LIFE EXTENSION®
The Science of a Healthier Life®
November/December 2020

FEATURE ARTICLES

Vitamin D's: Winter Immune Benefits

PLUS: The Dangers of Overprescribing Statin Drugs

Item #02497
60 Softgels

Triple Protection for Your Ticker.

Your heart keeps the beat for your entire body. Hidden inside your arteries and veins is the vascular endothelium—a thin layer of cells that keeps your system running like clockwork.

NEW Endothelial Defense™ Pomegranate Plus keeps your cardiovascular gears turning with pomegranate, melon extract and more.

Pomegranate—protects arteries from oxidation with free-radical-quenching polyphenols.

Extramel® melon concentrate—encourages production of superoxide dismutase, a naturally occurring antioxidant.

Cardiose®—promotes circulatory health with hesperetin extracted from sweet orange peels.

This product is available at fine health food stores everywhere.

ArthroMax® Advanced with NT2 Collagen & AprèsFlex® is a multinutrient formula that supports healthy joint function.

JUST TWO CAPSULES A DAY PROVIDE:

Glucosamine sulfate 2KCl (derived from non-GMO corn)	**1,500 mg**
AprèsFlex® Indian frankincense (*Boswellia serrata*) extract (gum resin) [std. to 20% AKBA]	**100 mg**
NT2 Collagen™ standardized cartilage	**40 mg**
Total Collagen	**10 mg**
Boron (calcium fructoborate as patented FruiteX-B® OsteoBoron®)	**1.5 mg**

Item #02238 • 60 capsules

GLUTEN FREE

NON GMO LE CERTIFIED

NT2 Collagen™ is manufactured by Bioibérica. AprèsFlex® is a registered trademark of Laila Nutraceuticals exclusively licensed to PL Thomas - Laila NUTRA LLC. U.S. Patent No. 8,551,496 and other patents pending. FruiteX-B® and OsteoBoron® are registered trademarks of VDF FutureCeuticals, Inc. U.S. Patent No. 5,962,049.

[Δ] 3-O-acetyl-11-ketoB-boswellic acid.

This product is available at fine health food stores everywhere.

Life Got You Down for the Count?

Are you experiencing general fatigue? Do you lack motivation? Well, it's time to get up off the mat and fight back!

What you're feeling may be the result of declining NAD+ levels, a coenzyme found in every cell in your body. NAD+ facilitates ATP production, which your body uses for fuel.

Life Extension®'s best-selling NAD+ Cell Regenerator™ can help maintain the youthful levels of NAD+ you need to thrive.

NAD+ Cell Regenerator™ and Resveratrol
Item #02348 • 30 veg. caps.

NAD+ Cell Regenerator™
Item #02344 • 30 veg. caps.

GLUTEN FREE

NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

FORESIGHT FOR YOUR EYESIGHT

MacuGuard® Ocular Support provides:

1. **Lutein**, ***trans*-zeaxanthin**, and **meso-zeaxanthin** to help maintain structural integrity of the **macula** and **retina**.[1-5]
2. **Alpha-carotene** to further help support **macular density**.[1]
3. **Cyanidin-3-glucoside** to assist with night vision.[6-8]
4. **Astaxanthin** for comprehensive eye health support and to fight eye fatigue.[9]
5. **Saffron** to help support vision, based on study subjects seeing an average of two additional lines on eye chart used by doctors to test vision.[1]

References

1. *JAMA Ophthalmol.* 2015;133(12):1415-24.
2. *Nutrients.* 2013 April;5(4):1169-85.
3. *Nutrition*. 2011 Sep;27(9):960-6.
4. *Free Radic Biol Med.* 2012;53(6):1298-307.
5. *J Ophthalmol.* 2015;2015:523027.
6. *Evid Based Complement Alternat Med.* 2012; 2012:429124.
7. *Invest Ophthalmol Vis Sci.* 2010;51(12):6118-24.
8. *J Agric Food Chem. 2003* Jun 4;51(12):3560-3.
9. *Altern Med Rev.* 2011 Dec;16(4):355-64.

Item #01993 • 60 softgels

Each bottle lasts for two months.

This product is available at fine health food stores everywhere.

GLUTEN FREE · 1 DAILY · NON GMO LE CERTIFIED

Does your MULTIVITAMIN measure up?

Two-Per-Day beats Centrum® in 10 ways!

Get The Maximum Potency From Your Multivitamin!

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

Centrum® Can't Compete

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

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

Two-Per-Day Capsules
Item #02314 • 120 capsules
(Two-month supply)

Two-Per-Day Tablets
Item #02315 • 120 tablets
(Two-month supply)

These products are available at fine health food stores everywhere.

GLUTEN FREE

NON GMO LE CERTIFIED

*Formula compared to Centrum® Silver® Adults 50+.

LIFE EXTENSION®
The Science of a Healthier Life®
November/December 2020

CONTENTS

REPORTS

IN THE NEWS

AUTHOR INTERVIEW: CANCER, INCORPORATED

SUPER FOODS

LIFE EXTENSION®

The Science of a Healthier Life®

LifeExtensionRetail.com November/December 2020

We Have a New Look

Our new bottles and labels include important product details (dosages, cautions, all ingredients).

Life Extension has always provided extensive labeling information.

As regulations require a minimum text size on product labels, some bottles are larger than others. And, as always, our bottles are 100% recyclable.

Life Extension *For Longer Life*™

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.

find us on facebook

Facebook.com/LifeExtension

For instant access to special offers and promotions, product news, and exclusive health and wellness information.

follow us on twitter

Twitter.com/LifeExtension

For up-to-the-minute health tips, breaking industry news, and the latest updates in medical research.

LIFE EXTENSION (ISSN 1524-198X) November/December ©2020 is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33309-3338.Published 13 times a year. Subscription rate: $40 per year in the United States. US $47 in Canada. US $60 in other countries. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscriptions: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. POSTMASTER: Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. Printed in USA. The articles in this magazine are intended for informational purposes only. They are not intended to replace the attention or advice of a physician or other health-care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle change intended to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health-care professional. LEGAL NOTICE: Health claims contained in articles and advertisements in this publication have not been approved by the FDA with the exception of FDA-approved, qualified health claims for calcium, antioxidant vitamins, folic acid and EPA and DHA omega-3 fatty acids, and selenium as noted where applicable. *Life Extension® Magazine* does not endorse any of the businesses or the products and/or services that may appear in advertisements for non-Life Extension branded products or services contained in it, except to state that they are advertisers who may have paid Life Extension for placement of an advertisement in this publication. Life Extension disclaims any and all responsibilities or warranties as to the accuracy of information contained in advertisements for non-Life Extension branded products or services. For Canadian customers send change of address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON L2A 6C7.

H_2O Scams Exposed!

FREE Report

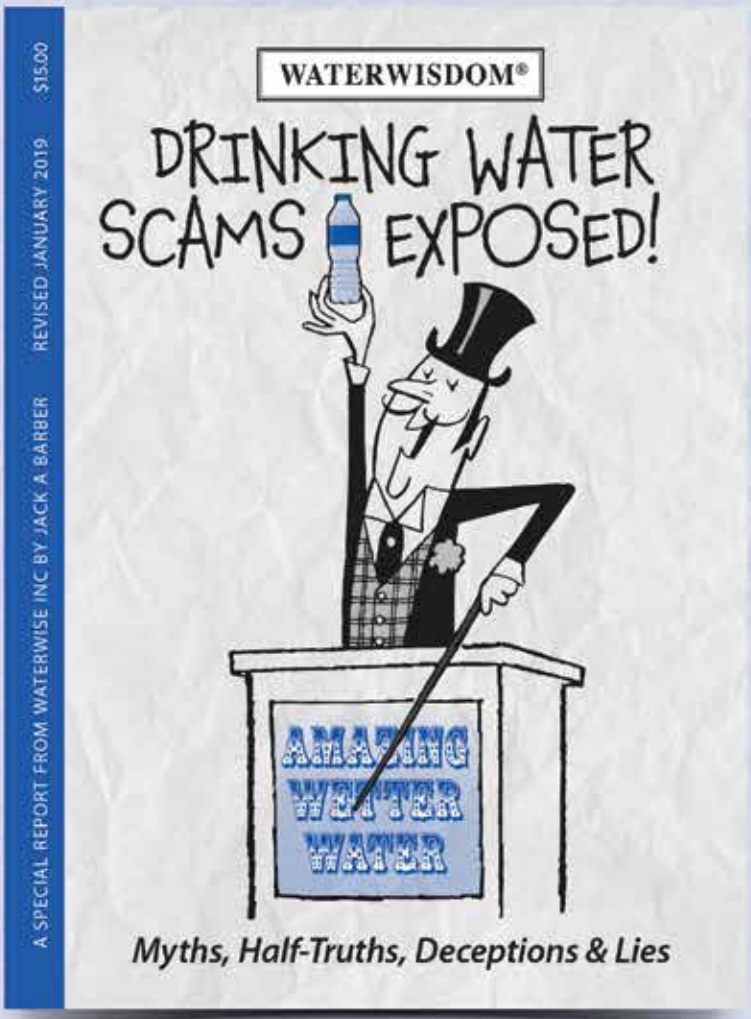
$15.00 value

Get the lowdown on bogus water scams… *oxygenated, structured, energized, alkalized and micro-clustered.*

Truth revealed *about distilled, mineral, spring, filtered, bottled, reverse osmosis, well and ordinary "purified" water. Discover the amazing Waterwise system that* ***guarantees you consistent water purity.***

Learn about the wise alternative to buying bottled and ***save 70% or more.***

Drink the purest… ***you should consume about 2,920 glasses*** *(182 gallons) every year—be water wise!*



Waterwise water purifiers are recommended by the following:

Dr. Russell Blaylock, Dr. Patricia Bragg, Dr. Ted Broer, Dr. Michael Colgan, Dr. David Klein, Dr. Monte Kline, Dr. Bill Misner, Dr. Keith Nemec, Dr. Scott Senne, Dr. Varah Siedlecki, Dr. David Williams, *and many more…*

Call **800-874-9028** Ext 750
Visit **waterscamsreport.net**

WATERWISE®
Purity Since 1977
Purification Systems

☑ **YES!** *Please rush my* ***FREE*** *Waterwisdom Report & Catalog… No Cost/No Obligation*

Name _____

Address _____

City _____ State ____ Zip _____

Mail to: Waterwise Inc • PO Box 494000 Leesburg FL 34749

MEDICAL ADVISORY BOARD

Sandra C. Kaufmann, MD, is a fellowship-trained and board-certified pediatric anesthesiologist as well as the Chief of Anesthesia at the Joe DiMaggio Children's Hospital in Hollywood, Florida. She is the founder of The Kaufmann Anti-Aging Institute and the author of the book The Kaufmann Protocol: Why we Age and How to Stop it (2018). Her expertise is in the practical application of anti-aging research.

Richard Black, DO, is a dedicated nuclear medicine physician practicing as an independent contractor out of Cleveland, Ohio. Dr. Black is board certified in internal medicine and nuclear medicine, and is licensed to practice medicine in multiple states throughout the United States.

John Boik, PhD, is the author of two books on cancer therapy, Cancer and Natural Medicine (1996) and Natural Compounds in Cancer Therapy (2001). He earned his doctorate at the University of Texas Graduate School of Biomedical Sciences with research at the MD Anderson Cancer Center, focusing on screening models to identify promising new anti-cancer drugs. He conducted his postdoctoral training at Stanford University's Department of Statistics.

Aubrey de Grey, PhD, is a biomedical gerontologist and Editor-in-Chief of Rejuvenation Research, the world's highest-impact, peer-reviewed journal focused on intervention in aging. He received his BA and PhD from the University of Cambridge in 1985 and 2000 respectively. Dr. de Grey is a Fellow of both the Gerontological Society of America and the American Aging Association and sits on the editorial and scientific advisory boards of numerous journals and organizations.

Deborah F. Harding, MD, is founder of the Harding Anti-Aging Center. She is double board-certified in internal medicine and sleep disorder medicine. She also earned the Cenegenics certification in age management medicine. She is a faculty member of the University of Central Florida Medical School.

Steven B. Harris, MD, is president and director of research at Critical Care Research, a company that grew out of 21st Century Medicine in Rancho Cucamonga, CA. Dr. Harris participates in groundbreaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction effects in animals and humans.

Peter H. Langsjoen, MD, FACC, is a cardiologist specializing in congestive heart failure, primary and statin-induced diastolic dysfunction, and other heart diseases. A leading authority on coenzyme Q10, Dr. Langsjoen has been involved with its clinical application since 1983. He is a founding member of the executive committee of the International Coenzyme Q10 Association, a fellow of the American College of Cardiology, and a member of numerous other medical associations.

Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPath., FACP, is the Medical Director of the South Florida Bone Marrow Stem Cell Transplant Institute and is regarded as one of the world's foremost experts on adult stem cells. He received his medical degree in 1978 from the University of Glasgow Medical School, Scotland. He completed his internship and residency in Internal Medicine and Hematology at the University's Royal Infirmary.

L. Ray Matthews, MD, FACS, is a professor of surgery and director of Surgical Critical Care at Morehouse School of Medicine in Atlanta, GA, and a trauma and critical care surgeon at Grady Memorial Hospital. He has published widely and is known as one of the top vitamin D experts. Dr. Matthews has spoken before the U.S. Food and Drug Administration several times, presenting a recent update about clinical research on vitamin D.

Ralph W. Moss, PhD, is the author of books such as Antioxidants Against Cancer, Cancer Therapy, Questioning Chemotherapy, and The Cancer Industry, as well as the award-winning PBS documentary The Cancer War. Dr. Moss has independently evaluated the claims of various cancer treatments and currently directs The Moss Reports, an updated library of detailed reports on more than 200 varieties of cancer diagnoses.

Michael D. Ozner, MD, FACC, FAHA, is a board-certified cardiologist who specializes in cardiovascular disease prevention. He serves as medical director for the Cardiovascular Prevention Institute of South Florida and is a noted national speaker on heart disease prevention. Dr. Ozner is also author of The Great American Heart Hoax,The Complete Mediterranean Diet and Heart Attack Proof. For more information visit www.drozner.com.

Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Tukwila, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored or co-authored 14 books, selling more than 1.5 million copies.

Xiaoxi Wei, PhD, is a chemist, expert in supramolecular assembly and development of synthetic transmembrane nanopores with distinguished selectivity via biomimetic nanoscience. She has expertise in ion channel function and characterization. She founded X-Therma Inc., a company developing a radical new highway towards non-toxic, hyper-effective antifreeze agents to fight unwanted ice formation in regenerative medicine and reduce mechanical icing.

Maintain Youthful HOMOCYSTEINE LEVELS

FOR BRAIN, HEART, AND HEARING HEALTH

Homocysteine Resist supports healthy levels of homocysteine, an unfavorable amino acid that can increase with normal aging.

Item #02121

60 vegetarian capsules

Just one daily capsule of **Homocysteine Resist** provides:

5-MTHF (activated folate)	5,000 mcg
Methylcobalamin (activated vitamin B12)	1,000 mcg
Pyridoxal 5′-phosphate (activated vitamin B6)	100 mg
Riboflavin (vitamin B2)	25 mg

Suggested dose: If your daily multi-vitamin contains activated **B-vitamins**, then take one capsule daily of **Homocysteine Resist** at a different time of the day.

GLUTEN FREE · 1 DAILY · NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

In the News

Sleep is Important for the Immune System

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

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

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

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

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

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

Eating More Olive Oil May Lower Heart Disease Risk

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

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

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

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

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

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

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

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

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

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

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

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

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

Adding Spices to Meals May Benefit Health

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

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

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

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

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

Glucosamine Supplementation Linked to Lower Mortality Risk

There was a lower risk of death from cardiovascular disease, cancer, respiratory disease, digestive diseases, or any cause, among individuals who supplemented with **glucosamine**, in comparison with those who didn't, a study published in *Annals of the Rheumatic Diseases* found.*

Researchers looked at 495,077 participants enrolled in the UK Biobank study. During a median of 8.9 years, 19,882 deaths occurred, which included 3,802 deaths from cardiovascular disease, 8,090 from cancer, 3,380 from respiratory disease and 1,061 from digestive disease.

Regular use of glucosamine supplements was reported by **19.1%** of the participants at baseline.

Those individuals who regularly supplemented with glucosamine, compared to those who didn't, had:

- **27%** lower risk of death from respiratory disease,
- **26%** lower risk of dying from digestive disease,
- **18%** lower risk of death from cardiovascular disease,
- **6%** lower risk of dying from cancer, and
- **15%** lower risk of death from any cause.

Editor's Note: Glucosamine is a nutritional supplement used in the management of arthritis and joint pain. These newly identified benefits are being studied now to ascertain if supplementing with **500-1500 mg** a day of **glucosamine** might be an effective way to reduce the risk of age-related disorders and all-cause mortality.

* *Ann Rheum Dis.* 2020 Jun;79(6):829-836.

Eating Less Salt Helps Support Healthy Immune Function

One simple way to help maintain healthy immune function is to lower salt intake, according to a study published in *Science Translational Medicine.**

Researchers studied the effects of a high-salt diet in mice and humans. Mice infected with listeria that received a high-salt diet had 100 to 1,000 times more of the bacteria in their spleens and livers than animals that consumed normal diets.

In humans who consumed an extra **six grams** of salt per day, immune cells in the blood known as granulocytes were less effective against bacteria, and levels of glucocorticoids increased.

When a high amount of salt is consumed, it is filtered by the kidneys, whose sodium chloride sensor activates salt excretion in the urine. This sensor is also responsible for the accumulation of glucocorticoids that inhibit the function of granulocytes that primarily attack bacteria. When granulocyte function is impaired, infections are more severe.

Editor's Note: Additionally, according to the World Health Organization, "*Salt intake of less than **five grams** per day for adults helps to reduce blood pressure and risk of cardiovascular disease, stroke, and coronary heart attack.*"

* *Sci Transl Med.* 2020 Mar 25;12(536).

Metformin Use Associated with Improved Postoperative Survival Among Diabetics

A lower risk of readmission or mortality following surgery was found among patients who were using the antidiabetic prescription medication metformin, research reported in *JAMA Surgery* revealed.*

The study included 10,088 diabetics who were hospitalized for major surgery between January 2010 and January 2016. There were 5,962 individuals who had a prescription for metformin during 180 days prior to their surgery, who were matched with 5,460 people who did not have a prescription.

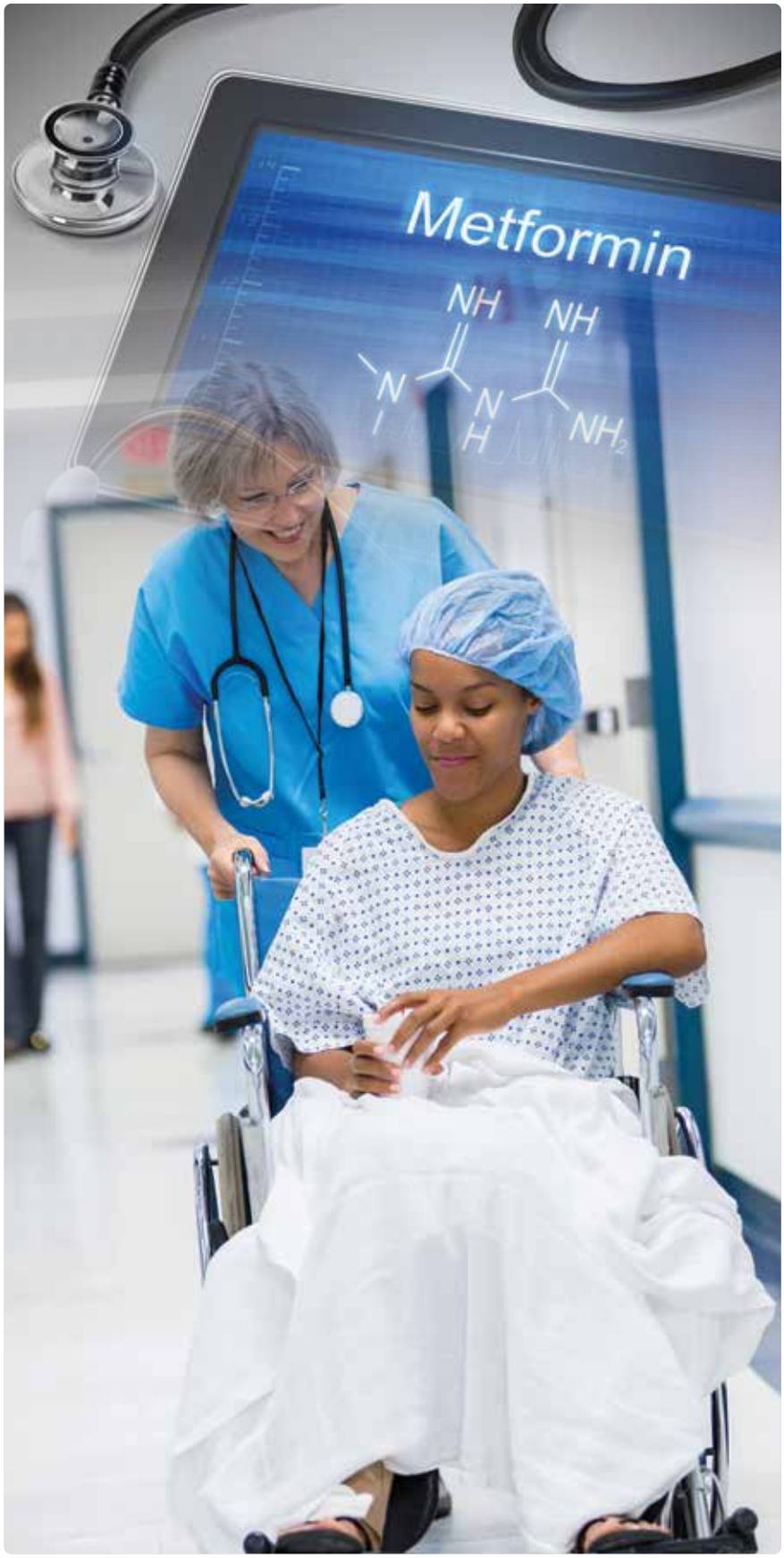
Having a prescription for metformin was associated with a **28%** lower 90-day postoperative mortality risk compared to the risk experienced by those who were not using the drug.

Metformin was also associated with a lower 30-day and 90-day postoperative risk of readmission, indicating fewer postoperative complications.

It was further determined that metformin was associated with a **22%** increase in five-year survival in comparison with not having been prescribed the drug.

Editor's Note: Preoperative inflammation, as determined by the ratio of white blood cells known as neutrophils to leukocytes, was significantly lower among metformin-treated patients, which may be one mechanism through which the drug confers its protective effects.

* *JAMA Surg*. 2020 Apr 8;155(6):e200416.



Reduced Heart Failure with Higher Magnesium Intake

Research findings published in the *Journal of the American Heart Association* show a lower risk of heart failure among participants in the Women's Health Initiative (WHI) who had a greater intake of magnesium, compared to those whose intake was low.*

The study evaluated data from 97,725 postmenopausal women who were free of heart failure on enrollment. Questionnaires completed by the participants after enrolling were evaluated for magnesium intake from food and supplements. During a median follow-up period of 8.1 years, 2,153 hospitalizations for heart failure occurred.

Compared to the top **25%** of magnesium consumers, who ingested an average of **461 mg** per day, women whose intake was among the lowest **25%** at **207.5 mg** per day had a **26%** greater adjusted risk of heart failure.

When magnesium from food alone was analyzed, the risk of heart failure for those consuming the least amount was **32%** higher than the group with the greatest consumption.

Editor's Note: "Women represent a large proportion of the growing heart failure epidemic, yet data are lacking regarding optimal dietary and lifestyle prevention strategies for them," the authors stated.

* *J Am Heart Assoc*. 2020 Apr 7;9(7):e013570.

EXTEND-RELEASE

MAGNESIUM

When You Need It

Item #02107 • 60 vegetarian capsules

NON GMO LE CERTIFIED

Innovative delivery system provides **immediate** and **extended-release magnesium** for full-body coverage of this essential mineral.

This product is available at fine health food stores everywhere.

ZiNC

SUPPORTS YOUR FIRST LINE OF DEFENSE

Research shows zinc deficiency is common in aging populations—and may contribute to the decline of **immune function**.[1]

Zinc supports:

- **Natural killer** cell function[2]
- A healthy inflammatory response[3]
- **Thymic** function needed to make immune **T-cells**

Life Extension® combines the superior bioavailability of ***zinc methionate*** with **zinc citrate** to provide 50 mg of these ***absorbable*** zincs in a single capsule.[4]

Item #01813

50 mg • 90 vegetarian capsules

This product is available at fine health food stores everywhere.

References

1. *Immun Ageing*. 2009 Jun 12;6:9.
2. https://www.sciencedirect.com/science/article/abs/pii/S1756464618303621.
3. *Am J Clin Nutr*. 2004 Mar;79(3):444-50.
4. *J Trace Elem Med Biol*. 2010 Apr;24(2)89-94.

NON GMO LE CERTIFIED


S40/

Are You *Resolving* INFLAMMATION?

BY CHANCELLOR FALOON

Chronic inflammation is connected to degenerative aging.

This has prompted scientists to coin the term **"inflammaging"** to describe this destructive process.[1]

Recent discoveries shed light on our understanding of **inflammaging**.[2]

Research shows that ***resolution*** of inflammation may be as important as ***inhibition*** of inflammation in the fight against age-related disorders.

The field of **inflammation resolution** is generating increasing interest.

This led scientists to identify compounds that help **resolve** inflammation. They are named:

Specialized pro-resolving mediators (SPMs)

Increasing **SPM levels** in preclinical models yields compelling findings.[3]

Clinical trials are currently recruiting participants and publishing results.[4]

How SPMs Resolve Inflammation

Specialized pro-resolving mediators are extracted from polyunsaturated fatty acids, predominantly found in **fish**.[3]

In response to certain conditions, such as **inflammation**, small amounts of omega-3 fatty acids are converted to even more beneficial compounds: **SPMs**.[3]

Chronic inflammatory conditions such as **inflammaging**, have been associated with lower concentrations of SPMs in the body.[5]

SPMs resolve inflammation by **three mechanisms**:[6-8]

- *Removing* dead and dying cells through a process in which **macrophage** immune cells engulf and digest dying or dead cells. This helps clean up the aftermath of inflammatory cascades.
- *Restoring* inflammation balance by decreasing **pro-inflammatory** mediators, while increasing compounds that have **anti-inflammatory** activity.
- *Renewing* damaged tissue by promoting cellular **regeneration**.

These benefits promise to help prevent many chronic aging disorders including deposition of plaque in the arteries (**atherosclerosis**).[9]

Inflamed Arteries

Inflammation is a key player in the development of heart disease.

Atherosclerosis is partially driven by an *imbalance* between pro-inflammatory and **inflammation-resolving** mechanisms in the artery inner walls.[9]

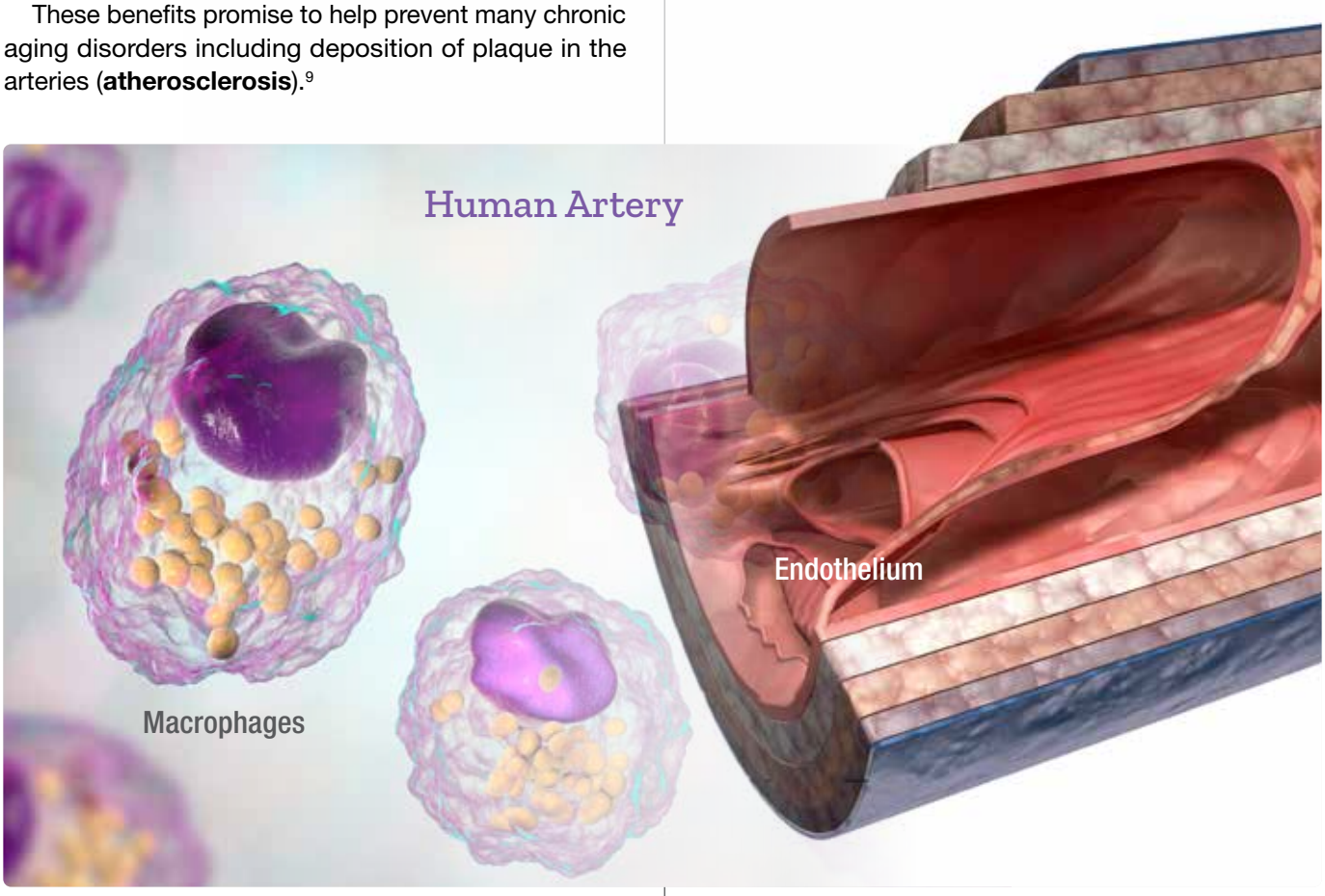
Atherosclerosis can begin when **LDL cholesterol** (the "bad" cholesterol) particles get trapped inside the endothelium (lining of the arteries).

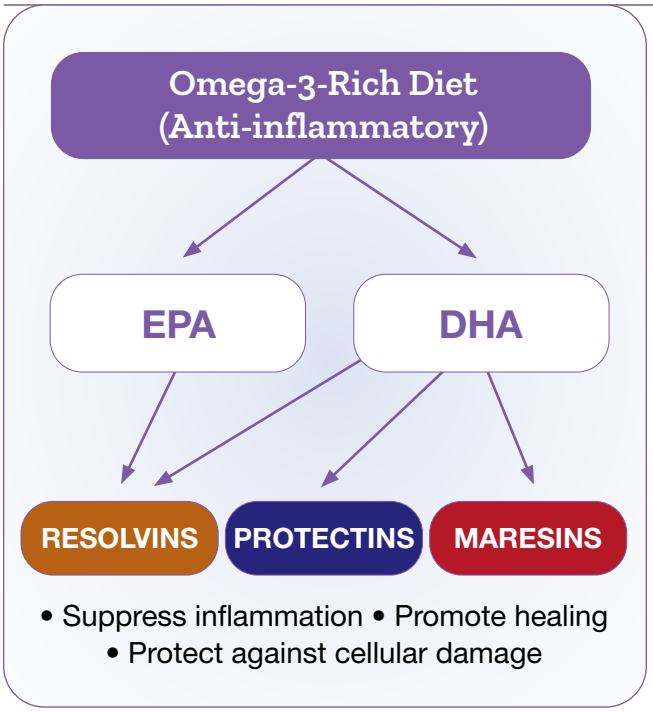
Macrophages enter the **endothelium** to clear out these oxidized LDL particles. If there is a lack of **pro-resolving mediators**, these macrophages will change into **foam cells**.[9]

This is a dangerous state that generally results in the **foam cells** dying and releasing their contents, creating an even *greater* **pro-inflammatory** environment.[9]

SPMs come into play here by initiating the *removal* of dead cells and foam cells through a process called **efferocytosis**.

If these cells are *not* removed, they contribute to plaque progression, which leads to atherosclerosis that endangers the heart, kidneys, and brain.[9,10]





How SPMs Differ from Omega-3s

The process of converting omega-3 fatty acids into SPMs requires several steps in the body.

When one eats cold water fish or takes fish oil supplements, tiny amounts may be converted to **pro-resolving mediators** (SPMs).

To meaningfully resolve **inflammaging,** *higher* amounts of standardized **SPMs** are often required beyond what can be obtained with fish oil.

Preclinical Research on SPM Precursors

In preclinical studies, SPMs *and* SPM precursors have been shown to have a variety of biological benefits.

A clinical trial of a combination of omega-3 fatty acids and SPMs demonstrates powerful effects on a range of immune, inflammatory, and blood-clotting indices.

Studies in mice have demonstrated impressive **resolution** benefits in a variety of disease models using the SPM precursor **18-HEPE**.

SPM precursors enable formation of **specialized pro-resolving mediators** (SPMs) in the body.

One study involved a rodent model that mimics some of the complications related to **cardiovascular disease**. Following surgery, researchers injected mice with the SPM precursor **18-HEPE** every three days.[12]

The mice that received **18-HEPE** were significantly shielded from damaging complications brought on by the surgical procedure.

Another study used a mouse model of **melanoma** metastasis. Researchers pretreated mouse **melanoma** cells with the SPM precursor **18-HEPE** while controls were not treated.

Healthy mice were then administered the SPM precursor 18-HEPE-treated **melanoma** cells and received additional 18-HEPE injections every other day. The SPM precursor-treated mice had significantly *less* formation of tumor colonies compared to controls.[13]

Another group of researchers found that treatment with the SPM precursor **17-HDHA** was able to *reverse* pain behavior in two rat models of osteoarthritis.[14]

The Science Behind Specialized Pro-Resolving Mediators (SPMs)

SPM *precursors* are predominantly derived from the **omega-3** fatty acids EPA and DHA.

But obtaining meaningful **potencies** of **SPMs** requires a series of complex metabolic processes that are often lacking in aging individuals.

The omega-3 fatty acid **precursors** needed to produce SPMs in the body include:[11]

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

These **precursors** listed above are then ***converted*** into the following **specialized pro-resolving mediators** (SPMs):

- **Resolvins**
- **Protectins**
- **Maresins**

These make up the bulk of the SPMs that target inflammation through the three steps of **removing, restoring** and **renewing.**

New Human Trial of SPM Precursors

A human trial of SPM precursors was published in **January 2020** and showed remarkable results.

In this study, 22 healthy volunteers aged 19 to 37 were randomized. One group received an enriched fish oil supplement containing omega-3 PUFAs *plus* a combination of SPM precursors, including **18-HEPE**, **17-HDHA,** and **14-HDHA**. The other group received a **placebo**.[18]

Researchers separated the participants into different dosing groups and performed a series of tests. They were able to conclude that the **SPM precursors**:

- Significantly increased cell surface proteins involved in *reversing* **inflammation** and **platelet aggregation** (which leads to harmful clotting) caused by the addition of a pro-inflammatory stimulus in the drawn blood of the patients.
- Increased clearance of *Staphylococcus aureus* and *E. coli*, by immune cells, which was highest at the final measurement, after 24 hours.
- Decreased **platelet activation**, a central part of the process that leads to a blood clot, in association with an increased level of **resolvins**.
- Increased the expression of genes linked to immune responses, recruitment of immune cells that fight infection and other diseases, and cellular metabolism in peripheral blood cells.

Omega-3s Help Resolve Inflammation

Because the original sources of SPMs are primarily the **omega-3 fatty acids** EPA and DHA, increasing the intake of these healthy fats will assist in resolving inflammation.[19-21]

In a recent clinical trial, researchers showed that in response to a pro-inflammatory stimulus, **EPA** and **DHA** intake leads to the formation of more SPMs.[21]

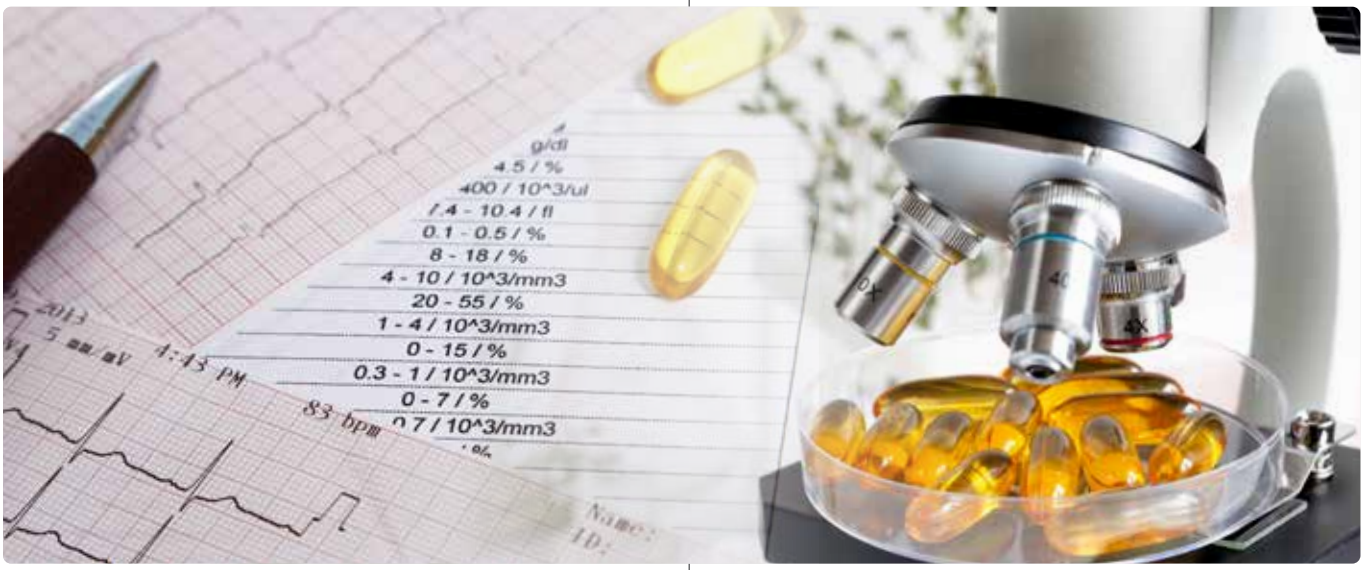
For five months, participants were given either EPA and DHA or a placebo daily, before receiving a **pro-inflammatory stimulus**. Blood was collected daily for five days after receiving the stimulus.

By the fifth day, the group that received the EPA and DHA had ***229% higher*** SPM levels than the placebo group. The levels of systemic inflammation, as measured by **C-reactive protein**, were significantly lower in the EPA/DHA treatment group compared to placebo.

The researchers repeated this testing using slight variations with their methods. Results consistently showed that EPA and DHA intake *increases* the level of SPMs in response to a pro-inflammatory stimulus.

This is great news for those who eat lots of **cold-water fish** and/or take high-potency **fish oil** supplements. Those with potential **inflammaging** issues may want to add a supplement providing **standardized** potencies of:

- **Resolvins**
- **Protectins**
- **Maresins**



WHAT YOU NEED TO KNOW

SPM Precursors + Omega-3s Resolve Inflammation

- **Chronic inflammation** is a major risk factor in aging, age-related disease, and degenerative disorders.
- Scientists have identified compounds that *resolve* inflammation, called **specialized pro-resolving mediators (SPMs).**
- SPMs are mostly derived from the **omega-3 fatty acids** EPA and DHA, which are primarily found in fish. A recent clinical trial showed that supplementation with a marine oil enriched with SPM precursors increases SPM levels and helps resolve inflammation.
- Another clinical trial showed that supplementation with omega-3s also increased SPMs in the body and helped lower levels of the inflammatory marker C-reactive protein.

Preclinical Research on SPMs

Preclinical data demonstrate promising results from the *direct* use of **specialized pro-resolving mediators (SPMs).**

In one study, researchers tested the effects of an **SPM resolvin** on mice that had obesity-associated **osteoarthritis.** The treatment was injected into the animals' joints. The results showed a significant *reduction* in pro-inflammatory macrophage infiltration into the soft tissue surrounding the joints (**synovium**), reduced severity of synovium inflammation, and prevention of cartilage degradation.[15]

A review of preclinical studies concluded that SPMs may be an effective treatment for gum disease (**periodontitis**). These studies showed that topical application of a **resolvin** and a **lipoxin** (an omega-6-derived SPM) to inflamed periodontal tissue results in a significant prevention of tooth loss compared to the control group.[16]

A mouse study showed that injections with the SPM **maresin** reduced inflammation-induced **neuropathic pain.**[17]

Summary

Chronic inflammation is so strongly correlated with age that scientists describe it as **inflammaging**.[1]

For decades, researchers have been studying how to better inhibit inflammation. They are now also beginning to understand the importance of **resolving** inflammation.

An abundance of preclinical data has demonstrated substantial potential benefits of having higher levels of **specialized pro-resolving mediators** (**SPMs**) or SPM precursors.

Polyunsaturated fatty acids, particularly the **omega-3** class, can be made into **SPMs** in your body. However, taking **SPM precursors** directly may be more effective.

Those concerned about chronic inflammation and persistently elevated inflammatory markers (like C-reactive protein and interleukin-6) may want to add a **multi-SPM** formula to their intake of omega-3 fatty acids.

Several clinical trials on SPM precursors are underway, with some completed and some still recruiting participants.[4]

Life Extension® is also now recruiting generally healthy people for a clinical trial. If you are in the Fort Lauderdale area and are interested in participating, please call **1-866-517-4536**.

References

1. Franceschi C, Campisi J. Chronic inflammation (inflammaging) and its potential contribution to age-associated diseases. *J Gerontol A Biol Sci Med Sci.* 2014 Jun;69 Suppl 1:S4-9.
2. Livshits G, Kalinkovich A. Inflammaging as a common ground for the development and maintenance of sarcopenia, obesity, cardiomyopathy and dysbiosis. *Ageing Res Rev.* 2019 Dec;56:100980.
3. Fattori V, Zaninelli TH, Rasquel-Oliveira FS, et al. Specialized pro-resolving lipid mediators: A new class of non-immunosuppressive and non-opioid analgesic drugs. *Pharmacol Res.* 2020 Jan;151:104549.
4. Available at: https://clinicaltrials.gov/ct2/results?cond=&term=specialized+pro-resolving+mediators&cntry=&state=&city=&dist=. Accessed August 25, 2020.
5. Dias IHK, Milic I, Heiss C, et al. Inflammation, Lipid (Per)oxidation, and Redox Regulation. *Antioxid Redox Signal.* 2020 Jul 20;33(3):166-90.
6. Serhan CN. Pro-resolving lipid mediators are leads for resolution physiology. *Nature.* 2014 Jun 5;510(7503):92-101.
7. Serhan CN. Treating inflammation and infection in the 21st century: new hints from decoding resolution mediators and mechanisms. *FASEB J.* 2017 Apr;31(4):1273-88.
8. Serhan CN. Discovery of specialized pro-resolving mediators marks the dawn of resolution physiology and pharmacology. *Mol Aspects Med.* 2017 Dec;58:1-11.
9. Back M, Yurdagul A, Jr., Tabas I, et al. Inflammation and its resolution in atherosclerosis: mediators and therapeutic opportunities. *Nat Rev Cardiol.* 2019 Jul;16(7):389-406.
10. Available at. Accessed October 9, 2015.
11. Lopez-Vicario C, Rius B, Alcaraz-Quiles J, et al. Pro-resolving mediators produced from EPA and DHA: Overview of the pathways involved and their mechanisms in metabolic syndrome and related liver diseases. *Eur J Pharmacol.* 2016 Aug 15;785:133-43.
12. Endo J, Sano M, Isobe Y, et al. 18-HEPE, an n-3 fatty acid metabolite released by macrophages, prevents pressure overload-induced maladaptive cardiac remodeling. *J Exp Med.* 2014 Jul 28;211(8):1673-87.
13. Li J, Chen CY, Arita M, et al. An omega-3 polyunsaturated fatty acid derivative, 18-HEPE, protects against CXCR4-associated melanoma metastasis. *Carcinogenesis.* 2018 Dec 13;39(11):1380-8.
14. Huang J, Burston JJ, Li L, et al. Targeting the D Series Resolvin Receptor System for the Treatment of Osteoarthritis Pain. *Arthritis Rheumatol.* 2017 May;69(5):996-1008.
15. Sun AR, Wu X, Liu B, et al. Pro-resolving lipid mediator ameliorates obesity induced osteoarthritis by regulating synovial macrophage polarisation. *Sci Rep.* 2019 Jan 23;9(1):426.
16. Osorio Parra MM, Elangovan S, Lee CT. Specialized pro-resolving lipid mediators in experimental periodontitis: A systematic review. *Oral Dis.* 2019 Jul;25(5):1265-76.
17. Serhan CN, Dalli J, Karamnov S, et al. Macrophage proresolving mediator maresin 1 stimulates tissue regeneration and controls pain. *FASEB J.* 2012 Apr;26(4):1755-65.
18. Souza PR, Marques RM, Gomez EA, et al. Enriched Marine Oil Supplements Increase Peripheral Blood Specialized Pro-Resolving Mediators Concentrations and Reprogram Host Immune Responses: A Randomized Double-Blind Placebo-Controlled Study. *Circ Res.* 2020 Jan 3;126(1):75-90.
19. Ramirez JL, Gasper WJ, Khetani SA, et al. Fish Oil Increases Specialized Pro-resolving Lipid Mediators in PAD (The OMEGA-PAD II Trial). *J Surg Res.* 2019 Jun;238:164-74.
20. Barden AE, Shinde S, Burke V, et al. The effect of n-3 fatty acids and coenzyme Q10 supplementation on neutrophil leukotrienes, mediators of inflammation resolution and myeloperoxidase in chronic kidney disease. *Prostaglandins Other Lipid Mediat.* 2018 May;136:1-8.
21. Norris PC, Skulas-Ray AC, Riley I, et al. Identification of specialized pro-resolving mediator clusters from healthy adults after intravenous low-dose endotoxin and omega-3 supplementation: a methodological validation. *Sci Rep.* 2018 Dec 21;8(1):18050.
22. Barden A, Shinde S, Tsai IJ, et al. Effect of weight loss on neutrophil resolvins in the metabolic syndrome. *Prostaglandins Leukot Essent Fatty Acids.* 2019 Sep;148:25-9.
23. Summers C, Rankin SM, Condliffe AM, et al. Neutrophil kinetics in health and disease. *Trends Immunol.* 2010 Aug;31(8):318-24.

Weight Loss Increases SPMs

In a recent study, researchers discovered that **weight loss** leads to a significant *increase* in the formation of **SPMs.**[22]

The researchers selected 42 patients with **metabolic syndrome** and took blood samples of their **neutrophils,** which are a short-lived type of white blood cell that eliminates pathogens.[23] The researchers then stimulated the neutrophils and measured the release of SPMs to use for comparison after the intervention.

Patients were randomly selected to go through either a **weight loss** program (treatment) or a **weight stabilization** program (control).

After 16 weeks, the researchers again took blood samples of their neutrophils and provided stimulation to measure the amount of SPM release.

At the end of the trial, the SPM release from the neutrophils of the patients in the **control group** was **unchanged** compared to baseline.

The **weight loss group** had significantly *elevated* **SPM release compared to baseline. Compared to the control group, weight loss led to a 2-fold increase the release of the SPM E-series resolvin.**

LITHIUM

The Brain & Body Element

In areas where **lithium** is naturally abundant in the drinking water, people tend to **live longer**, healthier lives.[1-3]

Lithium is a *low-cost* mineral that supports **cognition**, cell **DNA** and **healthy aging**.[3-5]

Item #02403

1000 mcg • 100 vegetarian capsules

This product is available at fine health food stores everywhere.

References

1. *Appl Physiol Nutr Metab.* 2018 Apr;43(4):412-4.
2. *J Clin Psychiatry.* 2015 Mar;76(3):319-26.
3. *Eur J Nutr.* 2011 Aug;50(5):387-9.
4. *J Alzheimers Dis.* 2015;48(2):403-10.
5. *JAMA Psychiatry.* 2017 Oct 1;74(10):1005-10.

ABSORB MORE QUERCETIN

Quercetin has demonstrated significant health benefits, but ***higher*** doses are often required to achieve optimal results.

A novel **phytosome** delivery technology markedly *increases* absorption to deliver *more* **quercetin** throughout one's body.

For daily quercetin supplementation, take just <u>one</u> of the highly absorbable **Bio-Quercetin** capsules.

<u>One</u> small **10 mg** quercetin dose of **Bio-Quercetin** provides a **500 mg** equivalent dose of standard quercetin!*

Item #02302

30 vegetarian capsules

This product is available at fine health food stores everywhere.

* Supplier Internal Study. Data on File. 2017

1 DAILY

NON GMO LE CERTIFIED

MAINTAIN A HEALTHY *POST-INFLAMMATORY* RESPONSE

PRO-RESOLVING MEDIATORS

Specialized **Pro-Resolving Mediators** (**SPMs**) help maintain the body's healthy post-inflammatory response to support whole-body health.

SPMs help:

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

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

Item #02223 • 30 softgels

NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

VITAMIN D'S
Winter Immune Benefits

BY JULIE MYERS

Vitamin D has shown promise against winter illness because it plays a critical role in supporting the **immune system**.

Low vitamin D levels have been associated with *higher* rates of many chronic diseases.[1-6]

This includes an *increased* risk for acute communicable diseases, including **viral infections** in **vitamin D** deficient people.[7,8]

A meta-analysis of randomized, controlled clinical trials showed a protective effect against **acute respiratory infections** with vitamin D supplementation.[9]

More than **40%** of Americans have been found to have **insufficient** blood levels of vitamin D (defined as levels between **20-30 ng/mL**).

An additional nearly **30%** of Americans have lower vitamin D levels (**below 20 ng/mL**) that qualify as **deficiency**.[10]

This factor may be especially important among adults aged 60 and over.[10]

Life Extension® supporters have long been advised of the importance of maintaining an optimal vitamin D level between **50-80 ng/mL**.

Oral intake of **vitamin D** to ensure healthy levels may help protect against winter-season conditions.

Impact on Immune Function

For the body to produce its own **vitamin D**, we need direct skin exposure to sunlight.

But we spend most of our time indoors or covered up by clothes and sunscreen. And spending more time in the sun raises the risk of skin cancer and accelerated skin aging.

The other way to get vitamin D is through diet, but most foods contain only modest amounts.

As a result, a majority of people are getting too little of this crucial vitamin.

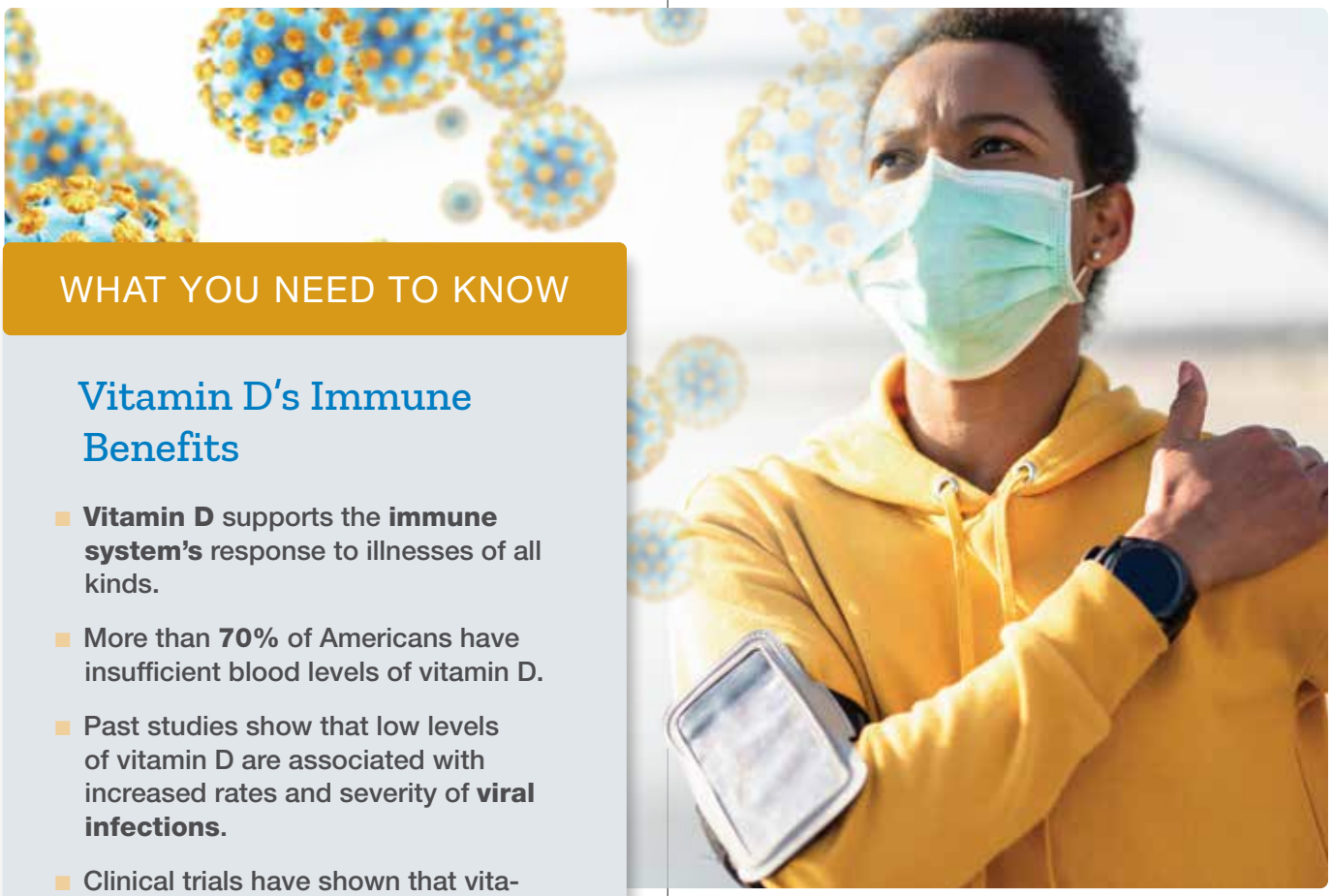
Having low levels of vitamin D is associated with a greater risk for many health problems, from cognitive decline to heart disease.[1-6]

Vitamin D supports **immune health** by helping:[7,8]

- Optimize immune function that protects us from infectious disease.
- Control *overly* aggressive inflammatory immune responses, which can inflict systemic damage.

When excessive levels of immune-system proteins called **cytokines** provoke attacks on healthy tissues, the result is called a "**cytokine storm**."

This is a dangerous reaction that can lead to **acute respiratory distress syndrome** (**ARDS**), an often-fatal complication in which fluid collects in the lungs.



WHAT YOU NEED TO KNOW

Vitamin D's Immune Benefits

- **Vitamin D** supports the **immune system's** response to illnesses of all kinds.
- More than **70%** of Americans have insufficient blood levels of vitamin D.
- Past studies show that low levels of vitamin D are associated with increased rates and severity of **viral infections**.
- Clinical trials have shown that vitamin D has a protective effect against **respiratory tract infections**.

Vitamin D and Viral Illness

Viral respiratory tract infections, such as the flu, are more common during winter.

One of the reasons for this may be **seasonal variations** in our vitamin D levels. During winter, we get less sun, leading to lower vitamin D production.[11,12] That puts us at increased risk for viral infection.

Research shows that infections are *more* common and more severe in those with vitamin D *deficiency*.[12,13]

Low vitamin D is also a risk factor for more severe lung disease, including acute respiratory distress syndrome (**ARDS**).[14,15] Research suggests that those with insufficient vitamin D are at increased risk of a **cytokine storm**.[16]

This hyperproduction of inflammatory factors leads to worsening disease severity and increased risk of death. Low vitamin D levels may be associated with the dangerous inflammation that occurs in ARDS.[14,15]

Vitamin D's Protective Actions

Vitamin D contributes to many functions that help shield the body from infections and lessen their severity. Maintaining adequate levels of **vitamin D:**[14,17-20]

- Interferes with the ability of viruses to **replicate** and produce *more* viruses,
- Helps support and repair healthy cellular linings in the body, including in the airways of the **lungs**,
- Increases production of proteins that shield against **bacteria and viruses**, enhancing the ability of cells to protect themselves from infection,
- Improves the ability of **immune cells** to mount an effective attack against specific viruses, and
- Helps prevent the immune system from going overboard and producing *excessive* pro-inflammatory compounds in the lungs.

Oral Vitamin D Reduces Risk

Many studies have evaluated whether daily **oral intake** of vitamin D can reduce rates of **viral** respiratory illness.

Meta-analyses of clinical trials have shown that vitamin D has a protective effect against **respiratory tract infections**.[9,21]

The impact of vitamin D treatment is greatest in those who, to begin with, have *low* levels of vitamin D.[9]

Life Extension® supporters have long been advised of the importance of maintaining an optimal vitamin D level between **50-80 ng/mL**, and yearly blood testing.

Summary

Vitamin D supports the **immune system** in many different ways, helping to shield the respiratory tract from **viral illness**.

A large majority of adults have vitamin D levels below the optimal level.

Trials have shown that **oral vitamin D** intake modestly *decreases* rates of **viral respiratory tract** infections.

References

1. Bennett AL, Lavie CJ. Vitamin D Metabolism and the Implications for Atherosclerosis. *Adv Exp Med Biol.* 2017;996:185-92.
2. Gaksch M, Jorde R, Grimnes G, et al. Vitamin D and mortality: Individual participant data meta-analysis of standardized 25-hydroxyvitamin D in 26916 individuals from a European consortium. *PLoS One.* 2017;12(2):e0170791.
3. Grubler MR, Marz W, Pilz S, et al. Vitamin-D concentrations, cardiovascular risk and events - a review of epidemiological evidence. *Rev Endocr Metab Disord*. 2017 Jun;18(2):259-72.
4. Ingraham BA, Bragdon B, Nohe A. Molecular basis of the potential of vitamin D to prevent cancer. *Curr Med Res Opin.* 2008 Jan;24(1):139-49.
5. Meehan M, Penckofer S. The Role of Vitamin D in the Aging Adult. *J Aging Gerontol.* 2014 Dec;2(2):60-71.
6. Toffanello ED, Coin A, Perissinotto E, et al. Vitamin D deficiency predicts cognitive decline in older men and women: The Pro.V.A. Study. *Neurology.* 2014 Dec 9;83(24):2292-8.
7. Aranow C. Vitamin D and the immune system. *J Investig Med.* 2011 Aug;59(6):881-6.
8. Baeke F, Takiishi T, Korf H, et al. Vitamin D: modulator of the immune system. *Curr Opin Pharmacol*. 2010 Aug;10(4):482-96.
9. Martineau AR, Jolliffe DA, Hooper RL, et al. Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data. *BMJ*. 2017 Feb 15;356:i6583.
10. Liu X, Baylin A, Levy PD. Vitamin D deficiency and insufficiency among US adults: prevalence, predictors and clinical implications. *Br J Nutr.* 2018 Apr;119(8):928-36.
11. Ginde AA, Mansbach JM, Camargo CA, Jr. Association between serum 25-hydroxyvitamin D level and upper respiratory tract infection in the Third National Health and Nutrition Examination Survey. *Arch Intern Med.* 2009 Feb 23;169(4):384-90.
12. Cannell JJ, Vieth R, Umhau JC, et al. Epidemic influenza and vitamin D. *Epidemiol Infect*. 2006 Dec;134(6):1129-40.
13. Berry DJ, Hesketh K, Power C, et al. Vitamin D status has a linear association with seasonal infections and lung function in British adults. *Br J Nutr.* 2011 Nov;106(9):1433-40.
14. Dancer RC, Parekh D, Lax S, et al. Vitamin D deficiency contributes directly to the acute respiratory distress syndrome (ARDS). *Thorax.* 2015 Jul;70(7):617-24.
15. Parekh D, Thickett DR, Turner AM. Vitamin D deficiency and acute lung injury. *Inflamm Allergy Drug Targets*. 2013 Aug;12(4):253-61.
16. Youssef DA, Miller CW, El-Abbassi AM, et al. Antimicrobial implications of vitamin D. *Dermatoendocrinol.* 2011 Oct;3(4):220-9.
17. Teymoori-Rad M, Shokri F, Salimi V, et al. The interplay between vitamin D and viral infections. *Rev Med Virol.* 2019 Mar;29(2):e2032.
18. Telcian AG, Zdrenghea MT, Edwards MR, et al. Vitamin D increases the antiviral activity of bronchial epithelial cells in vitro. *Antiviral Res.* 2017 Jan;137:93-101.
19. Zdrenghea MT, Makrinioti H, Bagacean C, et al. Vitamin D modulation of innate immune responses to respiratory viral infections. *Rev Med Virol*. 2017 Jan;27(1).
20. Tsujino I, Ushikoshi-Nakayama R, Yamazaki T, et al. Pulmonary activation of vitamin D3 and preventive effect against interstitial pneumonia. *J Clin Biochem Nutr.* 2019 Nov;65(3):245-51.
21. Bergman P, Lindh AU, Bjorkhem-Bergman L, et al. Vitamin D and Respiratory Tract Infections: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *PLoS One.* 2013;8(6):e65835.

Blood Testing Vitamin D Levels

There are no universal guidelines for frequency of vitamin D testing. However, given the high prevalence of vitamin D deficiency and the strong association of low vitamin D levels with several health issues, annual testing and supplementation to achieve adequate blood levels is highly recommended.

Annual blood tests can let people know whether they are taking the correct dosage to ensure optimal blood levels of vitamin D.

If you do not already maintain an optimal blood level of *25-hydroxyvitamin D* of **50** to **80 ng/mL**, then take between **5,000** to **8,000 IU** of vitamin D daily with meals.

Find SUGAR Balance

NEXT-GENERATION
Glucose-A1c Management

Glycemic Guard™ contains **250 mg** of polyphenol-rich **clove extract** and **200 mg** of **maqui berry** extract. These **plant extracts** help maintain already-healthy *after-meal* blood **glucose** and **A1c** levels.

Suggested dose is one capsule a day with or without food, or as recommended by a healthcare practitioner.

Item #02122
30 vegetarian capsules

1 DAILY
NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

Mega Green Tea Extract

Powerful DNA Protection

FOR LESS THAN **25¢** A DAY!

Mega Green Tea Extract provides powerful antioxidant effects throughout the body.

Each **725 mg** capsule of **Mega Green Tea Extract** is <u>standardized</u> to **98% polyphenols** that provide **326 mg** of **EGCG*** to:

- Protect against DNA damage and oxidative stress[1]
- Support healthy blood sugar levels[2]
- Enhance heart health[3]
- Boost brain function[4]
- Support strong bones[5]
- Maintain healthy cholesterol levels already within normal range[6]

Each cost-effective bottle lasts over <u>three months</u>!

Mega Green Tea Extract Decaffeinated

Item #00954

100 vegetarian capsules

Mega Green Tea Extract Lightly Caffeinated

Item #00953

100 vegetarian capsules

GLUTEN FREE

NON GMO LE CERTIFIED

* **EGCG** is the acronym for **epigallocatechin gallate**, which is the polyphenol in green tea that has demonstrated the most robust health benefits.

References

1. *Mutagenesis.* 2015;30(1):129-37.
2. *Curr Opin Clin Nutr Metab Care.* 2013;16(6):688-97.
3. *Circ J.* 2010;74(3):578-88.
4. *Nutrition.* 2014;30(3):337-42.
5. *BMC Musculoskelet Disord.* 2009;10:110.
6. *J Transl Med.* 2015;13:79.

These products are available at fine health food stores everywhere.

D3

For Heart Health, Strong Bones, Skin Health, and a Vital Immune System

These products are available at fine health food stores everywhere.

Vitamin D3 • 5,000 IU

Each tiny softgel provides **5,000 IU** of **vitamin D3** for easy swallowing.

Item #01713
60 softgels

Vitamin D3 • 5,000 IU with Sea-Iodine™*

For those who may be iodine-deficient. Each capsule provides **5,000 IU** of vitamin D3 + **1,000 mcg** of iodine.

Item #01758
60 capsules

Vitamin D3 • 7,000 IU

For individuals who need higher levels, including those who weigh over 180 pounds. Each tiny softgel provides **7,000 IU** of **vitamin D3**.

Item #01718
60 softgels

Vitamin D3 • 1,000 IU

Ideal for smaller individuals who also obtain **2,000-3,000 IUs** in a multi-formula. Each tiny softgel provides **1,000 IU** of **vitamin D3**.

Item #01751
250 softgels

CAUTION: Individuals consuming more than 50 mcg (2000 IU)/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Do not exceed 10000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

* If you have a thyroid condition or are taking antithyroid medications, do not use without consulting your healthcare practitioner.

GLUTEN FREE · 1 DAILY · NON GMO LE CERTIFIED

BEYOND CBD: Plant-Based Endocannabinoid Support

BY PAUL JOHNSON

Scientists have discovered that the **endocannabinoid system** influences the balance and function of almost ***all*** bodily systems.

The endocannabinoid system plays an important role in **brain function**, influencing mood, learning and memory, pain control, sleep, appetite, and more.

But as we age, the endocannabinoid system becomes less active.[1,2] That can lead to accelerated aging and increased susceptibility to disease.[1]

Research has shown that the endocannabinoid system plays a profound role throughout the rest of the body, affecting everything from bone strength to fat and glucose metabolism.[2]

In the past years CBD (cannabidiol) products have become increasingly popular, ranging from a variety of formulations from oils to cosmetics.

This comes from the fact that CBD interacts with and supports the endocannabinoid system.

The problem is that there are many unanswered questions about the quality and efficacy of the CBD-containing products purchased commercially.

For those who want to improve their internal endocannabinoid functions, scientists have identified **four plant compounds** that favorably influence the endocannabinoid system in ***multiple ways***.

What Is the Endocannabinoid System?

Like hormones and nerve cells, the endocannabinoid system is a ***cellular communication system***, allowing various cells to send *signals* to others.

It helps to regulate and maintain the optimal function of many bodily systems.

It also helps maintain **homeostasis**, stability in response to changes in the environment, throughout the body.

The endocannabinoid system is active in most tissues. It has been identified in brain, bone, muscle, liver, and fat tissue, immune cells, and more.[1-3]

It's made up of three parts:

- Signaling molecules called **endocannabinoids**,
- **Receptors** found throughout the body, to which the endocannabinoids bind to transmit a signal, and
- **Enzymes** which break down the endocannabinoids once their work is done.

Two of the best-known endocannabinoids are **anandamide** (**AEA**) and **2-arachidonoyl glycerol** (**2-AG**). They interact with receptors throughout the body.

The name "endocannabinoid" comes from the fact that plant-based **cannabinoid** compounds, such as those found in cannabis, influence **cannabinoid** receptors on cell membranes. "**Endo**" refers to something formed *within* the body.

Unlike cannabinoids from cannabis, **endocannabinoids** do *not* have psychoactive effects. But they have a profound impact on the brain and body.

The Endocannabinoid System and the Brain

In the brain, the endocannabinoid system has been shown to be **neuroprotective**,[1] shielding brain cells against damage and age-related changes.

As a result, it is a promising research target in the battle to help protect against cognitive decline and diseases such as Alzheimer's and Parkinson's disease.[1]

Its effects in the brain also relate to many essential quality-of-life factors: mood, pain perception, cognition and memory, appetite regulation, and sleep.[2,4]

On a cellular level, scientists have found that the endocannabinoid system protects the brain by:[1]

- **Regulating brain "helper" cells**. The **glial cells** in the brain are support cells that are vital to normal brain function. The endocannabinoid system maintains their function, supporting brain cells, preventing inflammation, and guarding against neurodegeneration.

- **Promoting formation of new neurons**. As we age, our ability to form new nerve cells declines. This is a major contributor to cognitive and functional decline. The endocannabinoid system *increases* neurogenesis, helping to maintain learning and memory.

- **Boosting synaptic plasticity.** The ability of our synapses, where neurons communicate, to adapt to new information also diminishes in old age. By strengthening this ability, known as synaptic plasticity, the endocannabinoid system can help prevent cognitive decline.

- **Increasing brain-derived neurotrophic factor**. This protein supports the survival, growth, and health of neurons, which helps prevent neurological diseases, including Parkinson's and Alzheimer's.

Body-Wide Effects

Beyond the brain, the endocannabinoid system has a wide range of effects. It has been found to regulate: [2]

- Bone remodeling, in which old bone tissue is replaced by strong, new bone,
- Gastrointestinal function,
- Fat metabolism in both the liver and in fatty tissues,
- Muscle metabolism, and
- Immune cell function.

WHAT YOU NEED TO KNOW

Strengthening the Endocannabinoid System

- The **endocannabinoid system** is a signaling system that operates throughout the body, from brain to bone.
- It helps regulate and bring balance to a wide range of bodily functions, which can slow the aging process and reduce risk for chronic disease.
- Researchers have discovered four compounds that influence endo-cannabinoid system function: **oleoylethanolamide (OEA), biochanin A, guineensine**, and **beta-caryophyllene.**

How the Endocannabinoid System Works

After discovering how diverse the effects of the endocannabinoid system are, scientists investigated *how* it works. They found that it contributes to all of the following:[1]

- **Cellular "housekeeping."** Cannabinoids induce **autophagy**, when cells clear away damaged proteins and other compounds to make room for new, healthy cellular components.
- **Regulation and protection of mitochondria**. Mitochondria are the "powerhouses" of the cells. The endocannabinoid system helps regulate their normal activity and protect them from damage.
- **Modulating signaling and communication pathways**. Cell-to-cell interactions throughout the body rely in part on endocannabinoid signaling. These relationships have diverse effects, including impacts on sleep-wake cycles, pain perception, mood, learning, and memory.

All of these pathways are critical in slowing the aging process and maintaining normal tissue function in various organs.

Supporting Endocannabinoid Function

Scientists have discovered that there are ways to influence the function of the endocannabinoid system—*without* resorting to use of **CBD** (cannabidiol), **THC** (tetrahydrocannabinol), or other potentially psychoactive cannabinoids from cannabis.

The following compounds have been found to influence the activity of the ***endocannabinoid system*** through distinct but complementary effects.

Oleoylethanolamide (OEA)

Oleoylethanolamide is a fatty acid that is naturally produced in the body.

It is similar in structure to one of the endocannabinoid compounds.

Oleoylethanolamide's (OEA) activity to suppress inflammation and regulate metabolism and appetite is mediated through the activity of **endocannabinoid** receptors but without binding to them.[5-7]

OEA has also been found to have neuroprotective effects and to provide support against obesity and associated metabolic abnormalities.[6-8]

Biochanin A

Biochanin A is a plant flavone found in clover, peanuts, chickpeas, and soy.[9]

Research has found that biochanin A inhibits one of the enzymes in the endocannabinoid system called **fatty acid amide hydrolase**.[10,11] This enzyme breaks down the endocannabinoid anandamide into inactive products.

By *blocking* the activity of the enzyme, biochanin A may help to support *higher* levels of anandamide.[12]

Anandamide acts as a natural pain reliever in the body, so biochanin A may be useful in treating chronic pain and other conditions.[11]

Anandamide, through its function as a critical molecule in the endocannabinoid system, is also believed to play important roles in regulating motivation, pleasure, and mood.[3,4,13]

Guineensine

A compound isolated from black pepper, **guineensine** boosts levels of both anandamide and 2-AG.[14,15] It works by blocking the reuptake of these endocannabinoids after their release by cells.[16]

As a result, levels of anandamide and 2-AG remain *higher* in the body for *longer*. Together with biochanin A's ability to block anandamide's breakdown, this further boosts the beneficial effects of these endocannabinoids.

Beta-Caryophyllene

Beta-caryophyllene is found in many plants, including rosemary, clove, and black pepper.[14]

Scientists have discovered that this compound directly activates one of the most important endocannabinoid *receptors*, known as **CB2**, mimicking the activity of some endocannabinoids.[14]

These CB2 receptors are found throughout the body. Their activation by beta-caryophyllene has been demonstrated to:

- Reduce inflammation in brain cells,[17]
- In an animal model, improve insulin function blood glucose control, lipids, and vascular inflammation,[18]
- Protect against age-related cognitive decline and reduce levels of an age-related proinflammatory cytokine,[19] and
- Inhibit breast cancer cell growth.[20]

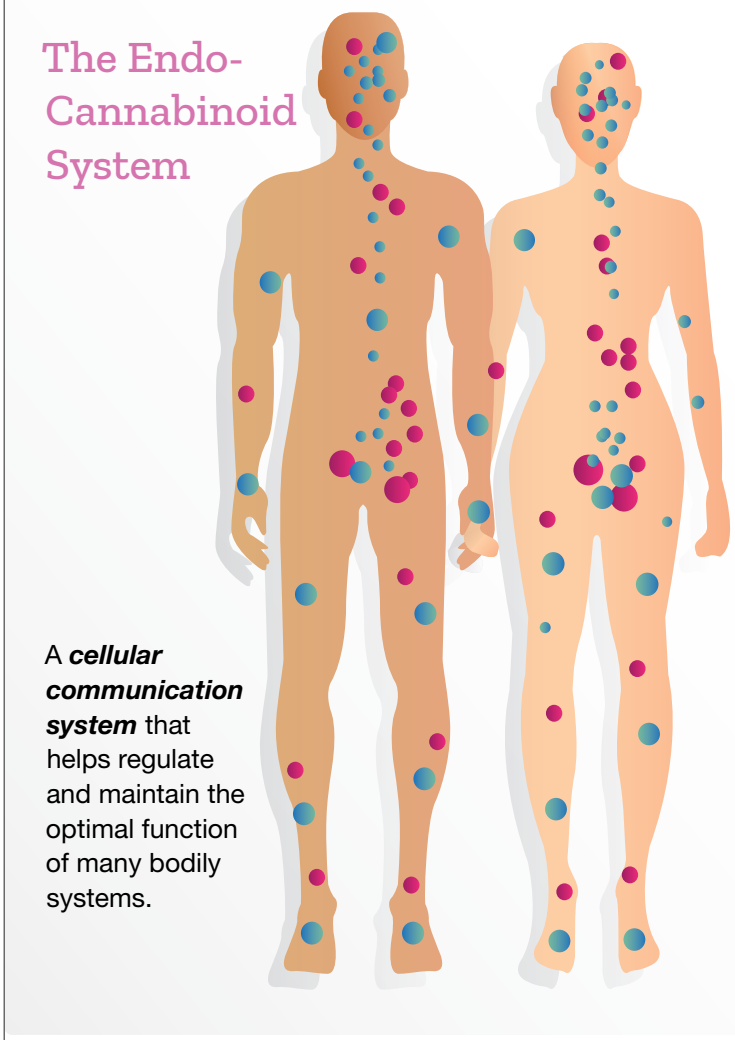
Summary

In the last few decades, scientists have discovered that the **endocannabinoid system** influences the balance and function of almost all bodily systems.

In the brain, it has important beneficial effects on mood, cognition, sleep, and more.

Throughout the body, it helps maintain tissue health, prevent age-related loss of function, and lower risk for disease.

Scientists have identified four plant-based compounds that influence the function of the endocannabinoid system: oleoylethanolamide (OEA), biochanin A, guineensine, and beta-caryophyllene.



References

1. Bilkei-Gorzo A. The endocannabinoid system in normal and pathological brain ageing. *Philos Trans R Soc Lond B Biol Sci.* 2012 Dec 5;367(1607):3326-41.
2. Watkins BA. Diet, endocannabinoids, and health. *Nutr Res.* 2019 Oct;70:32-9.
3. Zou S, Kumar U. Cannabinoid Receptors and the Endocannabinoid System: Signaling and Function in the Central Nervous System. *Int J Mol Sci.* 2018 Mar 13;19(3).
4. Manzanares J, Julian M, Carrascosa A. Role of the cannabinoid system in pain control and therapeutic implications for the management of acute and chronic pain episodes. *Curr Neuropharmacol.* 2006 Jul;4(3):239-57.
5. Overton HA, Babbs AJ, Doel SM, et al. Deorphanization of a G protein-coupled receptor for oleoylethanolamide and its use in the discovery of small-molecule hypophagic agents. *Cell Metab.* 2006 Mar;3(3):167-75.
6. Laleh P, Yaser K, Alireza O. Oleoylethanolamide: A novel pharmaceutical agent in the management of obesity-an updated review. *J Cell Physiol.* 2019 Jun;234(6):7893-902.
7. Orio L, Alen F, Pavon FJ, et al. Oleoylethanolamide, Neuroinflammation, and Alcohol Abuse. *Front Mol Neurosci.* 2018;11:490.
8. Laleh P, Yaser K, Abolfazl B, et al. Oleoylethanolamide increases the expression of PPAR-Alpha and reduces appetite and body weight in obese people: A clinical trial. *Appetite.* 2018 Sep 1;128:44-9.
9. Yu C, Zhang P, Lou L, et al. Perspectives Regarding the Role of Biochanin A in Humans. *Front Pharmacol.* 2019;10:793.
10. Chundi V, Challa SR, Garikapati DR, et al. Biochanin-A attenuates neuropathic pain in diabetic rats. *J Ayurveda Integr Med.* 2016 Oct - Dec;7(4):231-7.
11. Thors L, Burston JJ, Alter BJ, et al. Biochanin A, a naturally occurring inhibitor of fatty acid amide hydrolase. *Br J Pharmacol.* 2010 Jun;160(3):549-60.
12. Available at: https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/oleoylethanolamide. Accessed August 14, 2020.
13. Brodermann MH. Pain, pleasure and placebo: the cannabinoids in reward processing and the perception of pain. *Ment Health Addict Res.* 2016;1(3):59-63.
14. Gertsch J. Cannabimimetic phytochemicals in the diet - an evolutionary link to food selection and metabolic stress adaptation? *Br J Pharmacol.* 2017 Jun;174(11):1464-83.
15. Kumar A, Premoli M, Aria F, et al. Cannabimimetic plants: are they new cannabinoidergic modulators? *Planta.* 2019 Jun;249(6):1681-94.
16. Nicolussi S, Viveros-Paredes JM, Gachet MS, et al. Guineensine is a novel inhibitor of endocannabinoid uptake showing cannabimimetic behavioral effects in BALB/c mice. *Pharmacol Res.* 2014 Feb;80:52-65.
17. Askari VR, Shafiee-Nick R. The protective effects of beta-caryophyllene on LPS-induced primary microglia M1/M2 imbalance: A mechanistic evaluation. *Life Sci.* 2019 Feb 15;219:40-73.
18. Youssef DA, El-Fayoumi HM, Mahmoud MF. Beta-caryophyllene protects against diet-induced dyslipidemia and vascular inflammation in rats: Involvement of CB2 and PPAR-gamma receptors. *Chem Biol Interact.* 2019 Jan 5;297:16-24.
19. Lindsey LP, Daphney CM, Oppong-Damoah A, et al. The cannabinoid receptor 2 agonist, beta-caryophyllene, improves working memory and reduces circulating levels of specific proinflammatory cytokines in aged male mice. *Behav Brain Res.* 2019 Oct 17;372:112012.
20. Di Sotto A, Romaniello D, Freddoni G, et al. New insights in the antitumor effects of beta-caryophyllene in breast cancer cells: the role of cannabinoid and adrenergic systems. *Annals of Oncology.* 2018;29:94P.

Menopause, We've Got Your Number.

Meet Menopause 731™

Feel like yourself again with estrogen-free, comprehensive menopause support

Menopause is a natural part of a woman's life, but natural doesn't mean fun. But we've got menopause's number.

In fact, Menopause 731™ offers up to an 83% reduction in total discomforts, including:

- Up to 83% reduction in hot flashes
- Up to 66% reduction in irritability and mood swings

Feel like yourself again. Take Menopause 731™ and count on fewer signs of menopause.

Menopause 731™

Item #02204
30 enteric-coated vegetarian tablets

This product is available at fine health food stores everywhere.

NON GMO PROJECT VERIFIED · 1 DAILY · GLUTEN FREE · VEGETARIAN · MANUFACTURED IN THE USA

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.

Munch

Crunch Digest Your Lunch

(Or breakfast, or dinner...)

Uncomfortable after eating?

Digestive enzymes are specialized proteins that help you break down the foods you eat. Probiotics help maintain a healthy gut microbiota—the good bacteria in your gut.

Our Best-in-Class **Enhanced Super Digestive Enzymes** and Probiotics combines 10 vegetarian-friendly enzymes plus the probiotic *B. coagulans* to help you break down hard-to-digest foods and encourage a healthy gastrointestinal balance…so you can feel good after you eat!

Item #02021 • 60 vegetarian capsules

GLUTEN FREE

NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

Support Your Aging ENDOCANNABINOID SYSTEM *Without CBD*

The **endocannabinoid system** promotes healthy balance, regulation, and function of virtually every system in your body.

Endocannabinoid System Booster helps restore endocannabinoid function *beyond* **CBD**.

This formula provides multi-pronged **endocannabinoid** support with standardized **plant extracts** of oleoylethanolamide, biochanin A, guineensine, and beta-caryophyllene.

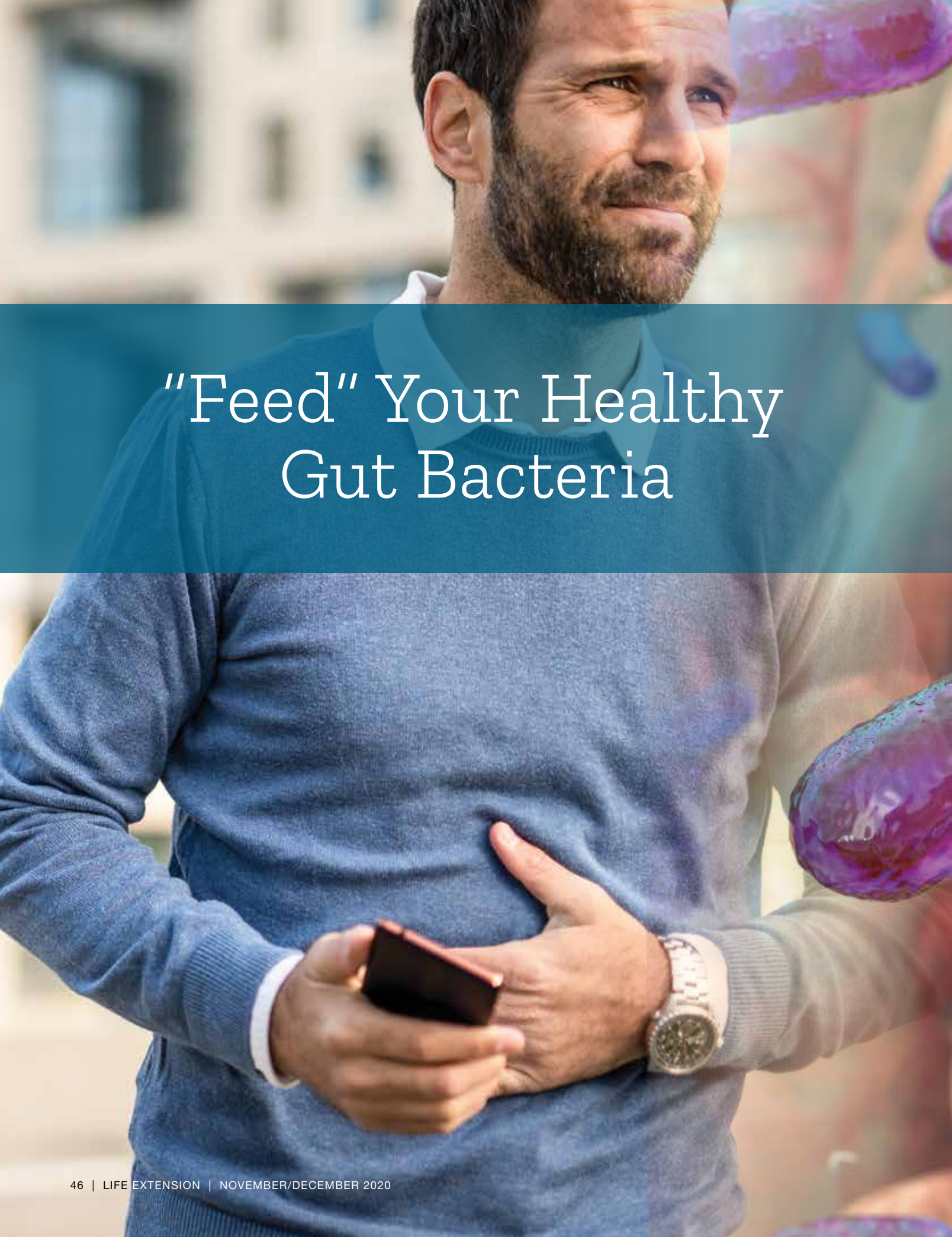
GLUTEN FREE

NON GMO LE CERTIFIED

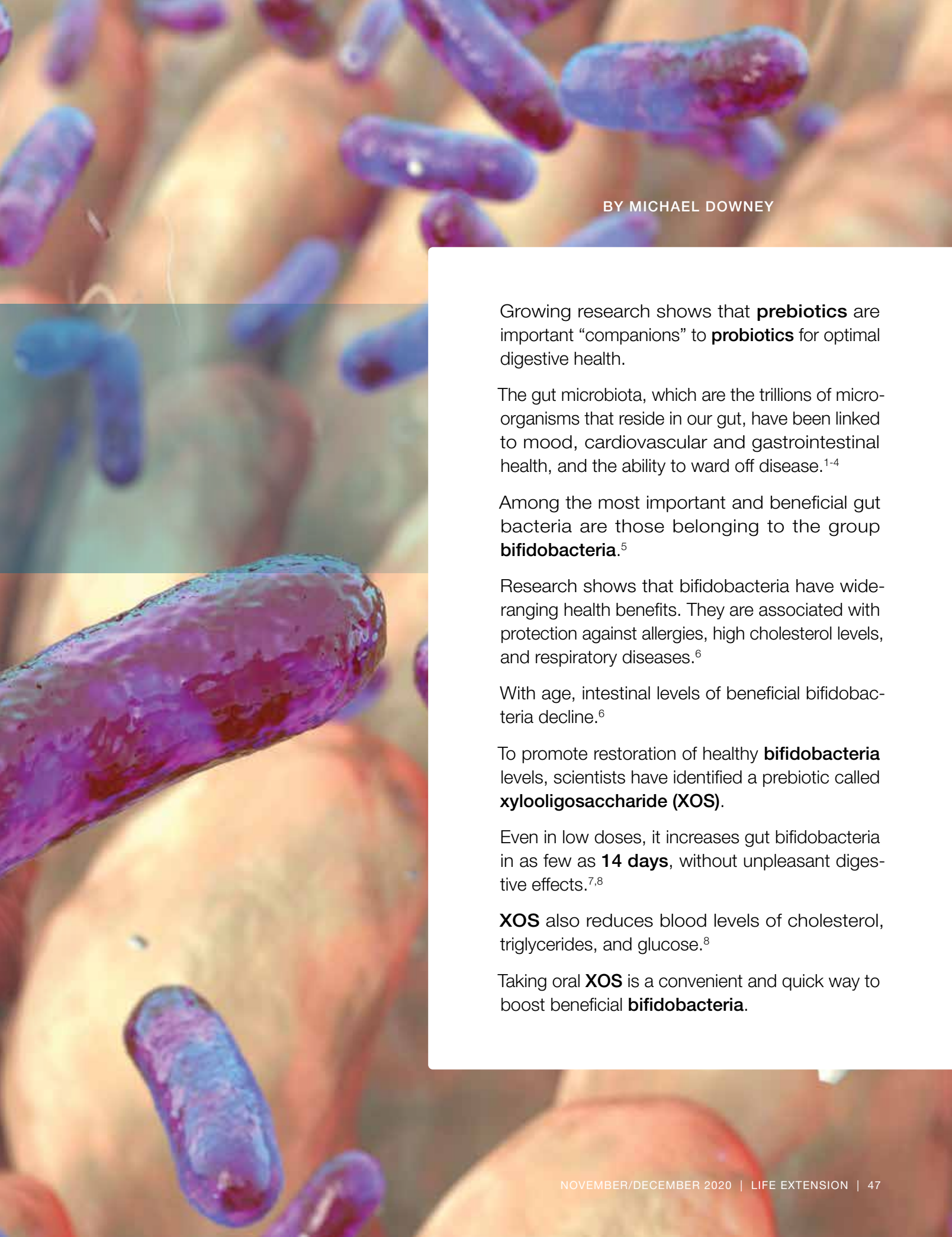
Item # 02405
30 softgels

This product is available at fine health food stores everywhere.

Clovinol® is a registered trademark of Akay USA LLC.



"Feed" Your Healthy Gut Bacteria



BY MICHAEL DOWNEY

Growing research shows that **prebiotics** are important "companions" to **probiotics** for optimal digestive health.

The gut microbiota, which are the trillions of microorganisms that reside in our gut, have been linked to mood, cardiovascular and gastrointestinal health, and the ability to ward off disease.[1-4]

Among the most important and beneficial gut bacteria are those belonging to the group **bifidobacteria**.[5]

Research shows that bifidobacteria have wide-ranging health benefits. They are associated with protection against allergies, high cholesterol levels, and respiratory diseases.[6]

With age, intestinal levels of beneficial bifidobacteria decline.[6]

To promote restoration of healthy **bifidobacteria** levels, scientists have identified a prebiotic called **xylooligosaccharide (XOS)**.

Even in low doses, it increases gut bifidobacteria in as few as **14 days**, without unpleasant digestive effects.[7,8]

XOS also reduces blood levels of cholesterol, triglycerides, and glucose.[8]

Taking oral **XOS** is a convenient and quick way to boost beneficial **bifidobacteria**.

How Prebiotics Work

The trillions of microorganisms that reside in the human digestive tract—known as the gut **microbiota**—do much more than promote healthy digestion. They impact immunity, metabolism, the endocrine system, mood, and cardiovascular health.[4,9-12]

Foods that nourish and promote healthy gut flora are called ***pre*biotics**.

For a food ingredient to be classified as a prebiotic, it must:[13]

- Resist digestion,
- Be fermented by intestinal microorganisms, and
- Stimulate growth and/or activity of beneficial bacteria.

Most commercial **prebiotics** require large doses to provide optimal digestive health support. Unfortunately, this can cause excessive flatulence, bloating and general digestive discomfort.[14]

But years of research identified a prebiotic that works at extremely low doses. It's known as **XOS (xylo-oligosaccharide)**.

Even better, it specifically targets and boosts levels of **bifidobacteria**.

Bifidobacteria Decline with Age

Levels of beneficial **bifidobacteria** decline *dramatically* with age.

In early adulthood, bifidobacteria make up **30%-40%** of our gut microbiota. Those levels fall to about:[6]

- **10%** by late middle-age, and
- Less than **5%** by old age.

Replenishing intestinal bifidobacteria restores their healthful effects on the body, while leaving less room for *dangerous* bacteria to take up residence.[15]

That's where **XOS** comes in. Made from non-GMO corn cobs, this prebiotic targets bifidobacteria, *preferentially* promoting their growth.

XOS Boosts Bifidobacteria

Studies have demonstrated that **XOS** safely and significantly boosts levels of bifidobacteria.[7,8]

In one double-blind, randomized, placebo-controlled study, microbiologists and clinical researchers with the **UCLA School of Medicine** enlisted 32 healthy subjects and divided them into three groups.

Every day for eight weeks, one group took a **placebo**, the second took **1.4 grams** of XOS, and the third took **2.8 grams** of XOS.[7]

The preparation contained **70%** XOS, so that the total amount of XOS ingested in the two study groups was **1 gram** or **2 grams**, respectively.

Both treatment groups had *increases* in **bifidobacteria**, but those taking **2 grams** daily of XOS had significantly larger increases than the lower-dose group.[7]

To achieve similar increases using another common prebiotic, **FOS (fructooligosaccharides)**, you'd have to take ***10 to 20 grams***, enough to cause cramps and other digestive problems.[7]

The XOS study found no significant side effects in any of the groups.

Results in Just Two Weeks

Another team of scientists using the same doses of the *same* **XOS** preparation found that this prebiotic could significantly boost bifidobacteria levels in a much *shorter* time.[8]

The group taking **1 gram** of XOS daily saw significant increases in bifidobacteria in **28 days**.[8]

Those taking **2 grams** of XOS daily achieved significant increases in bifidobacteria in ***just 14 days***.[8]

Why bifidobacteria respond so quickly and effectively to **XOS**, and at such low doses, is still being studied.

Research shows that bifidobacteria feed on precisely the types of carbohydrates that humans cannot digest, especially the group known as **oligosaccharides**.

XOS (xylooligosaccharide) is an important example of this group.[16]

Benefits of XOS

Taking XOS and raising bifidobacteria levels results in wide-ranging health benefits.[8]

One study found that taking XOS led to gastrointestinal and metabolic improvements, including:[8]

- ***Increased fecal acidity***, which inhibits less-desirable bacteria and promotes healthy bacteria,[17]
- ***Decreased triglycerides and cholesterol*** in the blood and increased levels in feces, and
- ***Decreased blood sugar,*** protecting against type II diabetes and metabolic syndrome.

WHAT YOU NEED TO KNOW

The Benefits of a Powerful Prebiotic

- The trillions of bacteria living in the human gut have an enormous impact on our health and vulnerability to disease.
- Higher levels of bifidobacteria are associated with resistance to a wide range of age-related diseases.
- A prebiotic called **XOS (xylooligosaccharide)** has been validated in human studies to specifically target and boost bifidobacteria. It works in very **low doses**, without side effects, in as little as ***two weeks***.

A recent **2020** rat study found that **XOS** supplementation modulates gut flora and reduces colon inflammation caused by high-fat-diet-induced obesity.[18]

In addition, in treated rats XOS ***counteracted the weight gain*** induced by a high-fat diet and ***decreased inflammatory factors*** in the colon.

Summary

The trillions of organisms that reside in the human digestive tract, or the gut microbiota, are a critical factor in sustaining our resistance to disease and promoting good health.

Among the most beneficial gut bacteria are those belonging to the group **bifidobacteria**.

With age, intestinal levels of these beneficial bacteria decline.

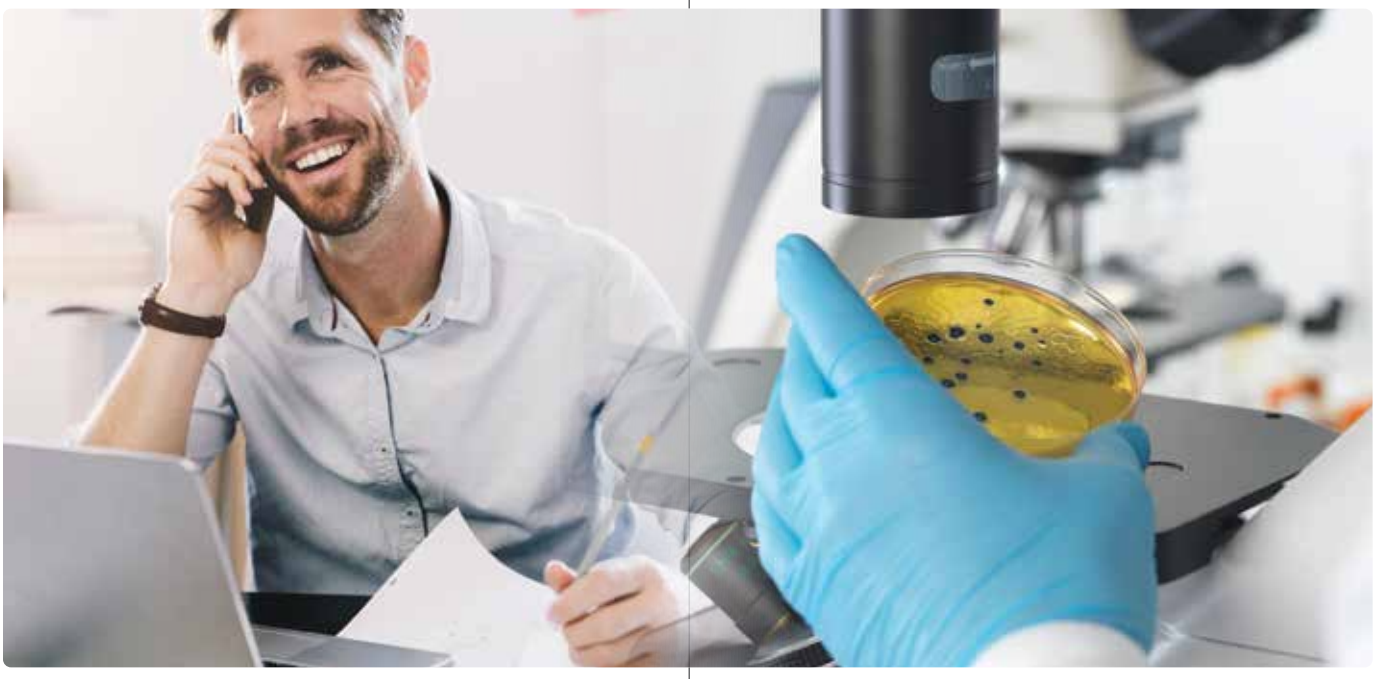
Scientists have identified a novel **prebiotic** called **XOS (xylooligosaccharide)** that has been shown in human clinical trials to boost bifidobacteria populations in the gut in as *little as two weeks*.

Unlike other prebiotics, XOS is effective in **low doses**, without side effects.

XOS has also been shown to lower cholesterol, triglycerides, and blood sugar, risk factors for cardiovascular disease and diabetes, respectively. •

References

1. Griffin JL, Wang X, Stanley E. Does our gut microbiome predict cardiovascular risk? A review of the evidence from metabolomics. *Circ Cardiovasc Genet.* 2015 Feb;8(1):187-91.
2. Tang WH, Kitai T, Hazen SL. Gut Microbiota in Cardiovascular Health and Disease. *Circ Res.* 2017 Mar 31;120(7):1183-96.
3. Marques FZ, Mackay CR, Kaye DM. Beyond gut feelings: how the gut microbiota regulates blood pressure. *Nat Rev Cardiol.* 2018 Jan;15(1):20-32.
4. Galland L. The gut microbiome and the brain. *J Med Food.* 2014 Dec;17(12):1261-72.
5. Turroni F, Marchesi JR, Foroni E, et al. Microbiomic analysis of the bifidobacterial population in the human distal gut. *ISME J.* 2009 Jun;3(6):745-51.
6. Arboleya S, Watkins C, Stanton C, et al. Gut Bifidobacteria Populations in Human Health and Aging. *Front Microbiol*. 2016;7:1204.
7. Finegold SM, Li Z, Summanen PH, et al. Xylooligosaccharide increases bifidobacteria but not lactobacilli in human gut microbiota. *Food Funct.* 2014 Mar;5(3):436-45.
8. Na MH, Kim WK. Effects of Xylooligosaccharide Intake on Fecal Bifidobacteria, Lactic acid and Lipid Metabolism in Korean Young Women. *Korean J Nutr.* 2007;40(2):154-61.
9. Khanna S, Tosh PK. A clinician's primer on the role of the microbiome in human health and disease. *Mayo Clin Proc.* 2014 Jan;89(1):107-14.
10. Sudo N. Microbiome, HPA axis and production of endocrine hormones in the gut. *Adv Exp Med Biol.* 2014;817:177-94.
11. Johnson EL, Heaver SL, Walters WA, et al. Microbiome and metabolic disease: revisiting the bacterial phylum Bacteroidetes. *J Mol Med (Berl).* 2017 Jan;95(1):1-8.
12. Available at: https://www.nih.gov/news-events/news-releases/nih-human-microbiome-project-defines-normal-bacterial-makeup-body. Accessed August 24, 2020.
13. Slavin J. Fiber and prebiotics: mechanisms and health benefits. *Nutrients.* 2013 Apr 22;5(4):1417-35.
14. Cummings JH, Macfarlane GT. Gastrointestinal effects of prebiotics. *Br J Nutr.* 2002 May;87 Suppl 2:S145-51.
15. O'Callaghan A, van Sinderen D. Bifidobacteria and Their Role as Members of the Human Gut Microbiota. *Front Microbiol.* 2016;7:925.
16. Pokusaeva K, Fitzgerald GF, van Sinderen D. Carbohydrate metabolism in Bifidobacteria. *Genes Nutr.* 2011 Aug;6(3):285-306.
17. Zhang YJ, Li S, Gan RY, et al. Impacts of gut bacteria on human health and diseases. *Int J Mol Sci.* 2015 Apr 2;16(4):7493-519.
18. Fei Y, Wang Y, Pang Y, et al. Xylooligosaccharide Modulates Gut Microbiota and Alleviates Colonic Inflammation Caused by High Fat Diet Induced Obesity. *Front Physiol.* 2019 2020-January-22;10(1601):1601.



Broccoli

THE TREE OF LIFE

Just one daily Optimal Broccoli and Cruciferous Blend tablet provides you with the same potent cell-protective and hormone health-promoting benefits as fresh vegetables.

For maximum benefits and absorption this enteric-coated tablet contains two layers:

- Vegetable extracts from broccoli, watercress, cabbage and rosemary
- Myrosinase to release sulforaphane in the small intestine.

Item #02368

30 Enteric Coated Tablets

NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

Restore Connections Between Your Neurons

Neuro-Mag® Magnesium L-Threonate
was specifically formulated by MIT scientists to be uniquely absorbable by brain and nerve cells.

The numbers of **synapses** that connect brain cells decline with aging.

Magnesium L-Threonate has been shown to support **synaptic density** and other structural components of the brain.*

Neuro-Mag®
Magnesium L-Threonate
Item #01603
90 vegetarian capsules

Neuro-Mag®
Magnesium L-Threonate Powder
Item #02032
Net Wt. 93.35 g
(0.206 lb. or 3.293 oz)

These products are available at fine health food stores everywhere.

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

NON GMO LE CERTIFIED

PreticX™
IN A TASTY STRAWBERRY CHEWABLE

RESTORE YOUTHFUL GUT BALANCE

With Strawberry Flavored FLORASSIST® Prebiotic Chewable

- With age, our **bifidobacteria** levels decline to as little as **5%**, creating gut imbalance.[1]
- *Increasing* **bifidobacteria** levels *enhances* digestion and carbohydrate metabolism.
- *Strawberry flavored* **FLORASSIST® Prebiotic Chewable** helps restore healthy **bifidobacteria** levels in as little as 14 days using **XOS** prebiotic fiber.[2]
- **1,000 mg** of **XOS** (xylooligosaccharides) per prebiotic chewable.

GLUTEN FREE NON GMO LE CERTIFIED

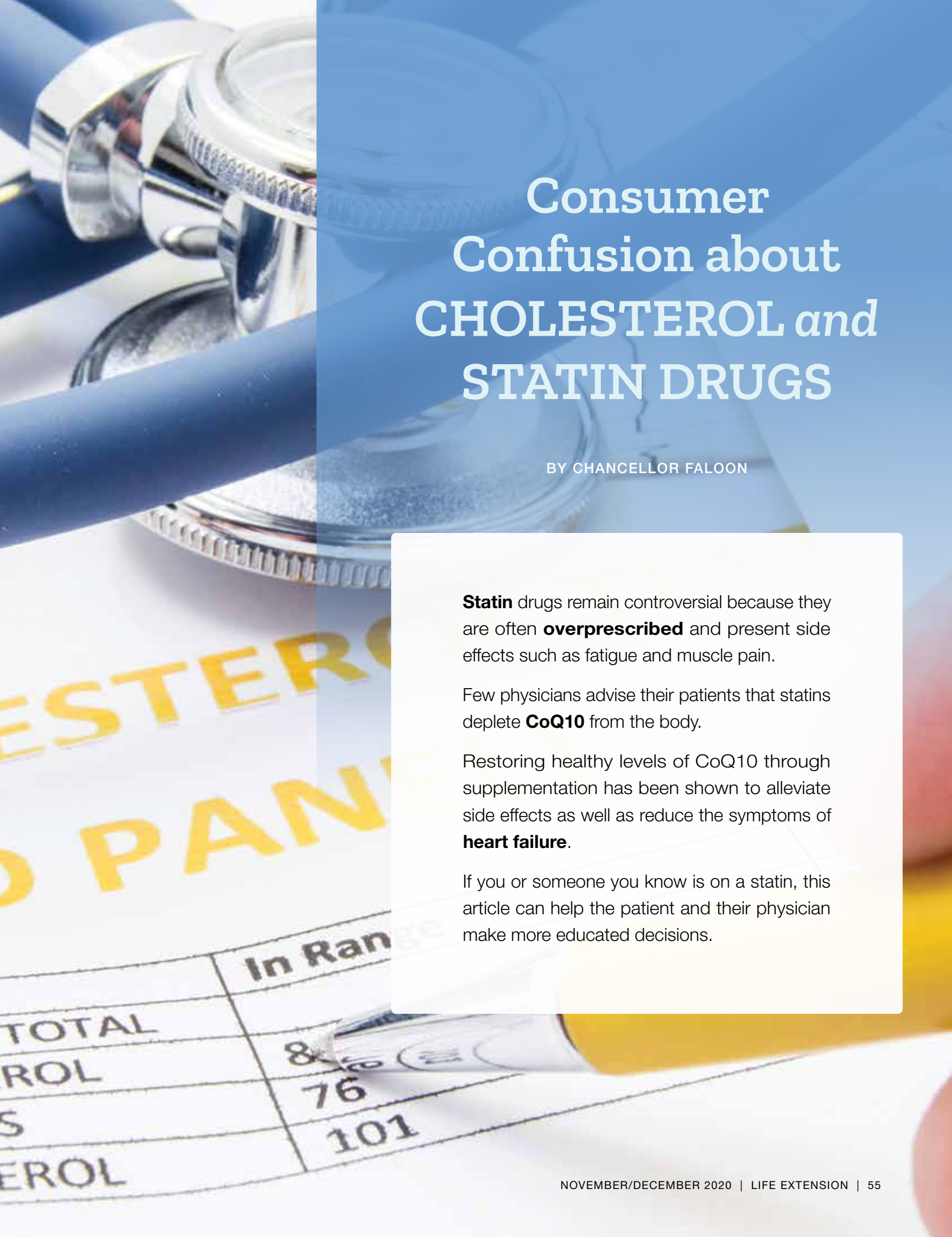
Item #02203

60 vegetarian chewable tablets

This product is available at fine health food stores everywhere.

References
1. *Front Microbiol.* 2016;7:1204.
2. *Korean J Nutr.* 2007;40(2):154-61.


CHOL
(LIPID
Test Name
CHOLESTEROL
HDL CHOLESTE
TRIGLYCERIDES
LDL-CHOLESTE



Consumer Confusion about CHOLESTEROL *and* STATIN DRUGS

BY CHANCELLOR FALOON

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

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

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

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

Statins and Heart Disease

Heart disease encompasses a range of cardiac disorders that include:

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

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

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

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

Concerns raised about **statin drugs** include:

- In people without known heart disease, there does not appear to be a mortality benefit with statin drugs, and the harms can outweigh the benefits,[1,2]
- Clinical trials of statins are largely industry-sponsored, and the original data in those studies are mostly unavailable to researchers,[2,3] and
- Lifestyle factors including tobacco usage, unhealthy diet, and sedentary lifestyle are thought to account for as much as **80%** of cardiovascular risk.[2,4]

The sum of published research shows that:

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

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

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

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

Reducing Statin Side Effects

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

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

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

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

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

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

Evidence also shows that statins interfere with the synthesis of **vitamin K2**.[9,10]

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

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

WHAT YOU NEED TO KNOW

Cholesterol and Statins

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

CoQ10 Provides Support

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

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

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

New Data Support CoQ10's Protective Effects

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Why *Early* Statin Trials Were Short Term

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

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

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

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

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

Newer Trials Show Reduced Mortality

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

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

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

20-Year Study Yields Robust Mortality Benefit

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

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

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

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

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

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

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

In 1989, the company filed for a **patent** on a drug that ***combined*** **CoQ10** with a **statin** to reduce statin side effects. In **1990**, they were awarded that patent, which was scheduled to expire in 2009.[19]

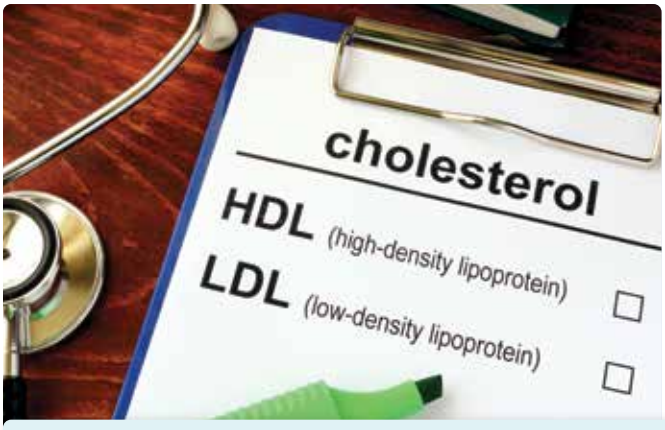
Merck never proceeded with clinical trials needed for FDA approval.

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

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

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

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



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

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

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

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

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

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

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

Increased Risk When LDL Particles Are Small and Dense

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

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

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

A critical step in the development of atherosclerosis is the adhesion of **monocytes** (a type of white blood cell) to the **endothelial cells** that line the artery walls.[33,34]

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

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

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

Statins Improve Health Outcomes in US Veterans

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

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

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

Multiple Risk Factors for Cardiovascular Disease

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

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

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

Impact of Apolipoprotein B

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

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

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

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

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

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

Summary

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

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

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

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

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

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

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

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

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

References

1. Available at: http://www.thennt.com/nnt/statins-for-heart-disease-prevention-without-prior-heart-disease/. Accessed July 8, 2020.
2. Hobbs FD, Banach M, Mikhailidis DP, et al. Is statin-modified reduction in lipids the most important preventive therapy for cardiovascular disease? A pro/con debate. *BMC Med.* 2016 Jan 14;14:4.
3. Available at: https://www.pharmaceutical-journal.com/news-and-analysis/opinion/insight/cholesterol-lowering-statin-therapy-for-healthy-people-is-not-as-simple-as-yes-or-no/20202407.article. Accessed July 8, 2020.
4. Sacks FM, Lichtenstein AH, Wu JHY, et al. Dietary Fats and Cardiovascular Disease: A Presidential Advisory From the American Heart Association. *Circulation.* 2017 Jul 18;136(3):e1-e23.
5. Uranga RM, Keller JN. Diet and age interactions with regards to cholesterol regulation and brain pathogenesis. *Curr Gerontol Geriatr Res.* 2010;2010:219683.
6. Ference BA, Kastelein JJP, Ginsberg HN, et al. Association of Genetic Variants Related to CETP Inhibitors and Statins With Lipoprotein Levels and Cardiovascular Risk. *JAMA.* 2017 Sep 12;318(10):947-56.
7. Milajerdi A, Sadeghi A, Mousavi SM, et al. Influence of Statins on Circulating Inflammatory Cytokines in Patients With Abnormal Glucose Homeostasis: A Meta-analysis of Data From Randomized Controlled Trials. *Clin Ther.* 2020 Feb;42(2):e13-e31.
8. Available at: http://utswmed.org/medblog/statins-debate/. Accessed July 8, 2020.
9. Okuyama H, Langsjoen PH, Hamazaki T, et al. Statins stimulate atherosclerosis and heart failure: pharmacological mechanisms. *Expert Rev Clin Pharmacol.* 2015 Mar;8(2):189-99.
10. Parker BA, Thompson PD. Effect of statins on skeletal muscle: exercise, myopathy, and muscle outcomes. *Exerc Sport Sci Rev.* 2012 Oct;40(4):188-94.
11. Derosa G, D'Angelo A, Maffioli P. Coenzyme q10 liquid supplementation in dyslipidemic subjects with statin-related clinical symptoms: a double-blind, randomized, placebo-controlled study. *Drug Des Devel Ther.* 2019;13:3647-55.
12. Langsjoen PH, Langsjoen JO, Langsjoen AM, et al. Statin-Associated Cardiomyopathy Responds to Statin Withdrawal and Administration of Coenzyme Q10. *Perm J.* 2019;23:18-257.
13. Littlefield N, Beckstrand RL, Luthy KE. Statins' effect on plasma levels of Coenzyme Q10 and improvement in myopathy with supplementation. *J Am Assoc Nurse Pract.* 2014 Feb;26(2):85-90.
14. Qu H, Guo M, Chai H, et al. Effects of Coenzyme Q10 on Statin-Induced Myopathy: An Updated Meta-Analysis of Randomized Controlled Trials. *J Am Heart Assoc.* 2018 Oct 2;7(19):e009835.
15. Available at: https://www.uptodate.com/contents/management-of-low-density-lipoprotein-cholesterol-ldl-c-in-the-secondary-prevention-of-cardiovascular-disease. Accessed July 29, 2020.
16. Griffin BP. Statins in aortic stenosis: new data from a prospective clinical trial. *J Am Coll Cardiol*. 2007 Feb 6;49(5):562-4.
17. Available at: https://www.uptodate.com/contents/statin-therapy-in-patients-with-heart-failure. Accessed July 8, 2020.
18. Available at: https://www.uptodate.com/contents/tests-to-evaluate-left-ventricular-systolic-function. Accessed July 8, 2020.
19. Available at: https://patents.google.com/patent/US4933165A/en. Accessed July 8, 2020.
20. Available at: https://www.nutraceuticalsworld.com/contents/view_online-exclusives/2016-04-07/more-education-needed-to-bolster-coq10-market/. Accessed June 29, 2020.
21. Lu Y, Cheng Z, Zhao Y, et al. Efficacy and safety of long-term treatment with statins for coronary heart disease: A Bayesian network meta-analysis. *Atherosclerosis.* 2016 Nov;254:215-27.
22. Vallejo-Vaz AJ, Robertson M, Catapano AL, et al. Low-Density Lipoprotein Cholesterol Lowering for the Primary Prevention of Cardiovascular Disease Among Men With Primary Elevations of Low-Density Lipoprotein Cholesterol Levels of 190 mg/dL or Above: Analyses From the WOSCOPS (West of Scotland Coronary Prevention Study) 5-Year Randomized Trial and 20-Year Observational Follow-Up. *Circulation.* 2017 Nov 14;136(20):1878-91.
23. Available at: https://medlineplus.gov/cholesterollevelswhatyouneedtoknow.html. Accessed July 8, 2020.
24. Nayor M, Vasan RS. Recent Update to the US Cholesterol Treatment Guidelines: A Comparison With International Guidelines. *Circulation.* 2016 May 3;133(18):1795-806.
25. Shapiro MD, Fazio S. Apolipoprotein B-containing lipoproteins and atherosclerotic cardiovascular disease. *F1000Res.* 2017;6:134.
26. Tabas I, Williams KJ, Boren J. Subendothelial lipoprotein retention as the initiating process in atherosclerosis: update and therapeutic implications. *Circulation.* 2007 Oct 16;116(16):1832-44.
27. Levinson SS. Comparison of apolipoprotein B and non-high-density lipoprotein cholesterol for identifying coronary artery disease risk based on receiver operating curve analysis. *Am J Clin Pathol.* 2007 Mar;127(3):449-55.
28. Contois JH, McConnell JP, Sethi AA, et al. Apolipoprotein B and cardiovascular disease risk: position statement from the AACC Lipoproteins and Vascular Diseases Division Working Group on Best Practices. *Clin Chem.* 2009 Mar;55(3):407-19.
29. Trompet S, Packard CJ, Jukema JW. Plasma apolipoprotein-B is an important risk factor for cardiovascular disease, and its assessment should be routine clinical practice. *Curr Opin Lipidol.* 2018 Feb;29(1):51-2.
30. Diffenderfer MR, Schaefer EJ. The composition and metabolism of large and small LDL. *Curr Opin Lipidol.* 2014 Jun;25(3):221-6.
31. Lorenzatti AJ, Toth PP. New Perspectives on Atherogenic Dyslipidaemia and Cardiovascular Disease. *Eur Cardiol.* 2020 Feb;15:1-9.
32. Chouinard JA, Grenier G, Khalil A, et al. Oxidized-LDL induce morphological changes and increase stiffness of endothelial cells. *Exp Cell Res.* 2008 Oct 1;314(16):3007-16.
33. Bergheanu SC, Bodde MC, Jukema JW. Pathophysiology and treatment of atherosclerosis : Current view and future perspective on lipoprotein modification treatment. *Neth Heart J.* 2017 Apr;25(4):231-42.
34. Available at: https://www.merckmanuals.com/professional/cardiovascular-disorders/arteriosclerosis/atherosclerosis. Accessed February 26, 2020.
35. Available at: https://www.sciencedirect.com/topics/medicine-and-dentistry/foam-cell. Accessed February 26, 2020.
36. Chiu S, Williams PT, Krauss RM. Effects of a very high saturated fat diet on LDL particles in adults with atherogenic dyslipidemia: A randomized controlled trial. *PLoS One.* 2017;12(2):e0170664.
37. Ulven SM, Leder L, Elind E, et al. Exchanging a few commercial, regularly consumed food items with improved fat quality reduces total cholesterol and LDL-cholesterol: a double-blind, randomised controlled trial. *Br J Nutr.* 2016 Oct;116(8):1383-93.
38. Jafari M, Ebrahimi R, Ahmadi-Kashani M, et al. Efficacy of alternate-day dosing versus daily dosing of atorvastatin. *J Cardiovasc Pharmacol Ther.* 2003 Jun;8(2):123-6.
39. Orkaby AR, Driver JA, Ho YL, et al. Association of Statin Use With All-Cause and Cardiovascular Mortality in US Veterans 75 Years and Older. *JAMA*. 2020 Jul 7;324(1):68-78.

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

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

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

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

Too much vitamin K can diminish the **anticoagulant** effects of warfarin and produce *unstable* **INR** measurements.

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

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

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

Blueberry
EXTRACT

Blueberries provide health-boosting benefits shown to:

- Enhance heart health
- Maintain brain function
- Sustain healthy blood-sugar levels already within normal range
- Support smooth, firm skin
- Improve movement and coordination

Blueberry extract is *more potent* than the whole berry, providing greater metabolic support throughout the body and without the excess sugar of raw fruit.

Item #01214
60 vegetarian capsules

This product is available at fine health food stores everywhere.

NON GMO LE CERTIFIED

AuoraBlue® is a registered trademark of Denali Bio Technologies, Inc.

'C' TO THE MAX

Humans don't manufacture **vitamin C** internally, so it must be obtained through dietary sources or supplements.

Vitamin C is water soluble and needs to be constantly replenished.*

A highly ***absorbable*** form of **quercetin** complements vitamin C's activity in the body.

Each tablet provides **1000 mg** of **vitamin C** and **15 mg** of **Bio-Quercetin Phytosome**.

Item #02227 • 250 vegetarian tablets

This product is available at fine health food stores everywhere.

NON GMO LE CERTIFIED

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

CoQ10

When Your Energy Matters Most

GLUTEN FREE

NON GMO
LE CERTIFIED

Item #01426
4 bottles $39 each

Item #01431
4 bottles $39 each

These products are available at fine health food stores everywhere.

Cardiologist Observes Improved Patient Outcomes & Reversal of Calcification and Atherosclerosis

JOEL KAHN, MD

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

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

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

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

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

My Clinical Practice

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

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

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

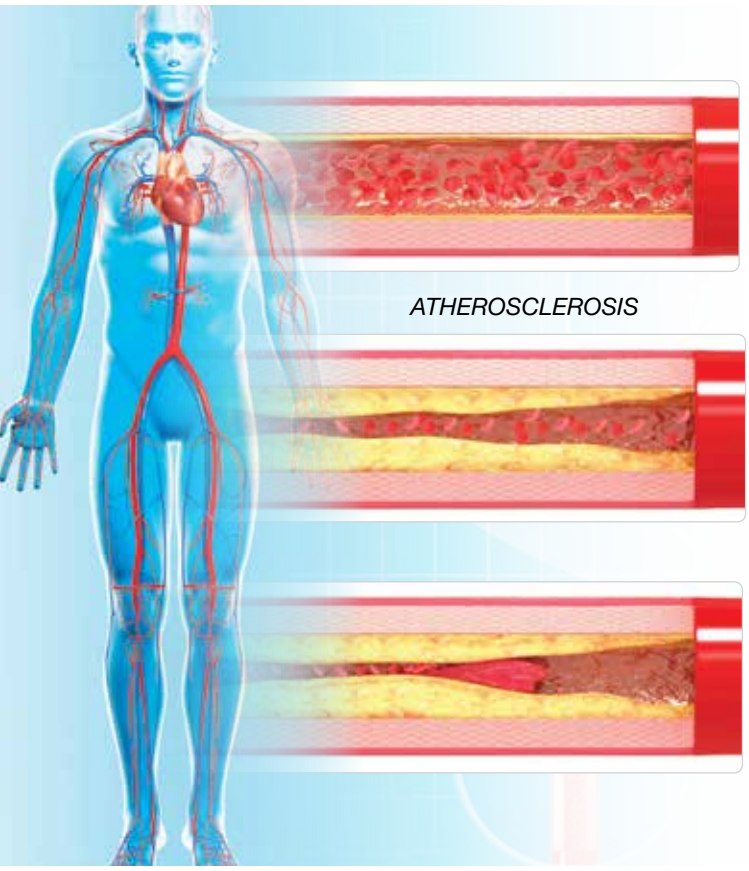
At that time, I read a study in a respected medical journal focusing on **atherosclerosis**, which often leads to heart attacks and strokes.

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

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

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

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



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

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

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

The Evidence Mounts

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

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

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

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

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

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

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

Pine Bark - *Centella* Extracts in Practice

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

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

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

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

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

Preventing Arterial Plaque Progression

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

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

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

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

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

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

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

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

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

WHAT YOU NEED TO KNOW

Reducing and Reversing Plaque Progression

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

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

Decrease of Coronary Artery Calcification

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

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

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

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

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

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

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

Testing in Patients with Stents

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

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

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

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

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

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

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

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

Summary

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

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

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

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

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

References

1. Luzzi R, Belcaro G, Ippolito E. Carotid plaque stabilization induced by the supplement association Pycnogenol(R) and centella asiatica (Centellicum(R)). *Minerva Cardioangiol*. 2016 Dec;64(6):603-9.
2. Ornish D, Brown SE, Scherwitz LW, et al. Can lifestyle changes reverse coronary heart disease? The Lifestyle Heart Trial. *Lancet.* 1990 Jul 21;336(8708):129-33.
3. Belcaro G, Dugall M, Ippolito E, et al. Pycnogenol(R) and Centella asiatica to prevent asymptomatic atherosclerosis progression in clinical events. *Minerva Cardioangiol*. 2017 Feb;65(1):24-31.
4. Bots ML, Evans GW, Tegeler CH, et al. Carotid Intima-media Thickness Measurements: Relations with Atherosclerosis, Risk of Cardiovascular Disease and Application in Randomized Controlled Trials. *Chin Med J (Engl)*. 2016 Jan 20;129(2):215-26.
5. Belcaro G, Cesarone MR, Scipione C, et al. Delayed progression of atherosclerosis and cardiovascular events in asymptomatic patients with atherosclerotic plaques: 3-year prevention with the supplementation with Pycnogenol(R)+Centellicum(R). *Minerva Cardioangiol*. 2020 Feb;68(1):15-21.
6. Hu S, Belcaro G, Cesarone MR, et al. Central cardiovascular calcifications: supplementation with Pycnogenol(R) and Centellicum(R): variations over 12 months. *Minerva Cardioangiol.* 2020 Feb;68(1):22-6.
7. Available at: https://www.mayoclinic.org/diseases-conditions/coronary-artery-disease/symptoms-causes/syc-20350613. Accessed July 15, 2020.
8. Belcaro G, Cesarone MR, Scipione C, et al. Pycnogenol(R)+ Centellicum(R), post-stent evaluation: prevention of neointima and plaque re-growth. *Minerva Cardioangiol.* 2019 Dec;67(6):450-5.

NEW!

TRIPLE ACTION SENOLYTIC FORMULA

COMBAT SENESCENT CELLS AND AGING

SCIENCE OF SENOLYTICS!

Senolytic compounds selectively help target senescent cells in the body.

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

ONCE-WEEKLY SENOLYTIC FORMULA

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

Apigenin has been added to inhibit Senescence Associated Secretory Phenotype, or SASP, produced by senescent cells.

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

**Aging Cell.* 2015 Aug;14(4):644-58.

Item #02301 • 24 vegetarian capsules
(Each box lasts three months.)

This product is available at fine health food stores everywhere.

NON GMO LE CERTIFIED

STRONGER BONES
STRONGER YOU

Some people require *extra* support for optimal bone strength and flexibility.

Bone Strength Collagen Formula provides **collagen** as a patented **chelated calcium** designed to support bone health.

Magnesium, silicon, dried plum, vitamin D3, and boron are included to further skeletal support.

This product is available at fine health food stores everywhere.

Item #01725

120 capsules

NON GMO LE CERTIFIED

KoAct® is a patented form of bone collagen with calcium designed to support bone strength and maintain optimal bone health.

KoAct® is a registered trademark of AIDP, Inc. Fruitex B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. Patent No. 5,962,049.

Maintain Endothelial Plaque Stability with

Arterial Protect

Arterial Protect can help stabilize endothelial plaque and promote healthy blood flow throughout the body.*

Just one capsule a day provides the patented French Maritime **pine bark extract** along with standardized ***Centella asiatica*** extract.

Item #02004

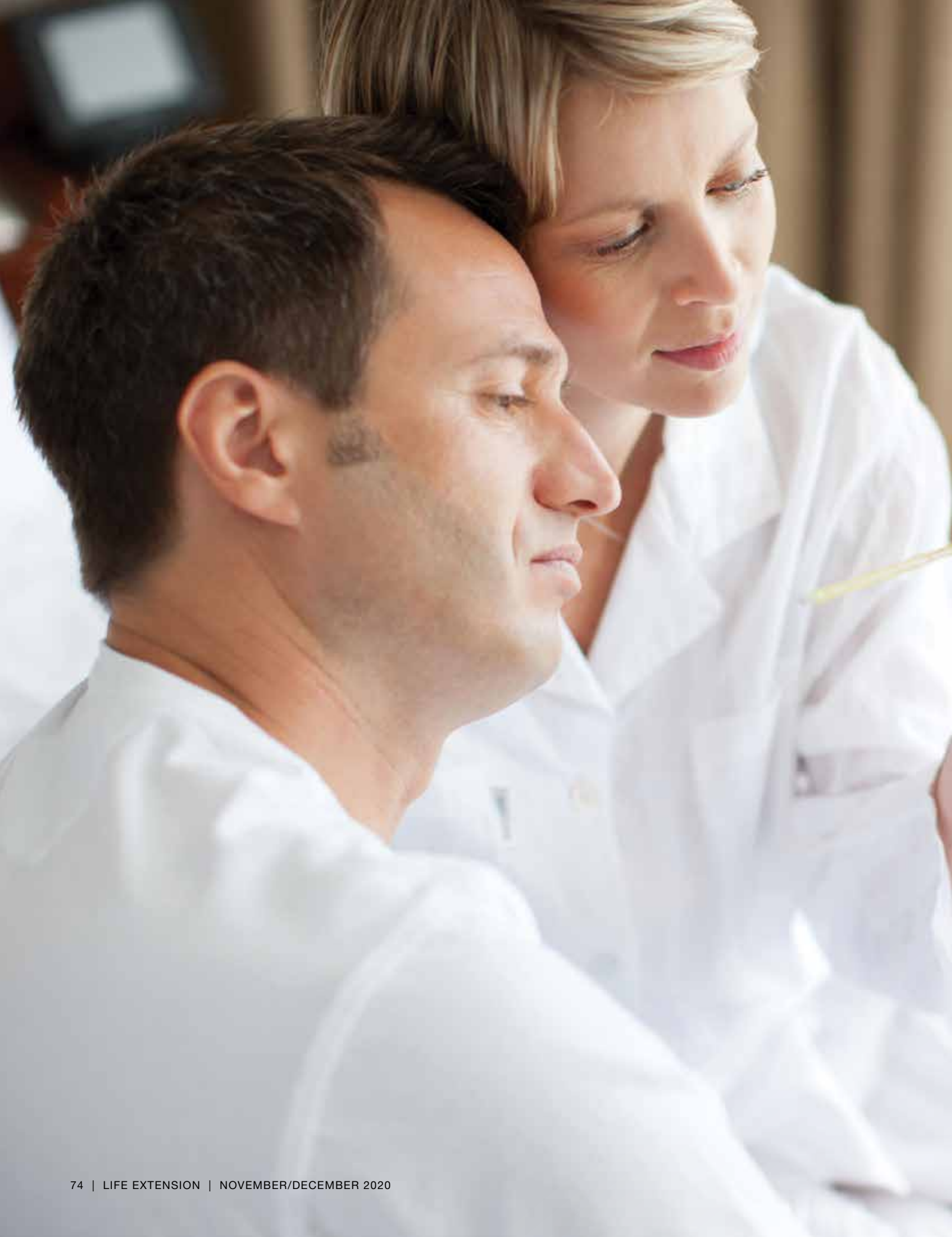
30 vegetarian capsules

Reference

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

GLUTEN FREE · 1 DAILY · NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.



Enhanced IMMUNITY *Against* ALLERGIES *and* COLDS

BY MICHAEL DOWNEY

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

Drugs target symptoms without correcting underlying causes of these miseries.

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

Human studies show that these ingredients lead to:[1-3]

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

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

Colds, Allergies, and Other Infections

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

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

Preventing and Reducing Symptoms

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

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

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

The ingredients are:

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

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

Discovery of Yeast's Immune Benefits

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

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

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

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

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

Defense Against Allergies

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

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

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

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

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

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

Yeast Fermentate Fights Colds and Flu

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

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

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

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

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

WHAT YOU NEED TO KNOW

Defending Against Allergies, Colds, and Infections Year-Round

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

How Yeast Fermentate Works

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

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

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

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

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

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

A Probiotic's Cold and Flu Defense

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

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

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

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

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

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

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

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

How the Probiotic Works

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

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

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

Summary

Allergies and **colds** are more than an inconvenience.

Human studies show that a **yeast fermentate** and the probiotic ***Lactobacillus rhamnosus*** **CRL1505** reduce the severity, occurrence, and duration of allergy, cold, and flu-like symptoms.

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

References

1. Moyad MA, Robinson LE, Kittelsrud JM, et al. Immunogenic yeast-based fermentation product reduces allergic rhinitis-induced nasal congestion: a randomized, double-blind, placebo-controlled trial. *Adv Ther.* 2009 Aug;26(8):795-804.
2. Moyad MA, Robinson LE, Zawada ET, Jr., et al. Effects of a modified yeast supplement on cold/flu symptoms. *Urol Nurs.* 2008 Feb;28(1):50-5.
3. Villena J SS, Núñez M, Corzo J, Tolaba R, Faedda J, Font G, Alvarez S. Probiotics for everyone! The novel immunobiotic Lactobacillus rhamnosus CRL1505 and the beginning of social probiotic programs in Argentina. 2012.
4. Available at: https://www.cdc.gov/features/rhinoviruses/index.html. Accessed July 10, 2020.
5. Available at: https://www.webmd.com/allergies/allergy-statistics. Accessed July 10, 2020.
6. Skoner DP. Complications of allergic rhinitis. *Journal of Allergy and Clinical Immunology.* 2000 2000/06/01/;105(6, Part 2):S605-S9.
7. Juhn YJ. Risks for infection in patients with asthma (or other atopic conditions): is asthma more than a chronic airway disease? *J Allergy Clin Immunol.* 2014 Aug;134(2):247-57; quiz 58-9.
8. Available at: https://www.rxlist.com/allergy_medications/drugs-condition.htm. Accessed July 10, 2020.
9. Gray SL, Anderson ML, Dublin S, et al. Cumulative use of strong anticholinergics and incident dementia: a prospective cohort study. *JAMA Intern Med.* 2015 Mar;175(3):401-7.
10. Jensen GS, Patterson, K.M., Barnes, J., Schauss, A.G., Beaman, R., Reeves, S.G. and Robinson, L.E.,. A double-blind placebo-controlled, randomized pilot study: consumption of a high-metabolite immunogen from yeast culture has beneficial effects on erythrocyte health and mucosal immune protection in healthy subjects. *The Open Nutrition Journal.* 2008;2:pp.68-75.
11. Available at: https://www.sciencedirect.com/topics/neuroscience/secretory-immunoglobulin. Accessed July 10, 2020.
12. AG S. Discovery of edible fermentation product with unusual immune enhancing properties in humans. *The FASEB Journal.* 2006;20(4):A143-A.
13. Jensen GS, Redman KA, Benson KF, et al. Antioxidant bioavailability and rapid immune-modulating effects after consumption of a single acute dose of a high-metabolite yeast immunogen: results of a placebo-controlled double-blinded crossover pilot study. *Journal of medicinal food.* 2011;14(9):1002-10.
14. Moyad MA, Robinson LE, Zawada ET, et al. Immunogenic yeast-based fermentate for cold/flu-like symptoms in nonvaccinated individuals. *Journal of alternative and complementary medicine (New York, N.Y.).* 2010;16(2):213-8.
15. Jensen GS, Carter SG, Reeves SG, et al. Anti-inflammatory properties of a dried fermentate in vitro and in vivo. *Journal of medicinal food.* 2015;18(3):378-84.
16. Reid G, Kort R, Alvarez S, et al. Expanding the reach of probiotics through social enterprises. *Benef Microbes.* 2018 Sep 18;9(5):707-15.
17. Salva S, Villena J, Alvarez S. Immunomodulatory activity of Lactobacillus rhamnosus strains isolated from goat milk: impact on intestinal and respiratory infections. *Int J Food Microbiol.* 2010 Jun 30;141(1-2):82-9.
18. Zelaya H, Tsukida K, Chiba E, et al. Immunobiotic lactobacilli reduce viral-associated pulmonary damage through the modulation of inflammation-coagulation interactions. *Int Immunopharmacol.* 2014 Mar;19(1):161-73.

Add AMPK

TO YOUR SWEAT ROUTINE

Let your healthy choices show.
AMPK is an enzyme in the body that signals cells to burn fat for energy. Over time, AMPK levels decline and can cause accumulation of abdominal fat.

Our AMPK Metabolic Activator:

- Revitalizes youthful AMPK activity
- Encourages the use of abdominal fat for energy
- Promotes healthy cellular metabolism

Item #02207
30 vegetarian tablets

GLUTEN FREE · 1 DAILY · NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

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

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.

Promote **Tear** Production from the **Inside Out**

Everyday factors can lead to dry, itchy, irritated eyes.

Tear Support with MaquiBright® is a unique oral supplement that supports your body's own tear production for continuous, all-day comfort.

The secret is the maqui berry's rich source of **delphinidins**, a source of support for tear-producing glands. When human subjects took just **60 mg** a day of **maqui berry extract**, there was a **45%** increase in lubricating tear production.[1,2]

Item #01918

30 vegetarian capsules

References

1. *Food Chem.* 2013;139(1-4):129-37.
2. *Panminerva Med.* 2014;56(3 Suppl 1):1-6.

GLUTEN FREE

1 DAILY

NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

IMMUNE DEFENSE YEAR-ROUND

Immune challenges can lead to nose, throat, and eye discomfort.

FLORASSIST® Immune & Nasal Defense combines a **probiotic** with a **yeast fermentate** to support a **year-round** healthy immune response.

Convenient, once-daily formula.

Item #02208

30 vegetarian capsules

GLUTEN FREE · 1 DAILY · NON GMO LE CERTIFIED

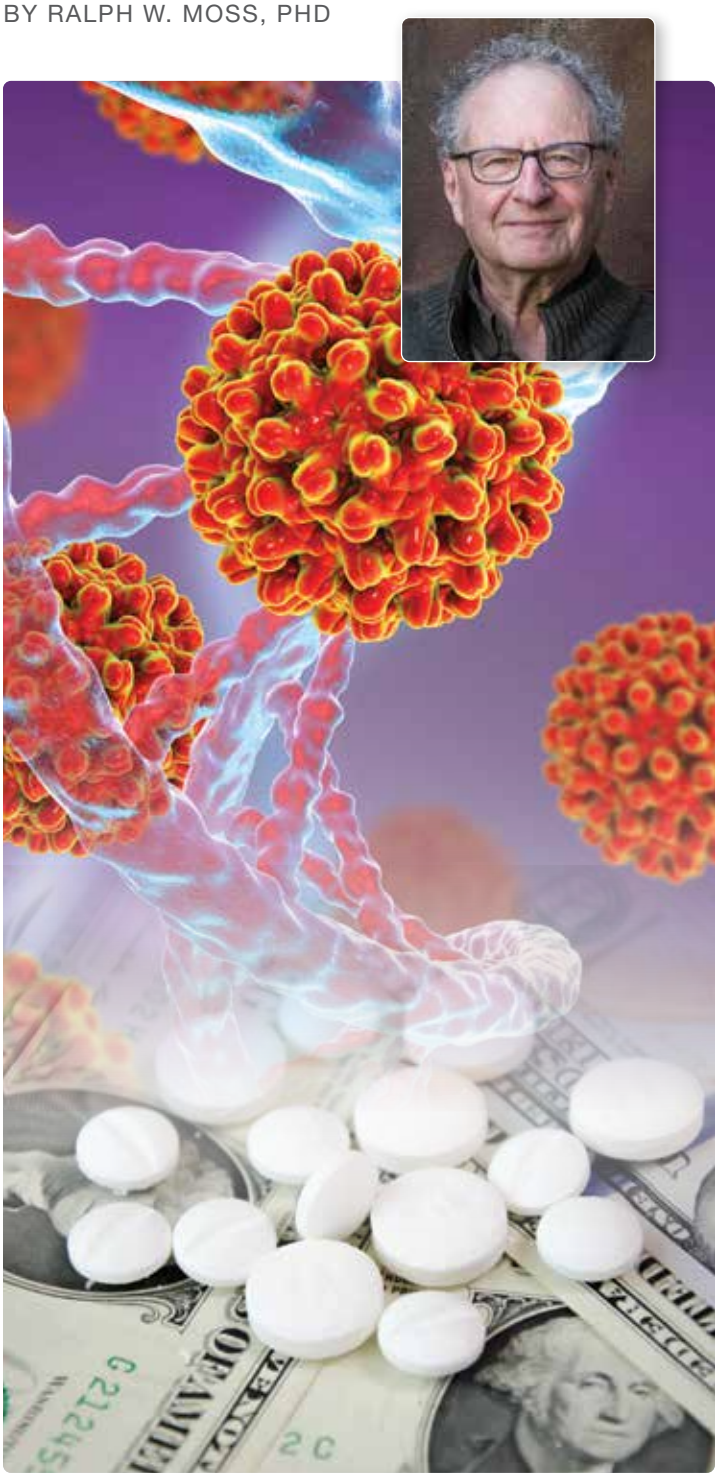
This product is available at fine health food stores everywhere.

EpiCor® is a registered trademark of Embria Health Sciences, L.L.C.

Cancer, Incorporated

Inside Story of Corruption, Greed & Needless Deaths

BY RALPH W. MOSS, PHD



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

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

He was promptly fired.

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

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

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

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

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

—LAURIE MATHENA

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

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

This is wishful thinking.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Why have they lowered their standards in this way? To quote *MedPageToday*: "The FDA does not make decisions in a vacuum—it is under constant pressure from politicians, pharmaceutical companies, and advocacy groups to speed up the drug approval process."

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

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

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

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

In cases like this, the severe side effects of an experimental treatment almost certainly led to the death of some older participants. Beside the human tragedy, this would depress the survival rate and possibly cause a delay, suspension or cancellation of the trial. Thus, a drug's proponents have a practical reason to keep the elderly out of their trial.

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

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

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

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

Moss Reports

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

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

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

For more information, visit **www.MossReports.com**.

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

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

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

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

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

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

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

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

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

LE: The truth about cancer treatments seems pretty grim.

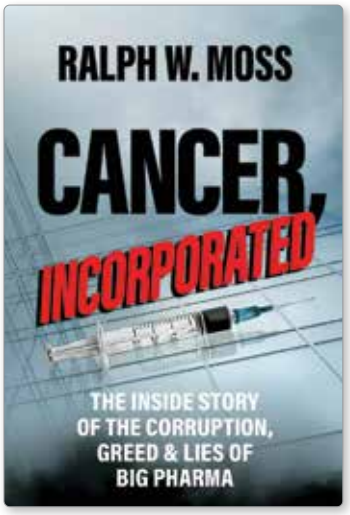
Dr. Moss: It is not my intention to discourage cancer patients from seeking effective treatments, but I also cannot be silent about Big Pharma's corruption of the oncology profession. Patients and caregivers deserve recommendations that are based on unimpeachable science, and not on research that has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

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

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

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

Dr. Ralph W. Moss has been writing about cancer treatments and the cancer industry since 1974. He is the author of 12 books and four film documentaries on cancer-related topics. Dr. Moss produces 'Moss Reports.'These 500+ page documents offer unbiased, up-to-date, and in-depth analysis of conventional, alternative, and complementary cancer treatments.
The Moss Reports website, www.mossreports.com, has a wealth of valuable information for cancer patients, caregivers, and industry professionals.



Support Healthy Immune Function with

WHEY Protein

(Whey Concentrate) (Whey Isolate) (Whey + Creatine + Glutamine)

Whey protein, packed with vital amino acids, promotes **glutathione** synthesis.

Glutathione plays an important role in supporting **immune** balance in the body.[1-3]

Whey fractions help modulate a full range of healthy bodily functions.

References

1. *Int J Gen Med.* 2011 Jan 25;4:105-13.
2. *Br J Nutr.* 2000 Nov;84 Suppl 1:S81-9.
3. *J Dairy Sci.* 2000 Jun;83(6):1187-95.

These products are available at fine health food stores everywhere.

NON GMO PROJECT VERIFIED

Choose the Best Whey for You!

WHEY PROTEIN CONCENTRATE
(chocolate or vanilla flavor)
Pure whey with the water removed.
Contains 80% easy-to-digest protein.
Item #02260 Vanilla • Item #02261 Chocolate

WHEY PROTEIN ISOLATE (chocolate or vanilla flavor)
Filtered to reduce carbohydrates, lactose and fat.
Contains 98% protein with some lactose.
Item #02242 Vanilla • Item #02243 Chocolate

ADVANCED WHEY PROTEIN ISOLATE
A premium isolate for greater strength and exercise performance. **Item #02246 Vanilla**

Contains milk. Use these products as a food supplement only. Do not use for weight reduction.

Does Your Fish Oil Provide Olive Polyphenols?

Omega-3s are widely used to protect heart health.

Olive oil also has vascular benefits.

Super Omega-3 provides **EPA/DHA** from ultra-pure **fish oil** plus standardized **polyphenols** from extra-virgin **olive oil**.

Item #01982

120 softgels

NON GMO LE CERTIFIED

GLUTEN FREE

IFOS™ certification mark is a registered trademark of Nutrasource Diagnostics, Inc. These products have been tested to the quality and purity standards of the IFOS™ program conducted at Nutrasource Diagnostics, Inc.

This product is available at fine health food stores everywhere.

Great Memory...

Isn't Just for Elephants

Do the answers not come as quickly as they used to? A healthy adult brain has as many as 100 billion nerve cells. Supercharge their performance with Cognitex® Elite.

The nutrients in these comprehensive brain health formulas support youthful memory and cognition to help you stay focused on living your healthiest life.

These products are available at fine health food stores everywhere.

Item #02396

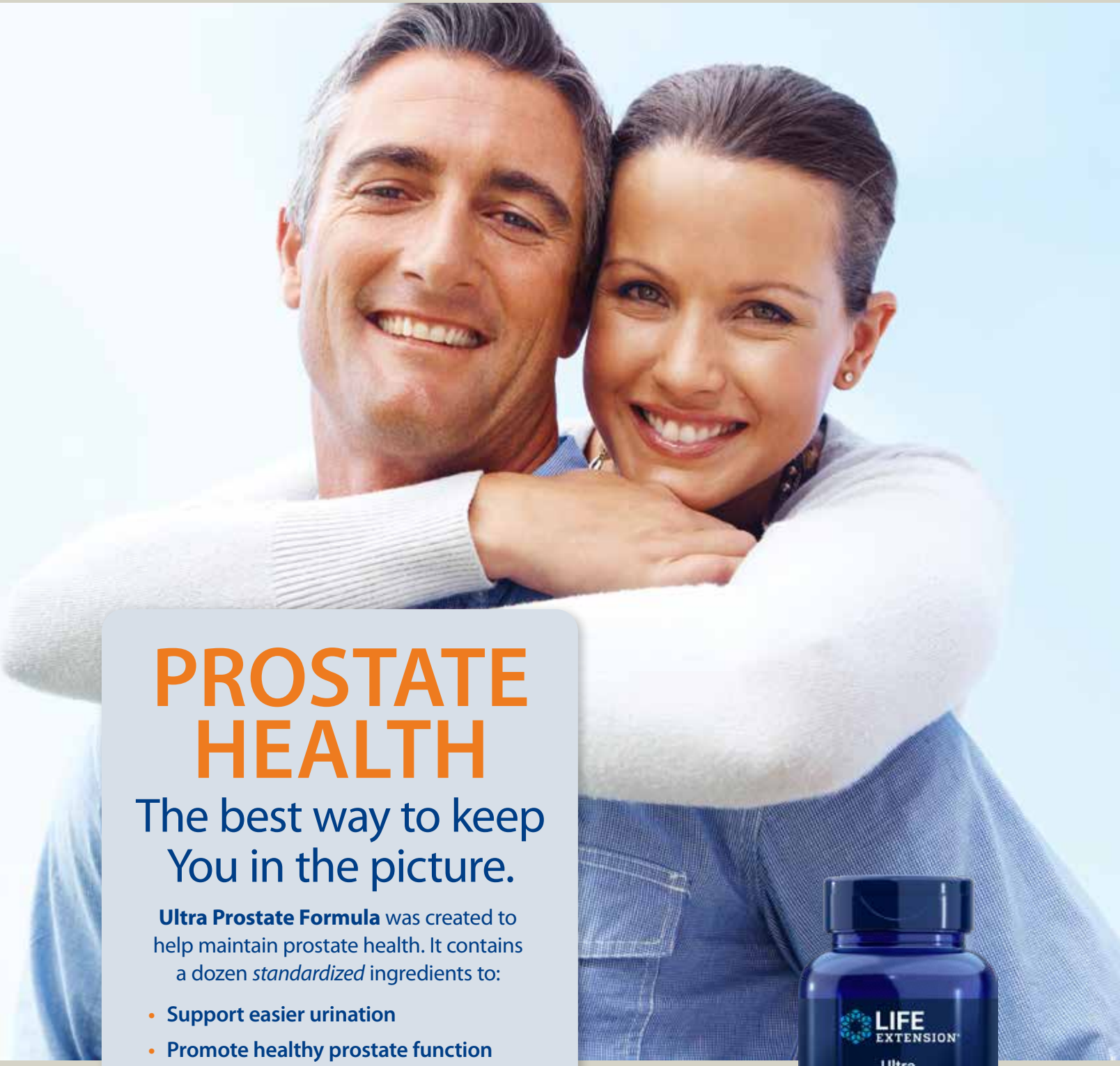
60 vegetarian tablets

Item #02397

60 vegetarian tablets

NON GMO LE CERTIFIED

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



PROSTATE HEALTH

The best way to keep You in the picture.

Ultra Prostate Formula was created to help maintain prostate health. It contains a dozen *standardized* ingredients to:

- **Support easier urination**
- **Promote healthy prostate function**
- **Encourage prostate cell division**

Ultra Prostate Formula is the most comprehensive *standardized*-ingredient, prostate-health supplement.

This product is available at fine health food stores everywhere.

Item #02029

60 softgels

GLUTEN FREE

NON GMO LE CERTIFIED

Sweet Dreams

Fast-Acting Liquid Melatonin is a popular way to achieve more rapid sleep onset.

The nice-tasting, citrus-vanilla flavor enables convenient "drop" dosing of ***Fast-Acting Liquid Melatonin*** each night or when needed.

Item #02234

3 mg, 2 fl. oz

FOR OCCASIONAL SLEEPLESSNESS.

Life Extension also offers a full range of melatonin in solid forms and a variety of dosages.

This product is available at fine health food stores everywhere.

CAUTION: Do not consume alcohol, drive or operate heavy machinery after taking this product.

GLUTEN FREE

NON GMO LE CERTIFIED

Onions

BY LAURIE MATHENA

Chopped onions are notorious for making your eyes water. But their health benefits are nothing to cry over.

A member of the *allium* family of vegetables (which also includes garlic and leeks), onions have important **antiviral** and **immune-boosting** properties.

They are a good source of sulfur, which is important for **detoxification** and **protein synthesis**.

Onions also contain compounds that help support heart health, reduce the risk of certain cancers, and can even improve bone density.

Heart Health

Studies have shown that onions improve numerous factors associated with heart health.

Red onions in particular contain anthocyanins, which give them their deep red color. People who consume high amounts of anthocyanins have a lower risk of heart attacks.[1]

Onions also contain small amounts of a beneficial flavonoid called **quercetin**.

Animal studies have indicated that consuming onions can reduce heart disease risk factors like inflammation,[2] high triglycerides,[3] and blood clot formation.[4]

Cancer Prevention

A meta-analysis that included 16 studies and more than 13,000 people showed that compared to those with the lowest intake, people with the highest intake of onions had a reduced risk of **colorectal cancer**.[5]

Another meta-analysis showed that people who consumed the most allium vegetables (like onions and garlic) were less likely to be diagnosed with **stomach cancer**, compared to those with the lowest intake.[6]

This cancer protection is likely due to onions' **sulfur-containing compounds** (which have been shown to decrease the growth and spread of tumors in test tube studies[7]) and flavonoids like **quercetin**[8] and **fisetin**[9] (which may inhibit tumor growth).

Boost Bone Density

Consuming onions could possibly help prevent osteoporosis by decreasing bone loss and boosting bone mineral density.

In one study of perimenopausal and postmenopausal women, those who ate onions at least once a day had **greater bone density** than those who only ate them once a month or less. And compared to women who never ate onions, those who ate them most frequently decreased their risk of bone fracture.[10]

References

1. *Circulation.* 2013 Jan 15;127(2):188-96.
2. *J Nutr Metab.* 2011;2011:475216.
3. *Plant Foods Hum Nutr.* 2006 Dec;61(4):179-85.
4. *Food Chem Toxicol.* 2013 Jul;57:99-105.
5. *Mol Nutr Food Res.* 2014 Sep;58(9):1907-14.
6. *Mol Nutr Food Res.* 2015 Jan;59(1):171-9.
7. *Mol Nutr Food Res.* 2016 Nov;60(11):2467-80.
8. *Oncol Rep.* 2017 Aug;38(2):819-28.
9. *Exp Ther Med.* 2018 Mar;15(3):2667-73.
10. *Menopause.* 2009 Jul-Aug;16(4):756-9.

NEW PRODUCTS

REFORMULATED

Item #02208

Item #02405

Be Ready with FLORASSIST® Immune & Nasal Defense

Reformulated! FLORASSIST® Immune & Nasal Defense encourages a healthy immune response with EpiCor®, a yeast fermentate discovered when factory workers at a yeast fermentation plant had better work attendance than their office counterparts.

EpiCor® promotes natural killer cell activity and production of secretory IgA—essential parts of your immune system.[1] This formula also has L. rhamnosus CRL1505, a probiotic discovered in northwest Argentina that produces 47% higher levels of secretory IgA than placebo.[2]

L. rhamnosus CRL1505 is so effective that it is given to over 300,000 Argentinian school children every year.[2,3] FLORASSIST® Immune & Nasal Defense: be ready for whatever the world has for you.

EpiCor® is a registered trademark of Embria Health Sciences, L.L.C.

1. *The Open Nutrition Journal.* 2008;2(1)
2. *Int J Biotechnol Wellness Industr.* 2012; 1:189-198.
3. *Beneficial Microbes.* 2018;9(5):707-715.

Endocannabinoid System Support

Your endocannabinoid system (ECS) helps govern sleep patterns, mood, metabolism, nervous system health and more. Your ECS relies on endocannabinoid compounds, endocannabinoid receptors and enzymes that control how it all works.

If your body doesn't have enough of endocannabinoids, your ECS simply won't do its job as well. Endocannabinoid System Booster combines a specialized fatty acid with a standardized red clover extract and a cannabinoid mimetic blend of rosemary, clove and black pepper extracts.

Together, these ingredients help boost the ECS by targeting endocannabinoid receptors, encouraging youthful endocannabinoid levels and inhibiting enzymes that break them down—Containing absolutely no CBD, hemp, or THC ingredients.

Paint Your Heart A Healthy Picture

Pomegranate Complete combines extracts from the **whole fruit**, **flower**, and **seed oil** to support system-wide health.

These pomegranate plant compounds help inhibit inflammation and combat age-related metabolic changes.

Item #01953

30 softgels

This product is available at fine health food stores everywhere.

GLUTEN FREE

NON GMO LE CERTIFIED

POMELLA® extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Science, Inc.

Keep Your ENERGY UP

Occasional feelings of fatigue happen to everyone.

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

Energy Renew contains a proprietary extract of French oak wood that can help promote healthy energy levels.

Item #01900

30 vegetarian capsules

Robuvit® is a registered trademark of Horphag Research and the use of this product is under International patent applications.

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

NON GMO LE CERTIFIED

This product is available at fine health food stores everywhere.

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.

45 times Greater Bioavailability

Curcumin

Patented **turmeric extract** (500 mg) results in **45 times** greater bio-availability of free curcuminoids.

Item #02407

500 mg, 60 vegetarian capsules

Same 500 mg potency patented **tumeric extract** with added benefits of ginger and other turmeric actives.

Item #02324

500 mg curcumin + gingerol, 30 softgels

GLUTEN FREE

NON GMO LE CERTIFIED

These products are available at fine health food stores everywhere.

LIFE EXTENSION®

The Science of a Healthier Life®

PO BOX 407198
FORT LAUDERDALE, FLORIDA 33340-7198

IN THIS EDITION OF *LIFE EXTENSION®* MAGAZINE