthor Richard Hayhoe, PhD, Senior Research Associate in Public Health Nutrition at the University of East Anglia, in the United Kingdom.

Editor’s Note: “This is particularly significant as vitamin C is readily available in fruits and vegetables, or supplements, so improving intake of this vitamin is relatively straightforward,” Dr. Hayhoe said. “We found that nearly **60%** of men and **50%** of women participants were not consuming as much vitamin C as they should, according to the European Food Safety Agency recommendations.”

* *J Nutr.* 2020 Aug 26.





Fish Oil Linked to Lower Risk of Cardiovascular Disease and Premature Mortality

A lower risk of premature mortality and cardiovascular disease events was found among people who supplemented with fish oil, compared with those who didn't, reported a study published in *The BMJ*.*

The study included 427,678 subjects who enrolled in UK Biobank between 2006 and 2010. They completed questionnaires at the beginning of the study, providing information concerning supplement use, and other data. Hospital records and death certificates documented their mortality during follow-up, which concluded at the end of 2018.

At enrollment, **31%** of the subjects said they used fish oil. During follow-up, fish oil users had a **7%** lower adjusted risk of experiencing cardiovascular events, a **16%** lower risk of cardiovascular disease mortality, a **20%** lower mortality risk from heart attack, and a **13%** lower risk of dying from any cause, compared to those who did not use fish oil.

Editor's Note: The authors stated that omega-3 fatty acids in fish oil have shown beneficial effects on blood pressure, triglycerides, heart rate, endothelial function, inflammation, and blood clotting, as well as help in protecting against cardiac arrhythmias. "Fish oil supplementation could be an inexpensive, quick, safe way of increasing an individual's omega-3 fatty acid intake," they asserted.

* *BMJ* 2020;368:m456.

Melatonin's Potential Benefits Against Aggressive Brain Tumors

A study published in the journal *Cells* investigated the effects of melatonin—both alone and in combination with anticancer drugs—against glioblastoma.*

Glioblastoma is a type of aggressive brain tumor that is exceptionally challenging to treat. Average life expectancy is less than one year after diagnosis.

Researchers found that melatonin has numerous properties against glioblastoma cells. It interacts with cancer cells and interferes with glioblastoma proliferative activity and aggressiveness.

In vitro studies suggested that using melatonin in combination with the standard therapy, TMZ (temozolomide), could enhance the drug's cytotoxic effects against the cancer and help decrease the dosage required. This could reduce side effects and improve quality of life.

Editor's note: The researchers concluded that melatonin has an impressive variety of properties against glioblastoma, and that it is "a promising agent in the field of antineoplastic research."

* *Cells*. 2020;9(3):599.





Cardiovascular Benefits of High-Dose Omega-3s

A study published in *Mayo Clinic Proceedings* shows the cardiovascular benefits of taking higher doses of omega-3 polyunsaturated fatty acids.*

This meta-analysis, which involved 40 interventional studies and included over 135,000 patients, evaluated the effect of two types of omega-3s—EPA and DHA—on the prevention of cardiovascular disease.

The researchers found that EPA plus DHA supplementation was associated with:

- **35%** reduced risk of **fatal** myocardial infarction
- **13%** reduced risk of myocardial infarction
- **10%** reduced risk of coronary heart disease events
- **9%** reduced risk of coronary heart disease mortality

The higher the dose, the greater the protection.

For example, an extra **1,000 mg** of EPA and DHA per day decreased the risk of cardiovascular disease by **5.8%** and of heart attack by **9%**.

Editor's Note: The study authors concluded, "The current study presents strong evidence that EPA+DHA supplementation is an effective strategy for the prevention of certain [cardiovascular disease] outcomes, and that for [cardiovascular disease] events and [myocardial infarction] the protective effect appears to increase with dosage. Authoritative bodies issuing intake recommendations and health care providers need to consider taking these results into account. Considering the relatively low costs and side effect profiles of omega-3 supplementation and the low drug-drug interactions with other standard therapies used in primary and secondary [cardiovascular disease] prevention, clinicians and patients should consider the potential benefits of omega-3 (EPA/DHA) supplementation."

* *Mayo Clinic Proceedings*. September 17, 2020.

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Caution: Temporary flushing, itching, rash, or gastric disturbances may occur.

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

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

For full product description and to order **DHEA supplements**, call **1-800-544-4440** or visit **www.LifeExtension.com**



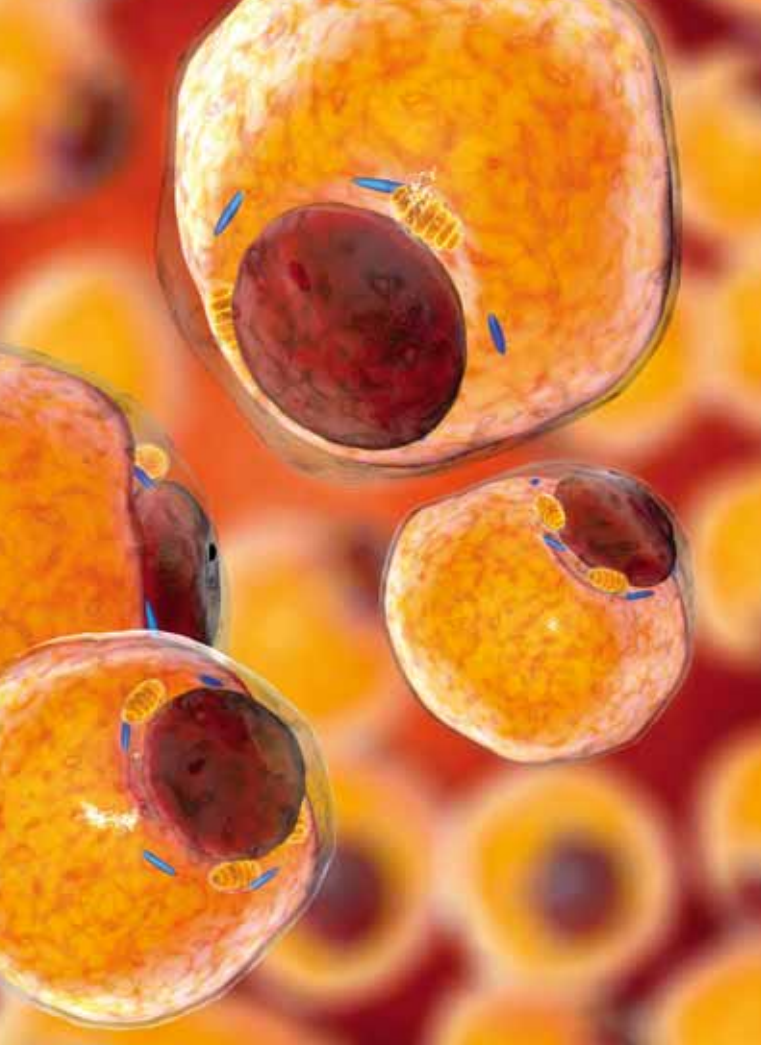
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Weight Loss Using R-LIPOIC ACID

BY ROSS STOKES





Losing weight is rarely easy.

But a recently published study found that a compound called **lipoic acid** reduced weight and total body fat in overweight/obese adults, with no changes in diet or physical activity.¹

This new study used the biologically active form known as **R-lipoic acid**. The doctors found that **26%** of the participants experienced at least a **5%** decline in body weight by the end of the study.¹

When only **women** were counted, researchers saw an average **3.2%** weight loss after 24 weeks along with an average **6.5% reduction** in **body fat**.¹

To achieve successful weight loss results, a multi-modal approach is often needed.

This includes incorporating some type of calorie reduction, increasing physical activity, and adding supplements to a regimen, like **7-Keto DHEA**, ***Gynostemma pentaphyllum***, **green tea**, and others.

Findings from this recent study suggest **R-lipoic acid** is a helpful candidate to add to a **weight loss** program.

What is Lipoic Acid?

Lipoic acid is a compound made in the body. It is naturally produced in the **mitochondria**, our cellular “power stations,” where it helps turn nutrients into **energy**.

It’s also found in some fruits, vegetables, and meats, but only in *extremely* small amounts.

Lipoic acid is a free-radical scavenger. But its health benefits only begin there.

Published scientific studies provide a rationale for using oral lipoic acid to improve **metabolism** and assist in **weight loss**.

An animal model of **obesity** showed that lipoic acid regulates the **hypothalamus**.² This brain region controls basic drives like hunger and thirst. In this study, animals given lipoic acid reduced food intake and had increased metabolism, leading to dramatic weight loss.

Lipoic acid exists in two forms: the “**R**” form is the most biologically active and the “**S**” form is less active.

Commercially available supplements typically provide a 50/50 ratio of the “**R**” and the “**S**” forms. In other words, **100 mg** alpha-lipoic acid provides **50 mg** of the biologically active “**R**” form.



Fortunately for consumers, full-strength **R-lipoic acid** as a standalone was introduced as an **anti-aging** supplement nearly two decades ago.

Weight Loss Trial with R-Lipoic Acid

Researchers at the Linus Pauling Institute at **Oregon State University, Oregon Health & Science University**, and **Boston University School of Medicine** collaborated on a 24-week trial.¹

They selected participants who were overweight or obese and had elevated levels of **triglycerides** (≥ 100 mg/dL).

Subjects were randomized to receive 255 mg of **R-lipoic acid** twice daily or a **placebo** for six months. There were no changes in their diet or physical activity.

At the end of the trial, **26%** of the participants experienced at least a **5%** decline in body weight.

When only women were investigated, an average **3.2% weight loss** after 24 weeks was shown along with an average **6.5% reduction in body fat**.

Severely obese individuals (**BMI ≥ 35**), as opposed to those who were just overweight, also saw improvements with **R-lipoic acid**. Their weight loss averaged **2.4%** and their **body fat** was reduced by **4.3%**.

Researchers hypothesize that improved cellular energy and lipoic acid metabolism could explain these fat-reducing effects.

Life Extension[®] readers understand that a multi-modal approach is needed to achieve successful weight loss. The findings from this study suggest **R-lipoic acid** is a helpful tool in any weight loss strategy.

R-Lipoic Acid Improves Markers of Oxidative Stress

Reductions in body fat and weight lower the risk of chronic diseases.

In this recent weight loss study, **R-lipoic acid** also improved some markers of oxidative stress.¹

Oxidative stress can contribute to chronic illnesses, from cardiovascular disease to cancer to dementia.

Subjects treated with R-lipoic acid had a **25% reduction** in urinary **F2-isoprostanes**, a marker of **lipid peroxidation**. Antioxidant gene expression *increased* by **22%**.

Along with reductions in body weight and fat, these changes could reduce risk of chronic disease.



Alpha-Lipoic Acid Studies

The recent study described so far in this article was published in *The Journal of Nutrition* and showed weight loss results. One reason for this is that it used **100% R-lipoic acid**, the active form.

But past studies have also shown benefits for alpha-lipoic acid, which contains **50% R-lipoic acid**.

The most common measures that have been evaluated are weight loss, markers of metabolic health, and markers of chronic inflammation as follows:

1. Weight Loss

Alpha-lipoic acid aids in weight loss and in lowering body mass index (BMI).³⁻⁷

In one study, overweight and obese women were put on a calorie-restricted diet and randomized to receive an omega-3 fatty acid, alpha-lipoic acid, a combination of the two, or a control.³ The groups receiving alpha-lipoic acid alone or in combination had a significantly greater loss of body weight than the control.

One interesting finding worth pointing out is that omega-3 prevented the drop in **leptin** as people lose fat. Leptin is a hormone involved in satiety and when levels drop, the brain interprets this as a starvation signal.

In other words, **combining caloric restriction with alpha-lipoic acid** and other nutrients can lead to *greater* weight loss than dietary changes alone.

In another study, scientists evaluated patients taking a medication that frequently results in weight *gain*.⁴ Subjects who received a **placebo** continued to gain weight over the 12-week trial. Those who received **alpha-lipoic acid** *lost* weight.

WHAT YOU NEED TO KNOW

Lose Weight and Lower Disease Risk with Lipoic Acid

- Lipoic acid is a nutrient made in the body and found in extremely small quantities in various fruits, vegetables, and meat.
- Oral intake of lipoic acid improves **metabolism** and can help reduce body weight and total body fat.
- Lipoic acid is also a potent **antioxidant**, reducing the oxidative stress that accompanies many chronic diseases.
- Lipoic acid improves other parameters of metabolic health, improving blood glucose control and restoring healthy blood lipid levels.
- Lipoic acid exists in two forms, the “R” form which is biologically active and the “S” form that is less biologically active.

Even more impressive, the weight loss particularly affected **visceral fat**, the fat around the abdominal organs that is tied to greater risk of metabolic and cardiovascular diseases. While those on a **placebo** added visceral fat, those in the **alpha-lipoic acid** group lost an average of **6.5%** of their visceral fat.

2. Metabolic Health

Metabolic syndrome is a major risk factor for cardiovascular disease, diabetes, and other conditions. While weight loss alone reduces risk, **alpha-lipoic acid** also improves **metabolic health**.^{8,9}

A review of 24 **human** trials concluded that **alpha-lipoic acid** intake positively affects both **blood sugar** (glucose) control and **blood lipid** (LDL cholesterol) abnormalities.⁸

Fasting glucose and **insulin levels** were significantly *reduced* with alpha-lipoic acid. Tests of insulin sensitivity and long-term glucose control also significantly improved.

Subjects taking alpha-lipoic acid also benefited from a *reduction* in triglyceride levels, total cholesterol, and LDL cholesterol (the “bad” cholesterol that contributes to atherosclerosis and cardiovascular disease).

3. Chronic Inflammation

Some studies have shown that alpha-lipoic acid can reduce indices of **inflammation**.

An international group of scientists published the results of a large meta-analysis in the journal *Nutrition & Metabolism*.¹⁰ They found that alpha-lipoic acid significantly *decreased* various markers of systemic inflammation—including C-reactive protein, interleukin-6, and tumor necrosis factor-alpha—in patients with metabolic disease.



Summary

Lipoic acid is a nutrient found in small amounts in foods. It has a powerful impact on **metabolism**.

It has been shown in clinical trials to help with weight loss.

It has also been shown to reduce **oxidative stress** and improve lipid levels and long-term blood glucose control.

In a recent study, **R-lipoic acid** reduced body weight and total body fat in obese adults, most clearly in women.

Obesity increases the risk of chronic diseases.

R-lipoic acid is a promising tool in a **weight management** program. •

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

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What's Missing from Most MULTIVITAMINS?

BY MICHAEL DOWNEY



Millions of Americans take a **multivitamin**, including **68%** of seniors.¹

Yet surveys going back decades show that many older adults have **inadequate** intake of essential micronutrients.²

Major reasons for this are aging people who take no supplement or those who rely on a multivitamin with low potencies or inactive forms of specific nutrients.

Deficiencies Are Common with Age

Most Americans don't get enough of the nutrients they need.

There are a variety of reasons.

Many older people eat less, making them more prone to develop vitamin and mineral **deficiencies**.

Chronic conditions *increase* the need for some vitamins and minerals.

Medications may lower levels of critical nutrients, especially B vitamins. And older adults have a decreased capacity to **absorb** and use many nutrients.²

Fortunately, most readers of this magazine supplement with optimal potencies and forms of vitamins, minerals, and plant extracts.



Deficient Multivitamins!

Most multivitamins don't fix the problem of vitamin and mineral deficiencies. Rather, they give many people a false sense of security that they're getting all the nutrients they need.

The vast majority of multivitamins use nutritional targets set by the **federal government**. These targets tend to represent the *minimum* level of any nutrient required to sustain life, *not* the amount that will maximize healthy longevity.

In addition, few available products contain optimal **forms** of nutrients.

For example, folic acid (or folate) needs to be converted by the body into the metabolically active form, **5-MTHF**.

This is of particular importance, as approximately **40%** of people carry a gene variant that impairs their ability to convert folate into its active form: **5-methyl-tetrahydrofolate (5-MTHF)**.⁸

Huge Nutritional Gaps

Despite most older Americans now taking a multinutrient formula, many have **insufficient** levels of important nutrients.

A survey by the **National Institutes of Health** published in **2017** found that **14%** of so-called "full-spectrum, multivitamin-multimineral supplement" users were still **deficient** in at least one nutrient.³

Deficiency is defined as a nutrient level being so low that it causes a specific disease to manifest. In the case of **vitamin D**, a bone-wasting disease called **rickets** develops in response to very low vitamin D.

Insufficiency describes **less-than-optimal** levels of an essential nutrient.

A study of American hospitalized patients found nearly **40%** were deficient in **vitamin D**, defined as *25-hydroxyvitamin D* blood levels less than **20 ng/mL**.⁴

To put this **40%** who were **deficient** into context, much of conventional medicine still fails to recognize what minimal level of **vitamin D** is needed to avoid health problems.

Researchers debate whether frank **deficiency** should be defined as *25-hydroxyvitamin D* blood levels less than **20 ng/mL** or **12 ng/mL**.⁵ Either level is frighteningly low based on data published in recent decades.

For example, the preponderance of evidence clearly shows that one should strive for *25-hydroxyvitamin D* blood levels above **30 ng/mL**. Life Extension® has advocated that **50-80 ng/mL** of *25-hydroxyvitamin D* is likely ideal.

When looking at data where **30 ng/mL** of *25-hydroxyvitamin D* is defined as the low point before a person enters a disease risk category, an astounding **69%** of Americans are below this minimal (**30 ng/mL**) vitamin D blood marker, including some taking popular multivitamin supplements.^{6,7}

Micronutrient Intake in the U.S.

Using data from the National Health and Nutrition Examination Survey (NHANES) 2007-2010, researchers from the *Council for Responsible Nutrition* determined that large proportions of the population have intakes below the **estimated average requirements** (EAR).

Below are some of the percentages of Americans (ages four and over) who fail to meet the estimated average requirement:⁹

NUTRIENT	Percent Under Average Requirement
VITAMIN A	35%
VITAMIN C	31%
VITAMIN D	74%
VITAMIN E	67%
CALCIUM	39%
MAGNESIUM	46%

“Average requirement” does not consider people with underlying health issues whose need for certain nutrients can be strikingly high.¹⁰

There is an urgent need for more Americans to ensure at least adequate intake of nutrients that were identified decades ago as essential for better health and well-being.



Building a Better Multivitamin

To effectively promote health, aging individuals often need to take *higher* potencies of certain nutrients.

To meet the vitamin and mineral needs of older people, scientists created a formula designed to deliver the optimal **potencies** and **forms** of critical nutrients.

Compared to a popular multivitamin made by a pharmaceutical company, this formula has long provided:

- **2 times** the magnesium,
- **2 times** the zinc,
- **2 times** the vitamin D,
- **2.5 times** the vitamin B3,
- **3 times** the vitamin E,
- **8 times** the vitamin C,
- **10 times** the selenium,
- **10 times** the biotin,
- **12 times** the vitamin B12,
- **25 times** the vitamin B6, and
- **50 times** the vitamin B1.

WHAT YOU NEED TO KNOW

An Ideal Multivitamin

- Older adults stand to benefit from a **multivitamin**, but studies show that they frequently have nutrient deficiencies.
- Leading multivitamins omit nutrients, provide insufficient amounts, and fail to use the optimal forms of some nutrients.
- Scientists have designed a blend of vitamins, minerals, and plant-based nutrients that delivers the broadest array of health-promoting compounds in optimal **potencies** and **forms**.
- Taking a better vitamin and mineral blend can significantly improve overall health and shorten the length of illnesses.

Nutrients in Optimal Forms

In addition to higher *potencies*, it's vital to get a wide range of nutrients in optimal **forms**. This includes nutrients not generally found in multivitamins, such as:

- The mineral **boron**,
- **Mixed** tocopherols (forms of vitamin E), each with demonstrated biological benefits,
- The antioxidant alpha-lipoic acid, and
- **Plant extracts**, such as the bioflavonoid **apigenin** and the carotenoid **lycopene**.

And optimal **forms** of nutrients should be consumed, including a highly stable **chromium** and the metabolically active form of folate, 5-MTHF.

Key Nutrients

Here's a look at a few nutrients that most Americans should look for in a multivitamin:

Vitamin D

Vitamin D is best known for supporting bone health. It also promotes healthy cell division, immune function, and more.^{11,12} Multivitamin formulas' potencies used to be an abysmally low **400-800 IU**, even in recent years. Minimum vitamin D levels to achieve what most consider "sufficient" potency should deliver **2,000 IU** of vitamin D daily.

Some people take an additional **1,000-5,000 IU** of vitamin D3 daily to achieve optimal blood levels.

Optimal Form of Folate

Folate must be converted in the body by a complex series of *enzymatic* steps before it can be used.

But **5-MTHF** (*5-methyltetrahydrofolate*) is a form of folate that is *already* metabolically active and can be used by tissues immediately. This specific form was shown in one study to be *seven times* more bioavailable than folic acid.²⁴

This is critical for those with certain genetic enzyme defects that make folate metabolism less efficient.²⁵

Enzymatic Conversions
Required to Obtain
Biologically Active 5-MTHF

Synthetic Folic Acid

Dihydrofolate

Tetrahydrofolate

10-Formyl-THF

5,10 Methenyl-THF

5,10 Methylene-THF

5-MTHF
(Active Form of Folate)



Vitamin C

Vitamin C is associated with **immune health**, likely due to its ability to stimulate the production and function of immune cells.^{13,14} It is also vital to the formation of **collagen**, the connective tissue found throughout healthy arterial walls, skin, bones, and teeth.¹³ A superior formula should provide far more than the meager **60-90 mg** found in most commercial multivitamin formulas.

B Vitamins

B vitamins help to release the energy stored in nutrients that the body's cells need to carry out their daily functions.¹⁵ The various B vitamins work *together* to maintain overall health. That is why an ideal vitamin contains *readily metabolized* forms of riboflavin (B2), vitamin B12, vitamin B6, folate, and others.

Mixed Vitamin E Tocopherols

The four forms of **vitamin E tocopherols**—alpha, beta, delta, and gamma—work *together* to optimize health. For example, evidence indicates that combining alpha and gamma tocopherols is better for helping to reduce chronic inflammation and oxidative stress than taking either nutrient alone.¹⁶ *All* four forms should be taken daily. Many commercial multivitamins contain only **synthetic alpha tocopherol** and none of the other natural forms of vitamin E.

Alpha-Lipoic Acid

Alpha-lipoic acid is a natural compound that helps to protect vitamin C and glutathione so that they can fight against damaging free radicals.¹⁷⁻¹⁹ Most multivitamins don't contain it.

Selenium

The mineral **selenium** promotes heart and brain health, supports healthy inflammatory and immune responses.^{20,21} What most people don't realize is that selenium comes in different forms, each having distinct beneficial properties. These "forms" include: high-selenium yeast, Se-methyl L-selenocysteine, and sodium selenite. Each has specific beneficial properties.

Molybdenum

Most multivitamins don't contain sufficient potencies of **molybdenum**. This mineral is required for several enzymatic activities, including those that detoxify alcohol and metabolize sulfur.²²



Vitamin A

Vitamin A is best obtained from *two* separate sources: the fatty acid **retinyl acetate** and the pigment **beta-carotene**. This essential vitamin promotes vision, immune health, free-radical defenses, formation of thyroid hormones, healthy skin and mucous membranes, and the growth of bone, teeth, and soft tissues. Its use has been associated with decreased risk of certain **skin cancers**.²³

Taking a daily multinutrient formula that includes optimal forms and meaningful potencies can provide powerful health benefits.

Summary

Many Americans can benefit from a **multivitamin**. Research shows that micronutrient **deficiencies** are common.

Many leading multivitamin brands contain inadequate nutrient potencies, and do not contain the optimal forms.

Taking a daily formula with a broad array of health-promoting vitamins, minerals, and plant extracts may benefit overall health.

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

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PROBIOTIC BLEND Impedes Flu and Colds

BY MICHAEL DOWNEY





Catching a **cold** or the **flu** is more than a nuisance. It can be deadly.

Up to **62,000** Americans died from **influenza** during the **2019-2020** flu season, according to preliminary data from the U.S. Centers for Disease Control and Prevention.¹

About **70%-85%** of seasonal-flu-related deaths occur in people **65 years** of age and older.²

Though the common cold is less serious, it can develop into **pneumonia**, especially in those with weakened **immune** systems.³

A clinical study has demonstrated that a specific combination of **probiotics** and a **prebiotic** can reduce incidence of both **flu** and **colds**.

In this human study, the number of flu and flu-like illnesses decreased by **75%** while colds decreased by **39%**.

And when flu or colds did develop, duration and severity were reduced.⁴

This novel **probiotic** defense can provide critical **immune support** during the winter season.

Common Cold and Flu

A **viral** infection of the upper respiratory tract, the **common cold**, is the leading cause of missed days at work or school. Treatment is generally aimed at managing symptoms.

The **flu** is a more serious respiratory infection that may progress to pneumonia, especially in older people or people with suppressed immune systems.

Those aged 65 and older and with certain medical conditions (heart disease, diabetes, or asthma), children, and pregnant women, are at a higher risk for flu complications.

Probiotics Block Respiratory Infections

Colds and **flu** are generally treated with medications that reduce the *symptoms* but do nothing to promote **immunity** or help fend off invading **viruses**.

Scientists have found that **probiotics** can reduce the risk of developing colds and flu in the first place.

Specific strains of probiotics help rebalance the **gut flora** to bolster **immune** defenses against the flu and the common cold, while reducing risk of other upper respiratory tract infections.⁴⁻⁶

In those who *do* get sick, these probiotics were shown to reduce the **severity** and **duration** of the illness.

Helping Probiotics Thrive

To fully thrive, probiotics need **prebiotics**. These are nutrients that the probiotics can digest, supporting their survival and growth.

A blend of **probiotics** and a **prebiotic** can help the probiotics to flourish and work optimally.

One of the classes of prebiotics is called **galacto-oligosaccharides**, which are plant sugars that pass undigested. They remain in the **colon** to feed and promote the growth of beneficial gut microbes.

Results of Human Trials

Several small studies have shown that **probiotics** reduce the number of **upper respiratory tract** infections, as well as the average length of illness, need for antibiotics, and work absences.⁷⁻⁹

Based on these findings, scientists set out to test the effectiveness of a blend of **five probiotics** in fighting colds and flu.

The probiotics are:

- *B. lactis* BS01,
- *L. plantarum* LP01,
- *L. plantarum* LP02,
- *L. rhamnosus* LR04, and
- *L. rhamnosus* LR05.





WHAT YOU NEED TO KNOW

Warding Off Colds and Flu

- The **common cold** is the leading cause of medical visits and missed days at work or school.
- The **flu** and other **upper respiratory tract infections** pose considerable dangers for older adults, who can develop serious complications.
- **Probiotics** help defend against infection by supporting a healthy immune system.
- A blend of **five** specific **probiotics** and a **prebiotic** has been shown in a double-blind, human trial to significantly **reduce the number** of flu cases, colds, and similar illnesses.
- In those who did become ill, this blend **reduced the duration and severity** of flu, cold, and other upper respiratory tract infections.

These **five probiotic** strains were combined with **galactooligosaccharides**, a **prebiotic**, to further enhance effectiveness.

In a randomized, double-blind study, 250 healthy adult volunteers received either the **probiotic-prebiotic** blend or a **placebo** daily for **90 days** during flu season.⁴

In those who took the **probiotic-prebiotic** blend, the number of **flu** and flu-like respiratory illnesses was **reduced by 75%**,⁴ and the number of **colds** was **reduced by 39%**.⁴

Even in those who *did* develop an illness, the **probiotic-prebiotic** combination led to:⁴

- A **37%** reduction in the *severity* of flu symptoms,
- A **19%** reduction in the *severity* of cold symptoms,
- An average **one-day** reduction in the *duration* of colds,
- About a **three-day** reduction in the *duration* of coughs, and
- Close to a **1.5-day** reduction in the *duration* of all acute respiratory tract infections.

These five **probiotic strains**, supported by an effective **prebiotic**, enhance the body's **immune** defenses against colds, flu, and other respiratory illnesses.

Summary

The **flu** kills tens of thousands of Americans each year, and **colds** cause weeks of misery.

Older people are particularly susceptible because they have a lower level of **immunity**.

Scientists have developed a specially designed blend of **five strains of probiotics** that, along with a potent **prebiotic** to support their survival, can dramatically reduce the incidence of flu, colds, and other upper respiratory tract infections.

The purpose is to duplicate research showing robust, reduced incidences of flu, colds, and other upper respiratory tract infections.

In addition, when illnesses did occur, those taking this **probiotic-prebiotic** blend experienced reduced *severity and duration*.

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

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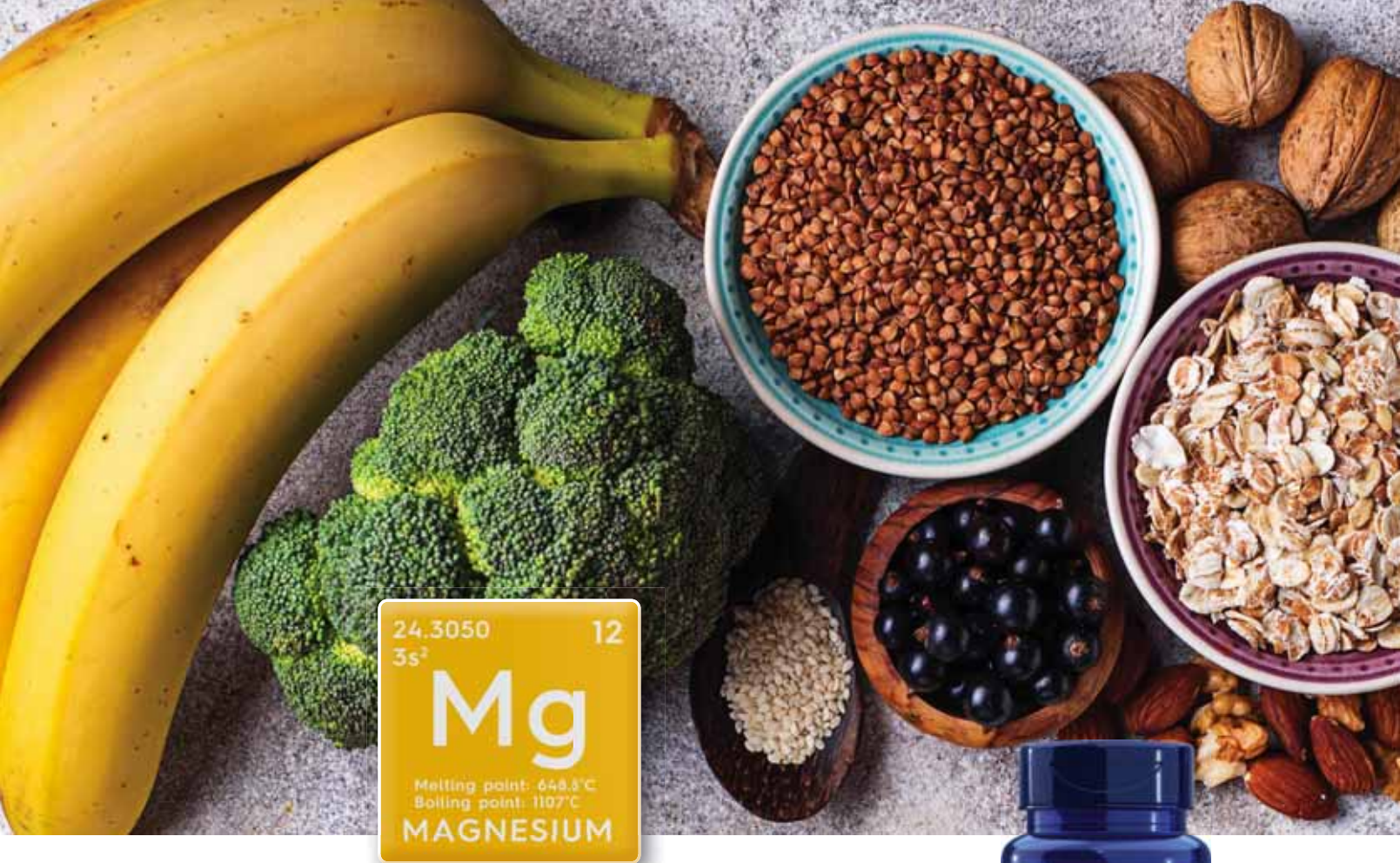
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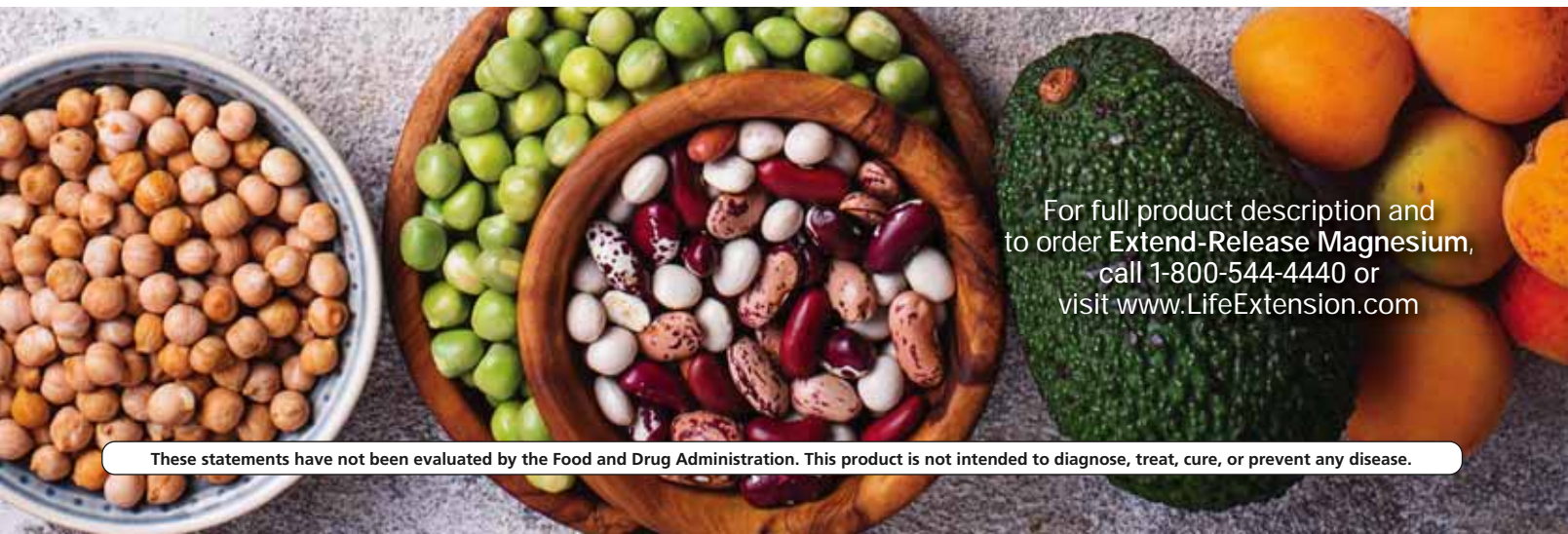
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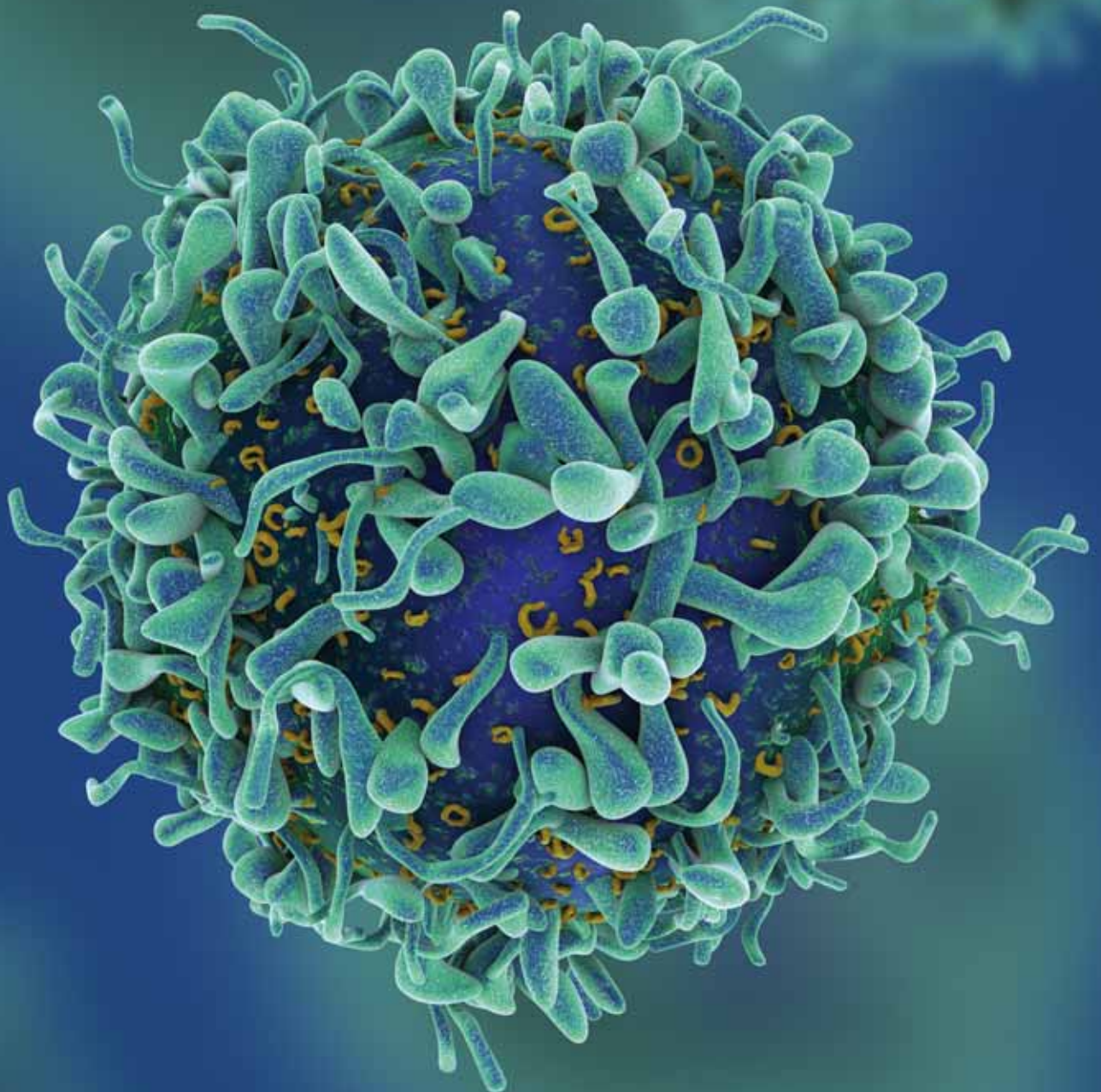


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The Detoxifying Effects of **LYCOPENE**

BY JEREMY HAWKINS





Lycopene, a pigment found in certain red fruits and vegetables, is known for its role in helping reduce the risk of **prostate cancer**.¹

Researchers have now found that **lycopene** can help prevent damage caused by **toxins** in our environment and food.²

Toxins are all around us—in the air we breathe, the water we drink, and the food we eat. They bombard our system, causing damage that accumulates over time and is a major contributor to chronic disease.^{3,4}

It's impossible to avoid most toxins. But research over the last several decades suggests there is a way to reduce the damage they inflict.

A **2019** review found that **lycopene** can help neutralize the effects of a wide variety of harmful compounds, from natural toxins to man-made chemicals.²

One analysis found those with the highest serum concentration of **lycopene** had a **26%** lower risk of stroke, a **14%** lower risk of cardiovascular disease, and a **37%** lower mortality risk.⁵

The Dangers of Toxins

The most common toxins are:²

- **Metals** and other elements with toxic activity, such as cadmium, mercury, and lead (which can appear in ground water, air emissions, and elsewhere in the environment),
- Synthetic **pesticides**, including herbicides, insecticides, rodenticides, and fungicides (which are widely used in agriculture and around homes in urban areas),
- **Drugs** with toxic side effects used to treat disease, such as cancer chemotherapy drugs,
- **Environmental toxins** produced by industry, automobiles, and burning of fossil fuels and other products, and
- **Natural toxins**, such as those produced by some bacteria or fungi.



Toxins contribute to a wide range of chronic diseases. The *American Lung Association* lists air pollutants *alone* as a potential cause of:³

- Cancer,
- Reduced fertility due to damage to the ovaries or testes,
- Damage to the brain and other parts of the nervous system,
- Birth defects,
- Coughing and wheezing, possibly leading to chronically impaired lung function, and
- Damage to the cardiovascular system, potentially contributing to cardiovascular disease.

Lycopene Fights Toxins

Lycopene is a bright red pigment found in several fruits and vegetables, notably tomatoes, guavas, and watermelon.

It is a member of the **carotenoid** family of nutrients, which include beta-carotene, lutein, and zeaxanthin.

Lycopene is a **free radical scavenger** that shows activity against many **toxins**.

How Lycopene Works

Toxins induce **oxidative stress**, releasing free radicals that attack and damage cells and tissues. Oxidative damage to lipids, proteins, and DNA is a contributor to age-related chronic disease.

Lycopene acts in multiple ways to stop this damage. It *prevents* oxidative stress in the first place and rapidly scavenges free radicals that do form.

In addition, lycopene indirectly fights oxidative injury by bolstering our native cellular defense mechanisms. It boosts levels of **glutathione**, an important intracellular antioxidant, and increases the activity of glutathione peroxidase, catalase, and superoxide dismutase, **enzymes** that are critical components of cellular antioxidant defenses.⁶⁻⁸

Through these mechanisms, lycopene may prevent the DNA damage that increases risk of **cancer**. Lycopene also reduces oxidation of lipids, a process that is implicated in the development of **atherosclerosis** and **cardiovascular disease**.



WHAT YOU NEED TO KNOW

Lycopene Protects Against Toxins

- We are constantly exposed to toxins in our air, food, and water. These toxins do damage to our tissues, contributing to risk for many chronic diseases.
- Lycopene is a red pigment and powerful free-radical scavenger found in several fruits and vegetables, including tomatoes, guavas, and watermelons.
- A recent review of the scientific literature reveals clear evidence that lycopene shields against virtually all the categories of toxic chemicals and compounds.
- Increasing lycopene intake can help reduce the damage done by environmental toxins and reduce the risk for many forms of age-related disease, from cancer to cardiovascular disease.

Many toxins also incite harmful **inflammation** in tissues. Lycopene prevents or even *reverses* this by inhibiting **nuclear factor-kappa B (NF-KB)**, the master regulator of inflammation.^{2,9-11}

Toxins can also cause cells to die off in a process known as **apoptosis**. Lycopene blocks this process in *healthy* cells by inhibiting the activation of proteins that trigger apoptosis.¹²⁻¹⁴

Lycopene has also been found to enhance the activity of liver enzymes that metabolize and **detoxify** potentially harmful chemicals.^{2,15,16}

Neutralizing Specific Toxins

Lycopene counters the effects of most common forms of toxins.

It has demonstrated activity against several types of **naturally occurring toxins** produced by microorganisms, including:^{9,15,17}

- **Aflatoxins**, poisonous substances produced by some kinds of mold or fungi,
- **Lipopolysaccharides**, a surface molecule found in some harmful bacteria, and
- **Ochratoxin A**, a common food-contaminating toxin.

Some of these can be produced by a bacterial or fungal infection while some are found in foods. Many of these toxins are **pro-inflammatory** and harmful to the liver, kidneys, and other tissues.

In mice, lycopene prevents the damage done by **aflatoxins** by blocking the activation of the toxin and by stimulating the activity of detoxification enzymes.¹⁵



Heavy metals are widespread throughout the environment. They can build up in tissues like the liver, brain, heart, and kidneys and cause severe damage. In animals, lycopene protects against this damage, preserving organ function even when levels of metals in the body are high.¹⁸⁻²³

Various **pesticides** are toxic to humans, causing damage to reproductive organs, the kidneys, and the nervous system. In pre-clinical studies, lycopene protects against many of these toxins by preventing tissue oxidation, activating liver enzymes that help to detoxify, and regulating a healthy immune response.²⁴⁻²⁹

Chemotherapy drugs like doxorubicin and cisplatin are toxic to the heart, kidneys, and more. In animals treated with these drugs, lycopene blocks heart and kidney damage.³⁰⁻³²

Ultraviolet radiation from the sun is another common contributor to oxidative stress, DNA damage, and risk for **skin cancer** and other conditions. Dietary lycopene acts like an internal sunscreen to help defend the skin from such damage. It both *absorbs* the light energy and scavenges free radicals formed by UV rays before they can cause DNA damage or other injury.³³

What Human Studies Show

Several studies show that people taking **oral lycopene** or with a diet high in lycopene are protected from many of the effects of toxins.

One systematic review published in the *European Journal of Clinical Nutrition* found that individuals consuming food products high in lycopene were protected from lipid oxidation, DNA damage in cells, and other markers of toxin-related damage.³⁴

Human trials demonstrate that lycopene helps prevent many of the chronic diseases to which toxins contribute. Various studies have found that lycopene and a lycopene-rich diet are associated with protection against **cancer, cardiovascular disease, metabolic disease, and more**.^{5,34-41}

A review of 21 studies found that supplementing with **tomato products** was associated with reductions in LDL cholesterol (the “bad” cholesterol) and improvements in vascular function. Lycopene supplementation was associated with lower systolic blood pressure.³⁵

Another review and meta-analysis found that people who had the *highest* serum concentration of lycopene had a **26%** lower risk of stroke, a **14%** lower risk of cardiovascular disease, and a **37%** lower risk of mortality.⁵



Summary

Decades of scientific research have found evidence that the pigment **lycopene** defends the body against a wide range of harmful compounds, from man-made chemicals to naturally occurring toxins.

These toxins, widely present in the air, food, and water, are significant contributors to many forms of chronic disease.

Increased intake of lycopene or lycopene-containing products helps protect the body from these toxins and reduces the risk of associated tissue damage and 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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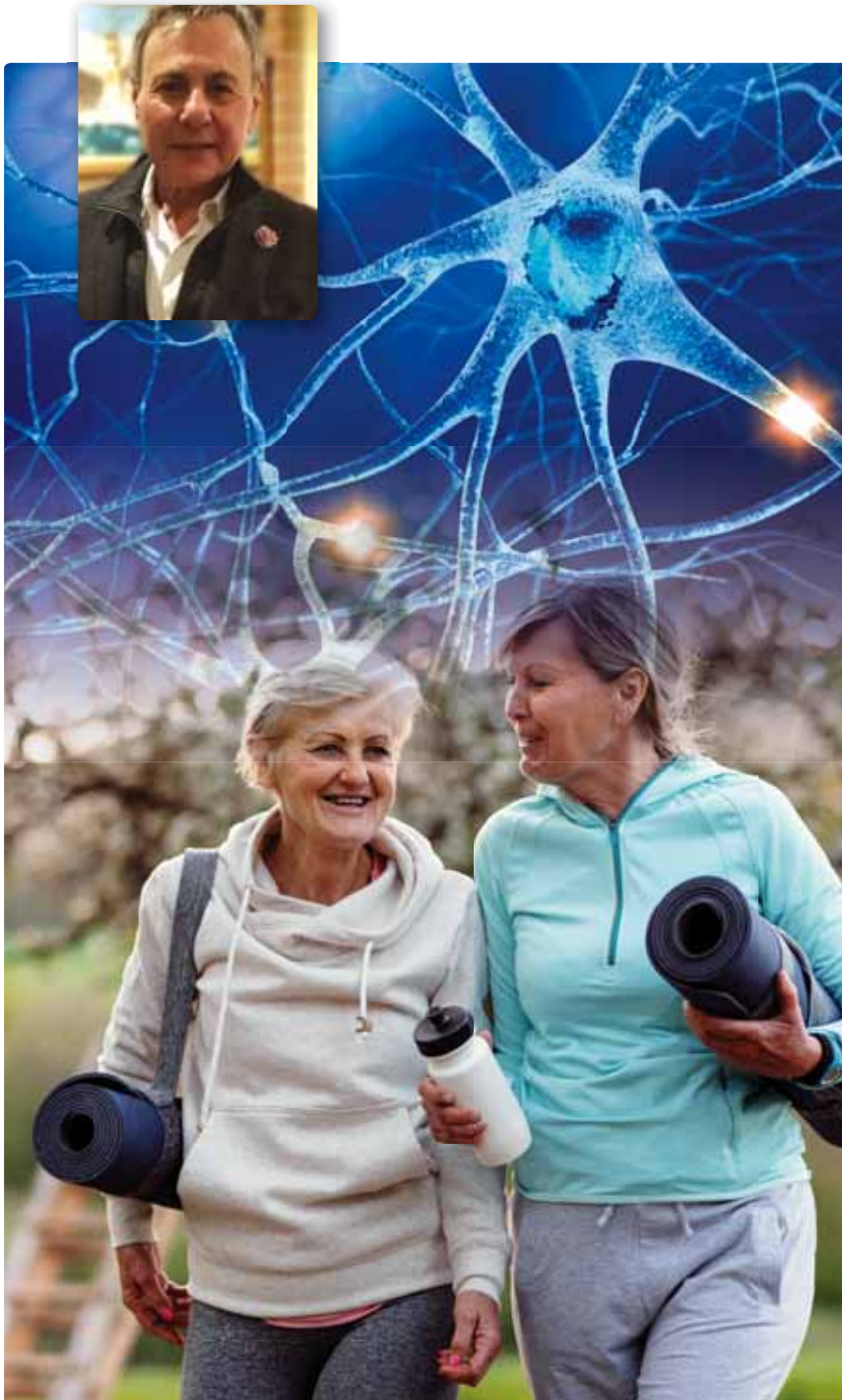
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The Anti-Aging Effects of Melatonin

BY ROMAN ROZENCWAIG, MD



Dr. Roman Rozencwaig has devoted much of his medical career to the study and therapeutic use of **melatonin**.

In 1987, Dr. Rozencwaig, along with two other researchers, published an intriguing paper in which they proposed that the decline of melatonin in the body is a key factor in aging, and in the diseases of aging.

Ten years later, he co-authored *The Melatonin and Aging Sourcebook*, which became the “go-to” reference for melatonin information.

In this interview, Dr. Rozencwaig shares his vast experience about the benefits of melatonin and why taking oral melatonin can promote a healthier life.

LE: You first published papers on **melatonin and aging** over 30 years ago. How have your views changed since then?

Dr. Rozencwaig: Since our publications, thousands of research papers have been written about the beneficial effects of melatonin on various conditions, that support our original theory.

As more research has been carried out, I'm more convinced than ever that melatonin is a very important molecule with **anti-aging** and **health-giving** properties. Treatments using melatonin and related compounds are already in use for a range of conditions. I strongly believe that in the future, additional treatments using melatonin or similar substances that mimic its activity will become known for being beneficial for a variety of diseases, as well as for treating aging itself.

LE: You've proposed that aging is due to a **melatonin deficiency**. How does that work?

Dr. Rozencwaig: What happens in aging is that the **pineal gland** becomes calcified and atrophied, and the production of melatonin declines gradually. As a result, the circadian rhythm suffers, then the **neuroendocrine system** becomes disorganized, and gradually illnesses and diseases come into play.

Pineal Gland



I believe that proper balance of melatonin and neurotransmitters is essential in maintaining our health and longevity.

A daily intake of melatonin at bedtime has many benefits for healthy aging and longevity.

LE: How does melatonin achieve all these beneficial effects?

Dr. Rozencwaig: Melatonin has a wide variety of effects on the body. Among many others, melatonin:

- Lowers nighttime body temperature, which produces anti-aging benefits.
- Is responsible for maintaining **circadian rhythms**, which synchronize the production and release of hypothalamic and pituitary factors and hormones. Aging is accompanied by the *desynchronization* of the entire neuroendocrine system, which leads to decline in health and increase of age-related disease.
- Protects the **brain** and may prevent neurological diseases such as Alzheimer's disease, Parkinson's disease, multiple sclerosis, autism, and many others.
- Improves **immunity**, which increases resistance against infections and cancer formation.
- Modulates both pro- and anti-inflammatory cytokines in different conditions.

LE: What effects does taking **oral melatonin** have?

Dr. Rozencwaig: Melatonin's effects on sleep are well-known, and many people use it to help with sleep, and with jet lag. Getting enough sleep is very important for health and longevity.

Melatonin's actions against the **aging process** are too numerous to mention in this interview. But among them are the following:

- Administration of melatonin regulates gene expression. This may assist in reversing some signs and symptoms of aging by working at the genetic level.
- Melatonin may help fight chronic, low-grade inflammation that happens with age (**inflammaging**).
- Melatonin may protect against viral, bacterial, and parasitic infections, probably by regulating immune response.
- Melatonin influences energy metabolism.
- Melatonin may protect against liver injury caused by alcohol, by regulating the activity of **AMPK**, an enzyme involved in cellular metabolism.
- Melatonin protects and restores mitochondrial function.
- Melatonin protects against **osteoporosis** by helping to regulate and balance bone formation and bone loss.
- Melatonin regulates **sirtuins**, proteins that play a role in cellular health.
- Melatonin stimulates a host of internal antioxidant enzymes, including superoxide dismutase (SOD) and glutathione peroxidase.
- Melatonin has been shown to have potential as a **neuroprotective** agent.
- Melatonin promotes apoptosis of cancer cells.
- Melatonin may play a role in oral health.



LE: One of the biggest concerns as we age is maintaining cognitive function. How is melatonin neuro-protective?

Dr. Rozencaig: One study in mice showed that melatonin promoted and improved sleep by inhibiting specific neurons associated with wakefulness and alertness. Sleep, especially **REM sleep**, is important in memory consolidation in aging. During sleep, melatonin also activates a waste-clearance system that is needed for removal of toxic **amyloid** and **tau** protein deposits seen in the brain of people with Alzheimer's disease.

In addition, melatonin facilitates brain **plasticity** (the ability to adapt and change), which underlies learning and memory consolidation.

As people age, cognitive abilities usually decline. There are several negative changes that occur in the **brain** as people age, and melatonin can counter them:

- There's a decline in the brain's **white matter**, which consists of **myelinated** (insulated) nerve fibers. This decline causes communication between neurons to slow down. Melatonin has been shown to *improve* myelination of nerve fibers.
- The brain is metabolically very active and produces large amounts of toxic free radicals over time. Melatonin is a strong **antioxidant** that is able to cross the blood-brain barrier and counter oxidative damage to the brain. Melatonin also increases production of *enzymes* that are needed to fight toxic reactive oxygen species in the brain and the neuroendocrine system.
- Chronic inflammation increases with age and is one of the causes of brain aging. Melatonin decreases this inflammation.

LE: There are some data showing that melatonin can protect **stem cells** and enhance tissue regeneration. What are your thoughts on this?

Dr. Rozencaig: Melatonin has been shown to play an important role in regulating the functions of stem cells, such as promoting **proliferation, migration, and differentiation**.

Melatonin has been used for *pre-treatment* of stem cells, and this may represent a new, safe approach to improving their beneficial effects. Melatonin combined with stem cell transplantation displays promising application potential in neurode-

generative diseases, liver cirrhosis, wound healing, heart attack, osteoporosis, and more.

LE: Melatonin is found in our **mitochondria**. What is its function there?

Dr. Rozencaig: Mitochondria are the powerhouses of the cells. They can also be a major source of free radicals. Melatonin also increases mitochondrial **glutathione** levels, leading to further protection against free radicals.

Loss of mitochondrial function is a known contributor to aging and predisposes the body to age-related diseases such as coronary artery disease, neurodegeneration, diabetes, obesity, and others. The number and function of mitochondria in our cells *decline* over time, which accounts for a large part of aging.

LE: How can melatonin be used therapeutically to stimulate immunity in older people?

Dr. Rozencaig: I believe that using melatonin in the aging population can help reverse some aspects of immune senescence. This may help protect against **viral, bacterial, and parasitic infections**. And melatonin treatment in the older population may reduce the incidence of cancer and improve **cancer** treatments.

LE: Aside from strengthening immunity, there are reports that melatonin has direct **antiviral** properties. How can melatonin be used to fight against viruses?

Dr. Rozencaig: Melatonin has been shown to prevent paralysis and death in mice.

There were infected with encephalomyocarditis virus. This is a highly pathogenic and aggressive virus. It causes **encephalitis** (brain inflammation) and **myocarditis** (inflammation of the heart muscle) in rodents. Melatonin was also shown to reduce **viremia** (when viruses enter the bloodstream) and significantly postpone the onset of disease and death in mice infected with the lethal Semliki Forest virus and others.

Respiratory syncytial virus (RSV) is a common respiratory virus. Mice infected with RSV showed *elevation* of oxidative stress associated with a *decrease* in glutathione and superoxide dismutase. Pre-treatment of the animals with **melatonin** resulted in marked *reduction* of acute lung oxidative injury, with *restoration* of **glutathione** and **superoxide dismutase** levels in the lungs. In RSV-infected mice, inhibition of oxidative stress was also associated with *reduced* production of **pro-inflammatory cytokines**, such as TNF-alpha.

These studies suggest that melatonin's actions against viruses are due to a variety of functions, including the ability to regulate immune function and inhibit excessive inflammatory response. But there are also **antiviral** properties that melatonin may possess. Melatonin may

have a protective effect against viral infections in cases of Ebola, dengue, encephalomyocarditis, Venezuelan equine encephalitis, rabbit hemorrhagic disease, and several others.

LE: What dosing do you recommend for general use as an anti-aging agent?

Dr. Rozencwaig: I believe people can begin taking melatonin safely for its anti-aging benefits starting at **35 to 45** years of age. For people who are generally in good health, I recommend a starting dose of **0.5 mg to 1 mg** or perhaps **3 mg** in the evening. The melatonin preparation should preferably be one that combines immediate- and extended-release forms, to be active for the entire sleep period. As people get older, I believe some can use higher doses of **3 mg to 5 mg** per evening, but that depends on the individual's health.

LE: What can someone expect if he or she begins to take oral melatonin?

Dr. Rozencwaig: One of the first things I notice in people who use melatonin is what I call a "**melatonin glow**." This looks like a glow of health.

People who take melatonin report better health, more energy, and better sleep. They also appear to have fewer upper respiratory infections. I have many patients and friends in their 70s and early 80s who have been taking melatonin for 30 years or more, and they look younger than their age and most of them are healthy, without any significant age-related illnesses.

LE: You've said that melatonin levels decline with age. How do we determine how much melatonin to take to slow the aging process?

Dr. Rozencwaig: One can measure melatonin levels in specialized labs, but it has to be done properly. Most people generally take, on average, between **0.5 mg** and **10 mg** in the evening for anti-aging effects. We can also adjust the amounts of melatonin we take depending on the circumstances. For example, exposure to X-rays or certain toxins may be harmful, and you may want to increase melatonin intake for a day or two.

LE: How safe is melatonin?

Dr. Rozencwaig: Melatonin is safe and inexpensive, even when used for prolonged periods of time. I have been following many patients who have been taking melatonin for **20 to 30 years**, safely and in good health.

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

Roman Rozencwaig, MD, is a pioneer in research on melatonin and aging, practicing in Montreal, Canada. He is a member of the Life Extension® Medical Advisory Board.



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Value of FISH OIL with EPA and DHA

BY STEPHANIE STEVENS





At the end of 2019, a **Food and Drug Administration (FDA)** advisory panel endorsed wider use of an **EPA-only** (fish oil) **prescription drug**.¹

The physicians on this panel recommended this **EPA-only** drug to be used in conjunction with cholesterol-lowering **statins** to reduce triglycerides and other cardiovascular risks.

The panel based its recommendation on a clinical trial using this fish-oil-derived drug that demonstrated improved outcomes in patients at high risk for cardiovascular disease.²

Television ads now tout this **fish oil drug** as **reducing cardiovascular risks** by 25%.³

The importance of **omega-3** fatty acids in preventing degenerative illnesses has long been recognized.

Fish oil contains **both** EPA and DHA omega-3s. These fatty acids fight cardiovascular disease by reducing triglycerides and inflammation, along with improving insulin sensitivity.^{4,6}

Studies have consistently shown that taking **both** EPA and DHA provides robust systemic health benefits.

A recent meta-analysis found that **EPA+DHA** supplementation is associated with a **35% reduced risk of fatal heart attack**.⁷

The **DHA** part of fish oil provides unique benefits, particularly in **promoting brain and eye health** and helping to protect against certain cancers.

Life Extension® recommends daily intake of fish oil containing at least **2,000 milligrams of combined EPA and DHA** to maximize benefits.

Some people require **higher** fish oil doses to obtain protective effects.

What are EPA and DHA?

EPA and **DHA** are omega-3 fatty acids found in fish, and *both* are vital for optimal health.

They are known to be protective against diverse types of chronic disease.⁸⁻¹³

Some DHA can be converted to EPA in the body, but this conversion is limited.¹⁴⁻¹⁶

For years, consumers have been educated on the health benefits of following a **Mediterranean diet**, rich in **fish** and extra virgin **olive oil**, paired with a high-concentration EPA/DHA **fish oil** supplement.

DHA's Unique Health Benefits

DHA provides numerous health benefits that do *not* overlap with those of EPA.

Here are some key ways that DHA differs from EPA:

- Levels of **DHA** in the brain are **250 to 300 times higher** than **EPA**, making **DHA** even more critically important to **brain health**.¹⁶
- While both DHA and EPA aid the growth and development of brain cells in young animals, **DHA** has a **rejuvenating** effect in the brain of **older animals**.¹⁷

- In response to oxidative stress, DHA is converted in the body to **neuroprotectin D-1**, which protects against brain aging, neurodegenerative diseases such as Alzheimer's, Parkinson's, and brain injury due to stroke.¹⁸
- EPA and DHA work in different ways to limit and resolve inflammation, providing greater benefits together than either one alone.¹⁹

Considering these factors, ensuring adequate intake of both EPA *and* DHA is vital.

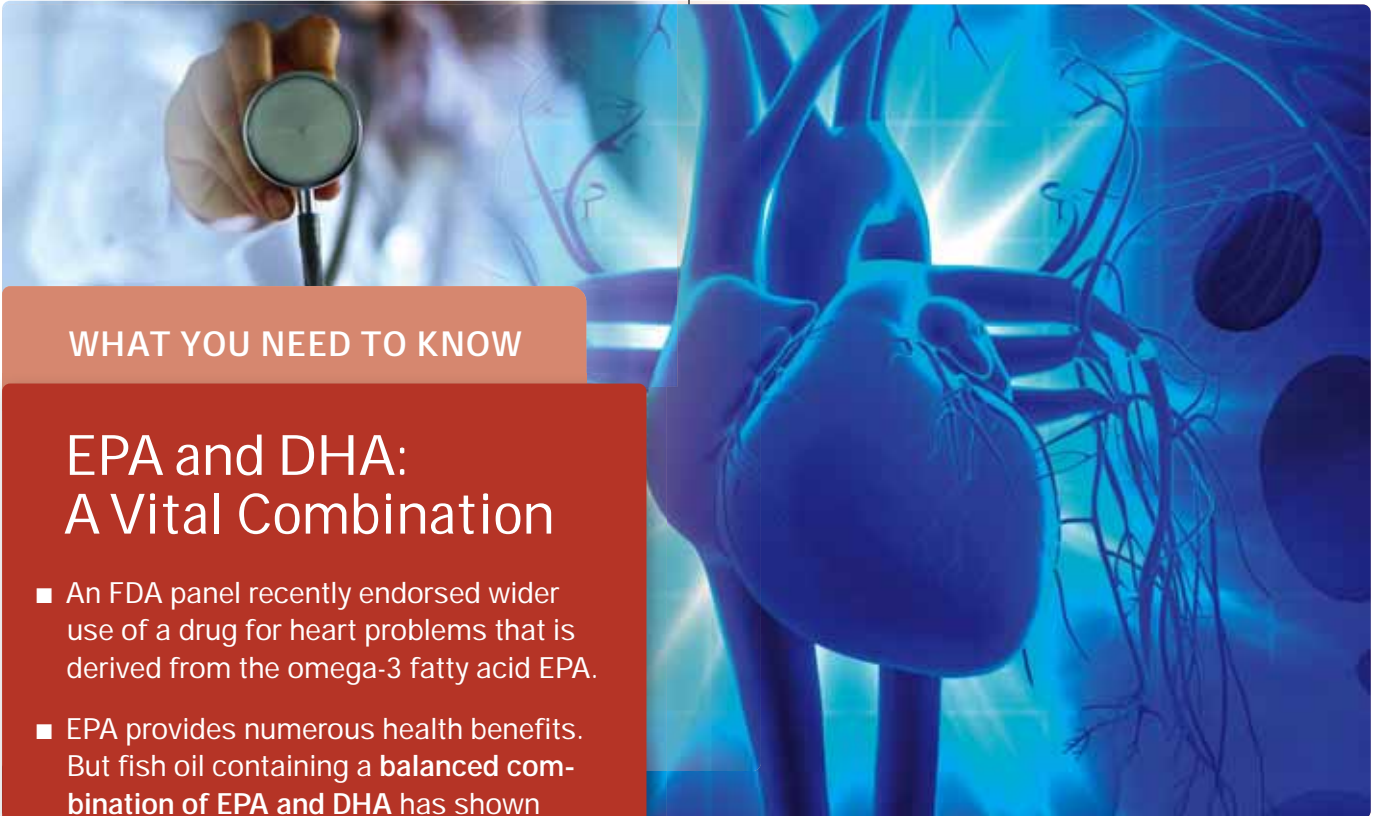
Brain Health

DHA is instrumental for the proper early development of the brain, and has been the subject of great scientific interest for protecting against cognitive decline in older age.^{9,12,16,20}

In early life, inadequate intake of omega-3 fatty acids has been linked to developmental defects, including autism and attention deficit hyperactivity disorder (ADHD).^{21,22}

In later life, fish oil helps maintain **cognitive function**.^{9,12}





WHAT YOU NEED TO KNOW

EPA and DHA: A Vital Combination

- An FDA panel recently endorsed wider use of a drug for heart problems that is derived from the omega-3 fatty acid EPA.
- EPA provides numerous health benefits. But fish oil containing a **balanced combination of EPA and DHA** has shown comparable results at a fraction of the cost.
- DHA has also shown unique abilities to protect the brain, fight forms of cancer, and promote healthy vision.
- Taking daily fish oil with at least **two grams of combined EPA and DHA** is ideal for optimal health benefits.

One reason is that omega-3s boost levels of **brain-derived neurotrophic factor**.^{23,24} Lower amounts of this protein have been associated with cognitive decline, Alzheimer's disease, and other age-related brain conditions.^{25,26}

Clinical trials in patients with cognitive impairment that have focused on **DHA** have shown that people have significant improvements.

For example, one study randomized older individuals with mild cognitive impairment to receive either fish oil that was mostly DHA (**1.3 grams DHA**) or a placebo.¹² After 12 months, the DHA group had significant **improvements in memory**.

In another study, patients with mild cognitive impairment received either mostly DHA or mostly EPA.²⁷ Both groups had improvements in depression, but **only those receiving the DHA had improved memory and verbal fluency**.

In addition, people who died suffering from Alzheimer's disease had significantly *lower* levels of **DHA** in their brains.²⁸

Cardiovascular Disease

Protection against cardiovascular disease is a well-documented benefit of omega-3 supplementation.

A recent meta-analysis of 40 clinical trials showed that omega-3 supplementation is associated with significant reductions in the risk for cardiovascular disease death.⁷

The study, published in the *Mayo Clinic Proceedings*, concluded that supplementation with **EPA and DHA** reduced the risk of coronary heart disease, including heart attack.⁷

Fish oil containing both EPA and DHA fatty acids has been shown to reduce the risk of cardiovascular disease by lowering triglyceride levels and improving insulin sensitivity.⁴⁻⁶

Specifically, a recent study found that **EPA+DHA** supplementation is associated with a **reduced risk** of:

- Fatal myocardial infarction (**35%**)
- Myocardial infarction (**13%**)
- Coronary heart disease events (**10%**)
- Coronary heart disease mortality (**9%**)

The cardiovascular protection was greater with *increases* in omega-3 **dosage**. Increasing intake of EPA and DHA by **1,000 mg** per day was associated with a **reduction** of **5.8%** in the risk of cardiovascular disease events.⁷

Life Extension® readers have been advised for decades to supplement with at least **2,000 mg** and *higher* of combined EPA and DHA to maximize health benefits.

Fighting Cancer

Several studies in humans and animals have shown that omega-3 intake is protective against cancer and even improves response to cancer treatment.²⁹⁻³³

One review study found evidence that **DHA** in particular helps prevent the development and progression of **breast cancer**.³²

It works by reducing breast cancer cell growth and reducing contributors to breast cancer risk like obesity, inflammation, and metabolic derangements.³²

Another review found that high consumption of fish oil reduces the risk for developing **pancreatic cancer**.³³

Again, **DHA** in particular was found to directly attack pancreatic cancer cells, inducing cell death, inhibiting abnormal signaling associated with cancer progression, and reducing new tumor blood vessel growth.³³

Supporting Eye Health

DHA is a structural component of the **retina** and is vital for the proper development of the eyes in infants and babies.³⁴

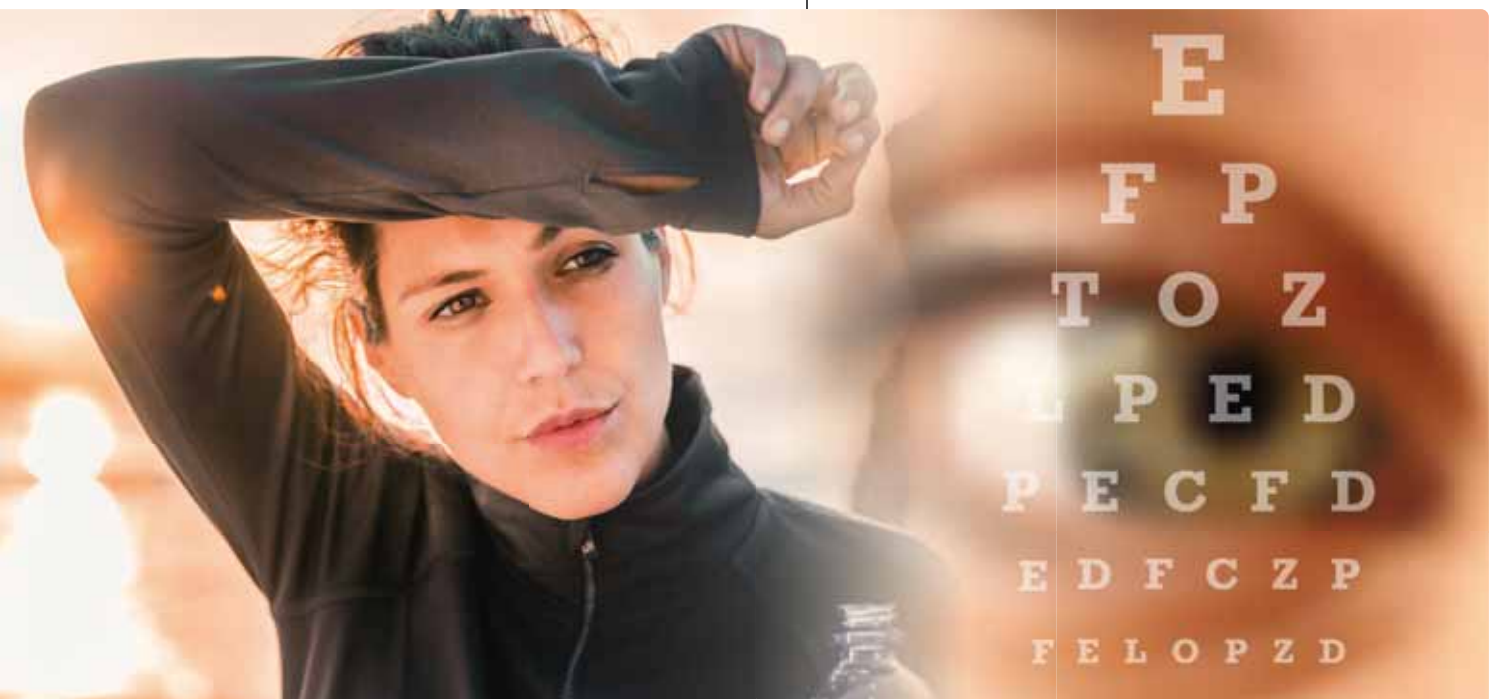
In adults, it also appears to support strong vision.

After only **90 days** of taking a supplement containing mostly **DHA** plus a small amount of EPA, individuals with corrected vision saw improvement in **visual acuity** (sharpness of vision) compared to a placebo group.³⁵

Summary

The two major omega-3 fatty acids in fish oil, **EPA** and **DHA**, support healthy biology in different ways.

In published studies, fish oil containing a balanced combination of EPA and DHA has been shown to improve cardiovascular health, brain function, and more.





A study reviewed by an FDA panel of experts found remarkable cardiovascular benefits when using **4,000 mg** of **EPA** by itself (along with a statin when needed). Other studies report similar findings when *both* EPA and DHA are used.

DHA also provides unique benefits in brain and eye health, and in fighting multiple forms of cancer.

It is important to note that anyone prescribed an EPA-derived drug should *not* stop taking it without consulting a physician.

Life Extension® recommends daily intake of fish oil containing at least **2,000 mg** of **EPA + DHA** to maximize health benefits.

Those with stubbornly **high triglyceride** blood levels or other **cardiovascular risk factors** may consider *higher* supplemental EPA/DHA doses or increase their dietary intake of cold-water fish like **salmon**. •

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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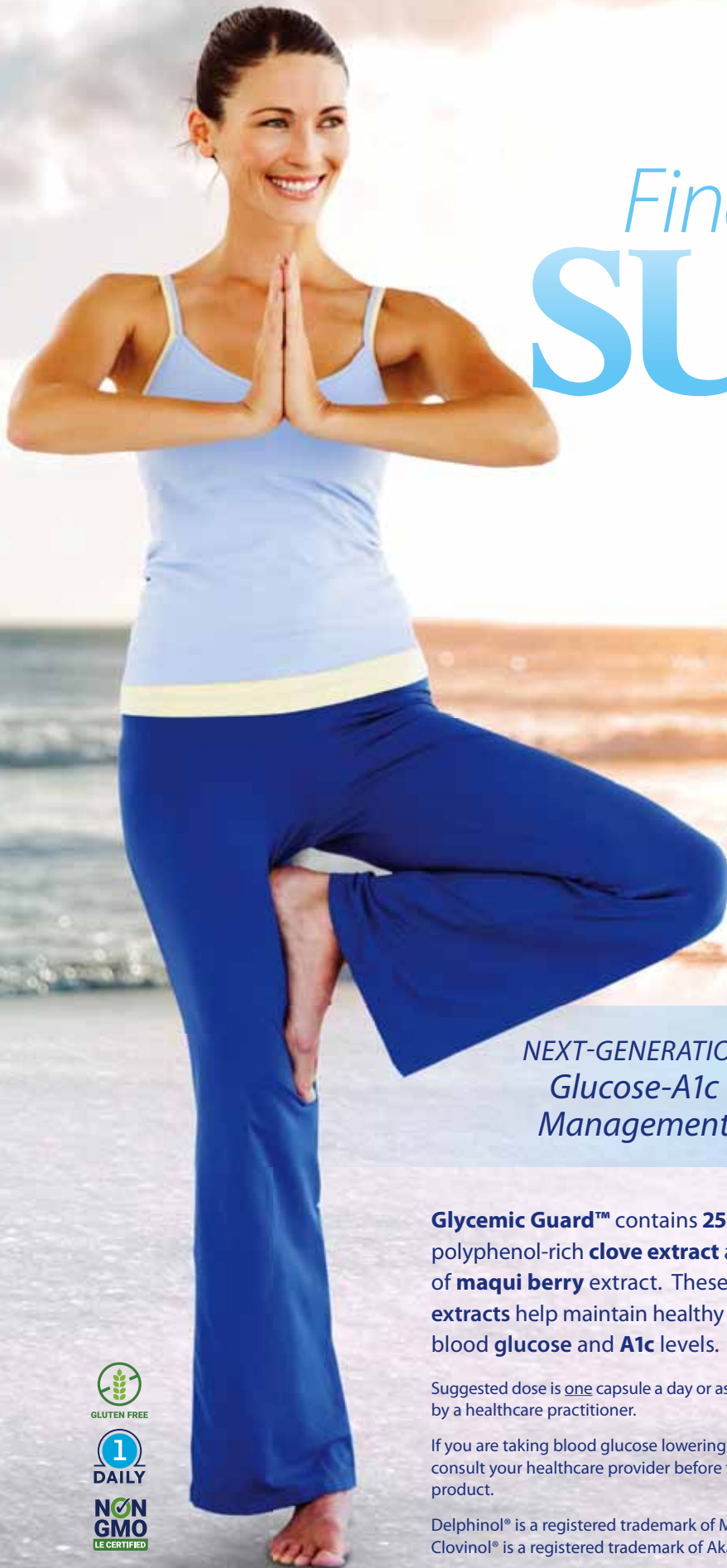
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Jon Dorenbos

His Journey from Tragedy to Self-Discovery

BY LAURIE MATHENA

"I think my life story summarizes it all: Find motivation in defeat and tell yourself a narrative that will inspire yourself to keep on keeping on."



At 38 years old, Jon Dorenbos was at the height of his career.

He was entering his 15th season in the National Football League. He had performed his magic act on multiple seasons of the television show, *America's Got Talent*. And he was making recurring appearances on shows like *The Ellen DeGeneres Show* and *The Today Show*.

But instead of running out onto the field as a newly minted New Orleans Saint, Dorenbos was headed into emergency surgery.

After he had been traded to the Saints, a routine physical exam revealed that he had a heart murmur. And follow-up tests revealed why: He had a life-threatening aortic aneurysm.

One wrong move—or, say, a tackle from a 300-pound linebacker—could cause the aneurysm to burst and kill him almost instantly. This same condition is what killed actors Alan Thicke and John Ritter, and actor Bill Paxton died of a postsurgical complication from this condition.

Internal Medicine specialist Dr. Jon Amoss broke the news to him: "You need immediate open-heart surgery, Jon. You're never going to play football again."

Less than 72 hours later, Dorenbos was undergoing emergency surgery to replace the valve and repair the aneurysm. A surgery that should have taken four hours took nearly 11, and the doctor told Dorenbos that he had the hardest sternum he'd ever had to crack. He had to stand on a stool to get enough leverage.

The road to recovery was a long one. At first, walking from his hospital bed to the door and back left Dorenbos exhausted. Emotionally, he experienced surging hormones and emotions that left him angry and depressed. It would be about a year and a half before he was fully recovered.

But Dorenbos didn't let his career-ending diagnosis defeat him.

"When one day you're a professional athlete heading into your 15th season in the NFL and the next you're being told that you need emergency open-heart surgery, that if you play in your next game there is a more than **50%** chance you'll die on the field... well, you can look skyward and scream, 'Why me?' Or you can be thankful that your undiagnosed ticking-time-bomb heart condition was discovered in time. You can feel grateful and pledge to live each moment fully aware of how precious it is."

His career may have been over, but in many ways his life was just



beginning. Three months earlier he had married his wife, Annalise. She became his nurse and constant companion during his road to recovery.

And as she nursed him back to health, together they determined to make the most of their life—and health. After watching eye-opening documentaries on Netflix about the dangers of meat and the benefits of a vegan lifestyle, Dorenbos made drastic changes to his diet.

"If we do eat meat, it's in moderation and we make sure it's grass fed," said Dorenbos. "My wife and I enjoy vegan chili—not so much because I'm vegan, but because I think that eating more vegetables and less meat is a smart decision for your health," he said. "Every once in a while, I enjoy a tri-tip steak. But overall, I've cut down on sugar and other foods that are bad for you and focused on clean eating."

In addition, Dorenbos takes a whey protein supplement to help boost his muscle performance. "I believe that when you work out, you should get protein back in your muscles," he said.

And while he pumped iron for 22 years straight during his football years, these days his workouts consist of daily hot yoga sessions with his wife, and morning runs along the beach near his California home.

Magic Man

Dorenbos's career-ending heart surgery wasn't the biggest struggle he had to face in his life. That one came when he was only a boy, 12 years old. It was a tragedy that Dorenbos has written about and spoken about publicly—his father murdered his mother and was sentenced to 13 years in prison.

Just one year later, Dorenbos discovered close-up magic, which involves doing card tricks utilizing techniques such as sleight-of-hand. He says that performing magic provided him with a path forward.

"At the exact moment I needed it, I saw a magic trick and was transported," said Dorenbos.

Magic brought Dorenbos out of his shell. It gave him purpose and focus and connecting with—and performing in front of—an audience gave him an adrenaline rush like no other.

Throughout his childhood—and even during his distinguished NFL career—Dorenbos spent more than 10,000 hours perfecting his craft. And in 2016, he showed off his talent to America when he auditioned for the television show *America's Got Talent*.

Dorenbos made it to the finals, where he ended up in third place. Three years later, he was invited back to *America's Got Talent: The Champions*. Once again, Dorenbos made it to the finals, coming in third place.

His run on *America's Got Talent* opened new—and even bigger—doors for Dorenbos. He was invited to perform on *The Ellen DeGeneres Show*, and was eventually making regular appearances as the show's "in-house" magician.

Now he hosts a gameshow on ellentube.com called *Let Me In So You Can Win*, where he surprises families who give back to their communities with a chance to win thousands of dollars.

A New Purpose

With his football career over, Dorenbos has turned his attention to what some say is his true calling: motivational speaking.

His mesmerizing magic, together with his personal story of overcoming tragedy and his infectious sense of humor, allows him to captivate audiences of all ages and backgrounds.

Before COVID-19 put a stop to in-person gatherings, Dorenbos was speaking in front of Fortune 500 companies like Home Depot, Lincoln Financial, and Nationwide Insurance, an average of 150 times a year. These companies want more than just a magician.

“When I perform magic at corporate events, I’m proud that it’s not gratuitous magic. It’s magic with a purpose,” said Dorenbos. “When I did magic as a kid, it opened me up. It made me vulnerable in ways to learn. What I’ve found in the speaking world is that when I do a trick that’s enhancing the message, it puts people in a state of wonder and they’re like a kid again. And now all of a sudden, they’re absorbing the message in all these different areas of the brain. They’re feeling it, experiencing it, watching it, and hearing it, and I just think it resonates better.”

The messages he delivers are the ones that he truly believes in. They deal with the healing power of forgiveness—and about not viewing failure as failure, but as part of the process.

“I take great pride that I can impact people personally and professionally,” said Dorenbos. “I think my life story summarizes it all: Find motivation in defeat and tell yourself a narrative that will inspire yourself to keep on keeping on.”

These days, Dorenbos is a hands-on dad to his one-year-old daughter, Amaya, delighting in his special night-time ritual of feeding her and rocking her to sleep.

And at the end of the day, Dorenbos wants to teach his daughter what he teaches to audiences all



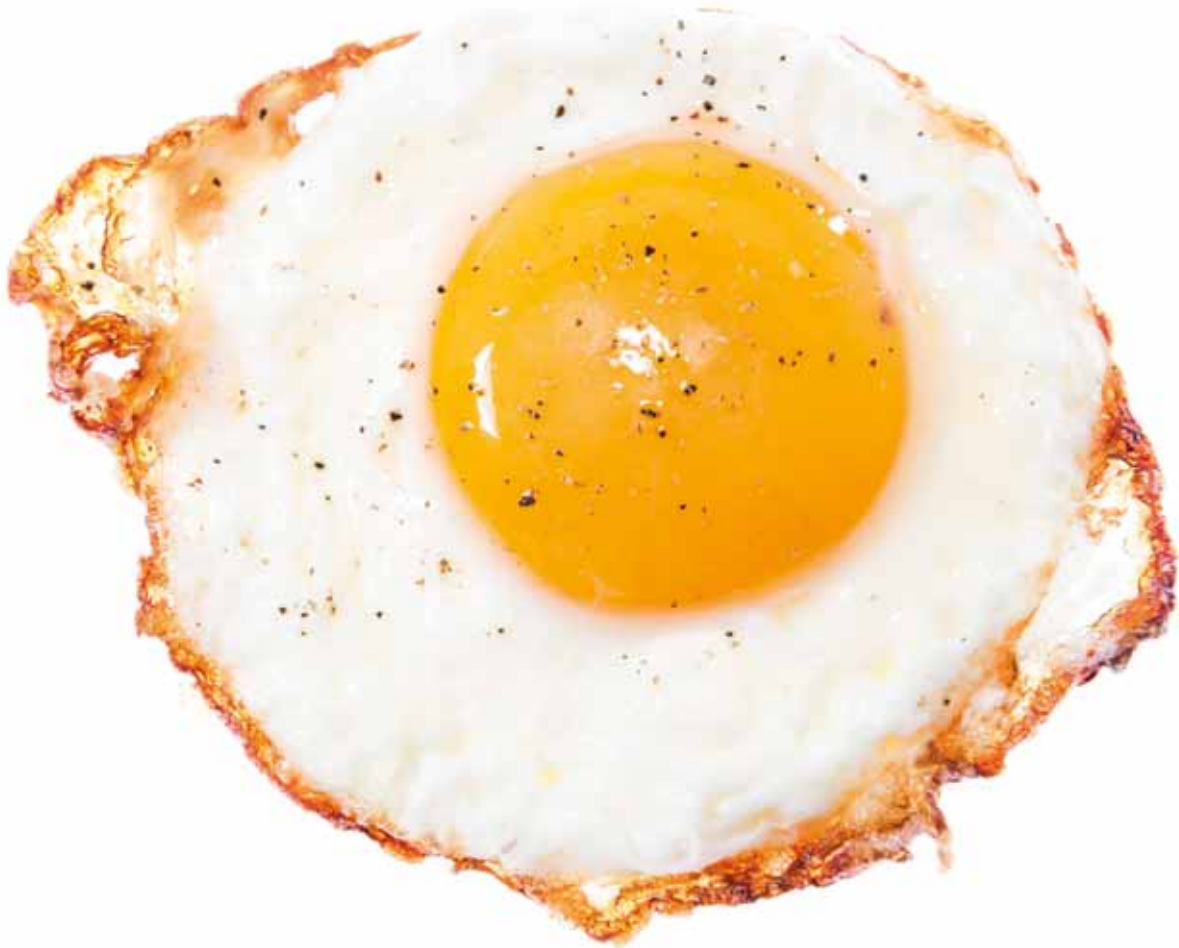
over the world, which is what he’s learned the hard way in his own life: to choose happiness.

“Happiness is a choice; it’s not an emotion,” said Dorenbos. “You have to choose it, see it, and constantly find it in all scenarios. This journey to find ourselves is never-ending. But what I know is that if you approach every day with childlike wonder and you recognize the possibility of every moment you find yourself in, you will actually be choosing happiness. And when you get there? Man, there’s no better high. It’s like, finally, you can exhale. It’s like... *peace*.” ●

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

Jon Dorenbos spent 14 years in the National Football League. He is also a professional magician, who appeared twice on *America's Got Talent*, has performed on *The Ellen DeGeneres Show* and *The Today Show*, and has headlined shows in Las Vegas. Today, Dorenbos is a motivational speaker who captivates audiences with his magic while sharing his inspiring personal story of overcoming tragedy. He captured that story in his Amazon best-selling book, *Life is Magic: My Inspiring Journey from Tragedy to Self-Discovery*.

For more information on Jon Dorenbos, visit www.jondorenbos.com



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Why Did I Come into This Room?

Joan Lunden's Candid Conversation About Aging



Millions of Americans woke up to Joan Lunden as the co-host of *Good Morning America* from 1980 to 1997.

As the longest-running female host ever on early morning television, Lunden reported from 26 countries, covered five presidents and five Olympics, and covered world-changing events like the fall of the Berlin Wall.

But when she left *Good Morning America* at age 47, in many ways her life was only just beginning.

She remarried in her 40s, had *two* sets of twins in her 50s—while also raising three teenaged daughters from her first marriage and caring for her aging mother—and fought (and won) her battle with breast cancer in her 60s.

Now, with 70 just around the corner, Lunden [before the pandemic] traveled the country speaking about a topic that has become her passion—healthy aging.

She headlined more than 20 events per year, sharing personal stories on battling cancer, caregiving, and key strategies for aging well, based on the latest science.

In her latest book, *Why Did I Come into This Room?* Lunden talks candidly about how she’s coping with the realities of aging (from wrinkles and weight gain, to weak pelvic floor, and low sex drive). She also delves into the science of aging—and more importantly, the science of *anti*-aging.

“We used to think all of the changes that came with aging were determined by our genes. Now research shows that only **30%** of health and longevity is controlled by genetics and that **70%** is in our hands to control,” said Lunden. “Our genes play a far less important role than lifestyle choices, diet, and health maintenance.”

In her book, she discusses factors such as:

- The link between inflammation and Alzheimer’s,
- The connection between decreasing estrogen, increasing insulin, and weight gain,
- The dangers of sarcopenia—and how to combat it as you get older, and
- How waist size impacts your risk of heart disease.

Lunden shares how her own anti-aging strategy involves following the lessons learned from the Blue Zones—the areas of the world with the longest-living people. This includes things like eating a Mediterranean-style diet, living an active lifestyle, and maintaining strong social connections.

In addition, Lunden takes numerous supplements to support her healthy lifestyle, the mainstays of which include:

- A multivitamin
- Calcium
- Vitamin C (**1,000 mg**)
- Vitamin D3 (**5,000 IU**)
- A probiotic
- Elderberry
- Fish Oil (**1,000 mg – 3,000 mg** of Omega-3)

In this candid interview with *Life Extension*[®], Lunden talks on a personal level about how she feels about growing older, some of the challenges she’s faced along the way, and advice for how to live your best life, no matter your age.

—Laurie Mathena

LE: Why was it important to you to write a book about aging?

Lunden: Writing about my life always feels a bit like lying on a psychiatrist’s couch. It forces me to dig deep, to delve into the scary places where my fears and worries reside, and to reflect on the choices I’ve made so far.

I mentally put myself there because I believe that sharing our journeys—including our personal stories, the mistakes we’ve made, and the lessons we’ve learned—may help others, or at the very least, amuse them.

I’ve often been guided by the wonderful quote: “You don’t inspire others by being perfect. You inspire them by how you deal with your imperfections.”

For this reason, I’ve shared some of my most personal and difficult challenges with viewers and readers over the years. My last big overshare was in 2014 when I was diagnosed with breast cancer.

People magazine asked me to appear on their cover bald for that story. Bare-headed bald—as in no scarf, no hat, no vanity.





If I could muster up the nerve to do that, I think I can share just about anything. So [I decided to share] my innermost thoughts about the very latest issue I'm coping with today ... aging.

Of course, this meant I had to be willing to admit that I am concerned about the aging process and also had to confide how I'm faring in that process.

Fortunately, it also meant I got to explore and make the distinction between being older and being old, not just for the benefit of those of us at a certain age, but for readers of every age.

LE: How do you feel now that 70 is right around the corner?

Lunden: When I was a little girl, I admittedly used to think of 65 as really old—as in the-end-of-the-road kind of old. Now, here I am driving full speed through my 60s with the top down and the wind blowing through my hair, feeling like it's one of the best decades of my life.

I didn't expect it to be, and that's a shame. We really shouldn't make this wonderful discovery about aging looking in the rearview mirror. I cringe when I recall my own predictions about this time of life!

Psychologists say that how we perceive ourselves has a huge influence on how we present ourselves. It impacts how we conduct our lives and what we think we can do. For most of us, it's something we're not even conscious of.

The age we feel we are—more than our biological age—can greatly impact our future, the goals we allow ourselves to set, and the strides we have yet to make.

Okay, then age is just a number that can change depending on who's asking. Today, I pick 45. That's my story and I'm sticking with it!

LE: Did age factor into your leaving *Good Morning America* after hosting for nearly two decades?

Lunden: I remember the day my agent called to tell me that ABC had decided to change the *Good Morning America* hosts; they were going to hire younger ones.

I was being replaced.

That is a phrase that can knock the wind right out of you. It took a moment to even process the reality of it.

I could have easily let my anger at the ABC execs take me by the neck and strangle me. I could have also let my fear of future unemployment totally paralyze me.

But somehow a cooler head prevailed and rather than worry about what the future might bring, and whether it would be as good, I thankfully focused on how I should handle myself during this pivotal point in my life, because I was going to have to do it in front of America.

I finally decided that the sun would come up tomorrow, even without *Good Morning America*.

Why do we all seem to be so resistant to change in our lives? I think it's because we all fear the unknown! That's certainly what I was concerned about. I had no idea what would come next.

LE: What did come next?

Lunden: Ironically, one of the first opportunities that came my way after leaving *Good Morning America* was a request from American Express to be the keynote speaker at a huge international travel conference in Edinburgh, Scotland.

I guess I have to tell you why that's ironic. I had a fear of public speaking. Despite an audience of 20 million viewers a week on television, the mere thought of speaking in front of several hundred people in a live situation had always unnerved me.



And I'm not just talking butterflies in my stomach here; I am talking about full-blown, red, blotchy hives on my chest!

The event in Scotland was just what I needed to start letting go of my long-time fear of public speaking. Today I average over 20 speeches a year. It is arguably one of the most rewarding and enjoyable parts of my career.

It has become a passion of mine to help lead conversations about how we can best manage our health so that we can enjoy longevity and all the promise that our later years hold for us.

LE: I'm sure your battle with breast cancer helps shape those conversations.

Lunden: When I heard those words, "You have breast cancer," my life came to a screeching halt. My first lesson in the challenging fight for my life was that cancer did not care about any of my plans.

I had always assumed that breast cancer was something that would happen to some other woman, not to me. But now here I was hearing the unimaginable.

I had gotten a 3D mammogram that day, which was negative, but in the ultrasound that followed, I learned I had an aggressive form of breast cancer called Triple Negative.

It was a fluke that I even had that ultrasound. It was only because a few years earlier I'd interviewed breast cancer expert Dr. Susan Love about mammogram screenings. I told Dr. Love I found them nerve-wracking because I was always called back for more pictures, although the technicians said it was only because I had dense breasts, so it was hard to see much.

With that, Dr. Love said I should be having regular ultrasounds in addition to mammograms. It turns out that her advice very likely saved my life.

LE: It seems like planning for the future is very important to you.

Lunden: Mom used to tell me that one of the best ways to keep our lives exciting and worth living was to always have plans, lots of them. Over the years, I have found that having plans and goals has helped me to keep excited and moving forward. Aren't our moms always right?

This concept of planning for an exciting future is perhaps one of the best-kept secrets of successful aging.

I first encountered this notion in an article about Deepak Chopra's bestselling book *Ageless Body, Timeless Mind*. I recall reading the words, "People don't grow old. People get old when they stop growing," and thinking to myself, Well, he sure is an optimist! Then of course, I immediately went out and bought a copy of the book.

LE: How have Chopra's ideas shaped how you approach aging?

Lunden: Chopra really made me think about the concept of aging and of being old. Although it appeals to common sense that we grow old because we simply wear out, no wear-and-tear theory of aging has actually held up under close scrutiny.

According to Deepak Chopra, there are three ways that we can measure our age: chronologically, biologically, and psychologically. Would it surprise you to discover that the most unreliable gauge of the three is chronological?

After reading Chopra's book I changed my approach to aging completely. I no longer perceive it as a threat to my many desirable goals. I now think of my later years as something to get excited about and plan for. Holy moly, what a difference it's made!

LE: Speaking of lifestyle choices, do you follow any particular anti-aging diet?

Lunden: While I'm not a nutritionist, I've learned over the years that it's very important to eat heart-healthy foods. I've tried countless diets. Some worked . . . kind of. But I'd often gain the weight back after I reached my goal.

What I have found successful, however, is following an eating plan. You know, these are programs that are not really diets so much as ways to incorporate healthy foods into our life on a long-term basis.

Now, as my general rule in life, I follow the Mediterranean diet, always choosing fresh foods and piling on the veggies.

Again, I'm not a nutritionist, but I can tell you that eating clean has been best for me. Replacing fried foods and processed foods with simple nutrient-dense proteins and lots of veggies and staying away from sugar has made a huge difference in my life.

LE: What kinds of plans are you making for the next decade of your life?

Lunden: My husband and I [have] discussions about how we want our lives to look as we age. We often laugh about some of our requirements: a warm sunny climate for golf and pool time; an active community where we can maintain our

fitness and also remain socially connected; and last, but not least, a place that is small enough so it doesn't require much upkeep but is also big enough for our kids to visit.

On a personal level, I'm thrilled to attend my kids' basketball, soccer, and football games. I've become a genuine sports fan, though I will admit that I sometimes get a little carried away and can be a bit too vocal in the stands—at least that's what the kids say. My husband is there, though, to keep me in check.

Each of us needs to give some thought to what makes us happy in life, especially now that we will likely have a whole lot of time for such pursuits. With a plan in hand, we're more apt to embrace these years than we are to try to dodge them.

LE: It's clear that your story is far from over.

Lunden: During the last two decades, I've had the opportunity not only to host TV shows but to pursue lots of new things.

I've had roles in several movies and prime-time shows; I've spearheaded media campaigns; I've spoken to audiences all over the world; I created a women's summer getaway camp in Maine; I designed several home-goods lines, including everything from cookware to bedding, which I sold on QVC; and, of course, I've continued writing books.

I am most certainly not done. The more new projects I say yes to, the more I strengthen my courage muscle, the more comfortable I am trying other new things, and the more excited I become about life.

It's never too late to write new chapters in our life story. We are each the author of our own adventure. We get to write what will be on our next page. We hold the pen.

Our story will be determined not so much by what life brings to us, but by the attitude, passion, and perseverance we bring to life.

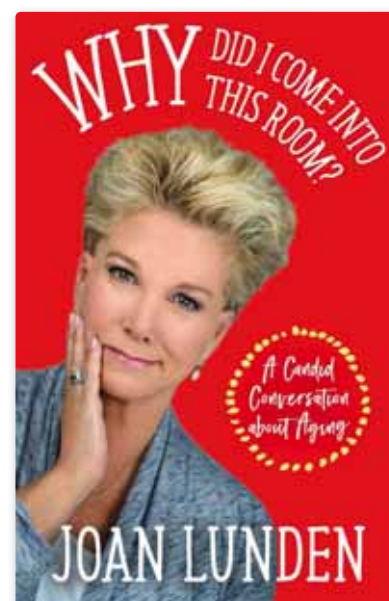
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Joan Lunden is an award-winning journalist, best-selling author, motivational speaker, and women's health and wellness advocate. She was the co-host of ABC's *Good Morning America* from 1980-1997 and is the author of 12 books. She is a special correspondent on the *Today Show* and host of the CBS series *Your Health*.

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1 bottle \$14.85 • 2 bottles \$13.50 each

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



GLUTEN FREE



Tomatoes

BY LAURIE MATHENA



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Tomatoes are touted for their health benefits today, but they weren't always viewed so highly. In colonial days, tomatoes were believed to be poisonous, and they didn't become a staple part of the diet until shortly before the Civil War.

Now, the tomato ranks as the second most consumed vegetable in the US (even though it's technically a fruit).

Tomatoes provide an array of health benefits that make them a valuable addition to a healthy diet.

Numerous plant compounds contribute to these health benefits. These include **beta carotene** (which is converted to vitamin A in the body) and **naringenin** (a flavonoid in tomato skins that reduces inflammation in animal studies).¹

But by far, the most beneficial, best-studied compound in tomatoes is the carotenoid that gives tomatoes their vibrant red color: **lycopene**.

Consuming tomatoes contributes to lower risk of heart disease and cancer—benefits largely due to lycopene.

Studies suggest that lycopene and tomato products can help to:²⁻⁴

- lower biomarkers of oxidative stress,
- lower TNF-alpha production (a signaling protein involved in systemic inflammation),
- protect the inner layer of the blood vessels, and
- decrease the risk of blood clotting.

Low levels of lycopene and beta carotene have been linked to an *increased risk* of heart attack,⁵ while higher serum concentrations of lycopene (seen as a marker of tomato intake) *decreases* the risk of stroke in men.⁶

Observational studies have shown that people who consume the most tomatoes and tomato products—and those who have the highest lycopene levels—have fewer incidences of numerous types of cancer.⁷

The strongest benefits were seen in prostate, lung, and stomach cancers—although benefits were also seen in cancers of the pancreas, colon and rectum, esophagus, oral cavity, breast, and cervix.⁷

The authors of one study concluded, “The consistently lower risk of cancer for a variety of anatomic sites that is associated with higher consumption of tomatoes and tomato-based products adds further support for current dietary recommendations to increase fruit and vegetable consumption.”⁷

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- 02318 Keto Brain and Body Boost
- 02020 Super Carnosine
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- 02146 Wellness Bar—Chocolate Brownie
- 02147 Wellness Bar—Cookie Dough
- 02246 Wellness Code® Advanced Whey Protein Isolate Vanilla
- 02221 Wellness Code® Muscle Strength & Restore Formula
- 02127 Wellness Code® Plant Protein Complete & Amino Acid Complex
- 02261 Wellness Code® Whey Protein Concentrate Chocolate
- 02260 Wellness Code® Whey Protein Concentrate Vanilla
- 02243 Wellness Code® Whey Protein Isolate Chocolate
- 02242 Wellness Code® Whey Protein Isolate Vanilla

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- 01671 D,L-Phenylalanine Capsules
- 01624 L-Arginine Caps
- 01532 L-Carnitine
- 00345 L-Glutamine
- 00141 L-Glutamine Powder
- 01678 L-Lysine
- 01827 Taurine
- 00133 Taurine Powder
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- 02497 Endothelial Defense™ Pomegranate Plus
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- 00984 Optimal BP Management
- 01953 Pomegranate Complete
- 00956 Pomegranate Fruit Extract
- 02024 Triple Action Blood Pressure AM/PM
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- 02123 Bone Restore Chewable Tablet
- 02416 Bone Restore Elite with Super Potent K2
- 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
- 02417 Mega Vitamin K2
- 01476 Strontium Caps

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- 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

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- 00709 Migra-Eeze™
- 01603 Neuro-Mag® Magnesium L-Threonate Caps
- 02032 Neuro-Mag® Magnesium L-Threonate Powder
- 00888 Optimized Ashwagandha
- 01676 PS (Phosphatidylserine) Caps
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CHOLESTEROL MANAGEMENT

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

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- 02412 Bloat Relief
- 30747 Digest RC®
- 07136 Effervescent Vitamin C - Magnesium Crystals
- 02021 Enhanced Super Digestive Enzymes
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- 02033 EsophaCool™
- 01737 Esophageal Guardian
- 01706 Extraordinary Enzymes
- 02100 Gastro-Ease™
- 01122 Ginger Force™
- 00605 Regimint
- 01386 TruFiber®

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- 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™ 300 mg, 30 veg capsules
- 02348 NAD+ Cell Regenerator™ and Resveratrol
- 01500 PQQ Caps • 10 mg
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- 02003 Triple Action Thyroid

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

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- 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
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- 02171 Rainforest Blend Whole Bean Coffee
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- 01503 CinSulin® with InSea2® and Crominex® 3+
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- 02018 Optimized Carnitine
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- 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
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- 01859 TMG Liquid Capsules
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- 00335 DHEA (Dehydroepiandrosterone) 25 mg, 100 capsules
- 00882 DHEA (Dehydroepiandrosterone) 50 mg, 60 capsules
- 00607 DHEA (Dehydroepiandrosterone) 25 mg, 100 vegetarian dissolve in mouth tablets
- 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

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- 01704 Immune Modulator with Tinofend®
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- 24404 Kinoko® Platinum AHCC
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- 01903 NK Cell Activator™
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- 01309 Optimized Quercetin
- 01811 Peony Immune
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- 02467 Curcumin Elite™ Turmeric Extract • 30 veg capsules
- 02407 Curcumin Elite™ Turmeric Extract • 60 veg capsules
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- 02223 Pro-Resolving Mediators
- 00318 Serrafazyme
- 01203 Specially-Coated Bromelain
- 00407 Super Bio-Curcumin® Turmeric Extract
- 01254 Zyflamend™ Whole Body

JOINT SUPPORT

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- 01617 ArthroMax® with Theaflavins & AprèsFlex®
- 02138 ArthroMax® Elite
- 00965 Fast-Acting Joint Formula
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- 01050 Krill Oil
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- 02231 NT2 Collagen™

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- 01424 Optimized Cran-Max® with Ellirose™
- 01921 Uric Acid Control
- 01209 Water-Soluble Pumpkin Seed Extract

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- 02240 Anti-Alcohol 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
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- 01837 Pomi-T®
- 01373 Prelox® Enhanced Sex for Men
- 01940 Super MiraForte with Standardized Lignans
- 01909 Triple Strength ProstaPollen™
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- 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
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- 01813 Zinc Caps

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- 00577 Potassium Iodide
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- 01074 5 HTP
- 01683 L-Theanine

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- 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
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- 02313 One-Per-Day Tablets
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- 02315 Two-Per-Day Tablets • 120 tablets

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- 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
- 02400 FLORASSIST® Winter Immune Support
- 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

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- 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 Serum
- 80156 Collagen Boosting Peptide Serum
- 02408 Collagen Peptides for Skin & Joints
- 80169 Cucumber Hydra Peptide Eye Cream
- 80141 DNA Support Cream
- 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
- 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 Methylcobalamin
- 01536 Vitamin B12 Methylcobalamin • 1 mg, 60 veg lozenges
- 01537 Vitamin B12 Methylcobalamin • 5 mg, 60 veg lozenges
- 02228 Vitamin C and Bio-Quercetin Phytosome
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™

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- 00658 7-Keto® DHEA Metabolite • 25 mg, 100 capsules
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- 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
- 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

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N-ACETYL-L-CYSTEINE Supports Healthy Respiratory Tract Function



N-Acetyl-L-Cysteine (NAC) supports healthy levels of *glutathione*, a molecule utilized by all cells for protection against free-radical damage and attacks from pathogens.

NAC is a powerful antioxidant that helps clear airways, and benefits bronchial, respiratory, liver, and immune health.

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

SUPER SALE PRICE

Item # 01534
600 mg, 60 capsules
1 bottle \$9.45
4 bottles \$8.33 each

Caution: Those who supplement with NAC should drink 6 to 8 glasses of water daily in order to prevent cysteine renal stones. Cysteine renal stones are rare but do occur.



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.

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Fuel for Heart | Mind | Muscle

CoQ10 helps fuel energy production at the cellular level—and **ubiquinol** *absorbs* eight times better than standard CoQ10. This means you'll have the body energy you need to power your brain, liver, kidneys, and heart.

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GLUTEN FREE



NON-GMO CERTIFIED

SUPER SALE PRICE

Item #01426 • 100 mg, 60 softgels

1 bottle **\$41.85** • 4 bottles \$35.10 each

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