Safe Relief from ACUTE PAIN

PLUS: PAGE 79
Harvard Scientist Describes The Mindspan Diet
The annual **SUPER SALE** enables **premium** nutrient formulas to be obtained at the year’s **lowest** prices.

Long-term supporters know that the **quality** of the products is backed by **Life Extension**’s commitment to extended healthy lifespans.

Below are examples of **SUPER SALE** savings:

| **Vitamin D** 125 mcg (5,000 IU), 60 softgels • Item #01713 | $5.85 |
| High-potency vitamin D in a softgel for better absorption. |

| **N-Acetyl-Cysteine** 600 mg, 60 capsules • Item #01534 | $8.33 |
| Supports healthy respiratory tract and immune function. |

| **Super K** 90 softgels • Item #02334 (3-month supply) | $18.23 |
| Supports bone and heart health with 3 forms of vitamin K including MK4 and MK7. |

| **BioActive Complete B-Complex** 60 vegetarian capsules • Item #01945 | $7.20 |
| Enzymatically active forms of B vitamins. |

| **Zinc Caps** 90 vegetarian capsules • Item #01813 | $5.40 |
| Zinc monomethionine and zinc citrate provide 50 mg of absorbable zinc. |

| **AMPK Metabolic Activator** 30 vegetarian tablets • Item #02207 | $21.60 |
| Plant compounds to support youthful AMPK activity. (1 tablet daily) |

| **Vitamin C 24-Hour Liposomal** 60 vegetarian capsules • Item #02501 | $20.70 |
| Increases vitamin C in plasma 7-times more than regular vitamin C. Sustained support 24 hours a day. (2-month supply) |

| **Senolytic Activator** 36 vegetarian capsules • Item #02301 (3-month supply) | $16.20 |
| Targets senescent cells with theaflavins, quercetin and bio-available fisetin. |

| **Super Omega-3 Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin** 120 softgels • Item #01988 | $28.35 |
| Highly purified EPA and DHA plus sesame lignans, krill and astaxanthin. |

| **FLORASSIST® GI with Phage Technology** 30 liquid capsules • Item #02125 | $20.25 |
| Dual-encapsulation probiotic for optimal delivery to help balance intestinal bacteria. |

| **Curcumin Elite** 500 mg, 60 vegetarian capsules • Item #02407 | $19.80 |
| Patented turmeric extract provides 45 times greater bioavailability. (1 capsule daily) |

**SUPER SALE ENDS JANUARY 31, 2022.**

Customers traditionally take advantage of the **SUPER SALE** to stock up on a year’s supply of their favorite supplements. To place your order, call **1-800-544-4440** or visit **www.LifeExtension.com** (**SUPER SALE** pricing available only to customers in the US, Canada, and England.)

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.
7 SOARING DEATHS FROM PAIN-RELIEVING DRUGS
FDA-approved analgesics inflict long-term injury to kidneys and other vital organs. Unprecedented numbers of Americans perish from acute opioid overdoses.

17 IN THE NEWS
Whey improves microvascular circulation in heart failure patients; higher magnesium linked to reduced liver cancer risk; time-restricted eating may help prevent chronic metabolic diseases; B vitamins lower cardiovascular-related mortality risk.

24 RISKS OF SITTING TOO LONG
Americans spend more than half their waking time sitting, which can lead to deep vein thrombosis. Clinical studies have shown two plant extracts reduce leg swelling and prevent venous clots.

35 VINPOCETINE IMPROVES HEARING CAPACITY
A 2021 clinical study found that a brain-boosting compound called vinpocetine also improved hearing capacity.

40 NUTRIENTS THAT PROTECT AGAINST MEMORY LOSS
Two nutrients have been clinically shown to improve memory function and stabilize or reverse cognitive dysfunction in people.

60 PROBIOTIC THAT LOWERS CHOLESTEROL
A probiotic strain helps decrease cholesterol absorption. In a clinical trial, this probiotic reduced LDL and total cholesterol blood levels.

70 MAGNESIUM MITIGATES MIGRAINES
Magnesium helps prevent migraines and lessens their duration and severity. Two human studies published in 2021 corroborate these benefits. Previous findings show magnesium is more effective when combined with riboflavin and CoQ10.

79 AUTHOR INTERVIEW:
Director of Gerontology at Harvard and author of The Mindspan Diet, Dr. Preston Estep explains the secrets of populations that live the longest with low levels of dementia.

87 WELLNESS PROFILE
After walking away from the Baskin-Robbins fortune, John Robbins founded an organization to transform food systems to support healthy people and a healthy planet.

91 SUPER FOODS
The herb fennel is rich in polyphenols and other compounds that show anti-inflammatory, anti-mutagenic, anti-thrombotic, hypoglycemic, and stress-relieving properties.
N-Acetyl-L-Cysteine (NAC) has been shown to support a healthy immune response and respiratory function.

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

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Gustavo Tovar Baez, MD, operates the Life Extension Clinic in Caracas, Venezuela. He is the first physician in Caracas to specialize in anti-aging medicine.

Ricardo Bernales, MD, is a board-certified pediatrician and general practitioner in Chicago, IL, focusing on allergies, bronchial asthma, and immunodeficiency.

Mark S. Bezdek, MD, FACP, FAARM, FAAEM, is board-certified in internal medicine, emergency medicine, and anti-aging/regenerative medicine. He is the director of Med-Link Consulting, which specializes in bio-identical hormone replacement therapy, natural alternatives, anti-aging, and degenerative diseases. He holds U.S. patents for a multivitamin/mineral supplement, an Alzheimer’s/dementia compilation, and a diabetic regimen.

Thomas F. Crais, MD, FACS, a board-certified plastic surgeon, was medical director of the microsurgical research and training lab at Southern Baptist Hospital in New Orleans, LA, and currently practices in Sun Valley, ID.

William Davis, MD, is a preventive cardiologist and author of Wheat Belly: Lose the Wheat, Lose the Weight and Find Your Path Back to Health. He is also medical director of the online heart disease prevention and reversal program, Track Your Plaque (www.trackyourplaque.com).

Martin Dayton, MD, DO, practices at the Sunny Isles Medical Center in North Miami Beach, FL. His focus is on nutrition, aging, chelation therapy, holistic medicine, and oxidative medicine.

John DeLuca, MD, DC, is a 2005 graduate of St. George’s University School of Medicine. He completed his internal medicine residency at Monmouth Medical Center in Long Branch, NJ, in 2008 and is board-certified by the American Board of Internal Medicine. Dr. DeLuca is a Diplomate of the American Academy of Anti-Aging Medicine and has obtained certifications in hyperbaric medicine, pain management, nutrition, strength and conditioning, and manipulation under anesthesia.

Sergey A. Dzugan, MD, PhD, was formerly chief of cardiovascular surgery at the Donetsk Regional Medical Center in Donetsk, Ukraine. Dr. Dzugan’s current primary interests are anti-aging and biological therapy for cancer, cholesterol, and hormonal disorders.

Patrick M. Fratellone, MD, RH, is the founder and executive medical director of Fratellone Associates. He completed his internal medicine and cardiology fellowship at Lenox Hill Hospital in 1994, before becoming the medical director for the Atkins Center for Complementary Medicine.

Norman R. Gay, MD, is proprietor of the Bahamas Anti-Aging Medical Institute in Nassau, Bahamas. A former member of the Bahamian Parliament, he served as Minister of Health and Minister of Youth and Sports.

Mitchell J. Ghen, DO, PhD, holds a doctorate in holistic health and anti-aging and serves on the faculty of medicine at the Benemerita Universidad Autonoma De Puebla, Mexico, as a professor of cellular hematopoietic studies.

Gary Goldfaden, MD, is a clinical dermatologist and a lifetime member of the American Academy of Dermatology. He is the founder of Academy Dermatology of Hollywood, FL, and COSMESIS Skin Care.

Miguelangelo Gonzalez, MD, is a certified plastic and reconstructive surgeon at the Miguelangelo Plastic Surgery Clinic, Cabo San Lucas.

Garry F. Gordon, MD, DO, is a Payson, Arizona-based researcher of alternative approaches to medical problems that are unresponsive to traditional therapies. He is president of the International College of Advanced Longevity Medicine.

Richard Heifetz, MD, is a board-certified anesthesiologist in Santa Rosa, CA, specializing in the delivery of anesthesia for office-based, plastic/cosmetic surgery, chelation therapy, and pain management.

Roberto Marasi, MD, is a psychiatrist in Brescia and in Piacenza, Italy. He is involved in anti-aging strategies and weight management.

Maurice D. Marholin, DC, DO, is a licensed chiropractic physician and board-certified osteopathic family physician. While training at the University of Alabama, he completed fellowships in Clinical Nutrition and Behavioral Medicine. He is currently in private practice in Clermont, FL.

Professor Francesco Marotta, MD, PhD, of Montenapoleone Medical Center, Milan, Italy, is a gastroenterologist and nutrigenomics expert with extensive international university experience. He is also a consulting professor at the WHO-affiliated Center for Biotech & Traditional Medicine, University of Milan, Italy and honorary resident professor, Nutrition, Texas Women’s University. He is the author of more than 130 papers and 400 lectures.

Philip Lee Miller, MD, is founder and medical director of the Los Gatos Longevity Institute in Los Gatos, CA.

Michele G. Morrow, DO, FAAP, is a board-certified family physician who merges mainstream and alternative medicine using functional medicine concepts, nutrition, and natural approaches.

Filippo Ongaro, MD, is board-certified in anti-aging medicine and has worked for many years as flight surgeon at the European Space Agency. He is a pioneer in functional and anti-aging medicine in Italy where he also works as a journalist and a writer.

Lambert Titus K. Parker, MD, an internist and a board-certified anti-aging physician, practices integrative medicine from a human ecology perspective with emphasis on personalized brain health, biomarkers, genomics and total health optimization. He serves as the Medical Director of Integrative Longevity Institute of Virginia, a 501(c)3 Non-Profit Medical Research Institute. He also collaborates on education and research for Hampton Roads Hyperbaric Therapy.

Ross Pelton, RPh, PhD, CCN, is scientific director for Essential Formulas, Inc.

Patrick Quillin, PhD, RD, CNS, is a clinical nutritionist in Carlsbad, CA, and formerly served as vice president of nutrition for Cancer Treatment Centers of America, where he was a consultant to the National Institutes of Health.

Allan Rashford, MD, graduated from the University of Iowa Medical School. Upon completing medical training, he became chief of medicine at St. Francis Hospital in South Carolina, and he was later named president of the Charleston Medical Society.

Marc R. Rose, MD, practices ophthalmology in Los Angeles, CA, and is president of the Rose Eye Medical Group. He is on the staff of Pacific Alliance Medical Center, Los Angeles, and other area hospitals.

Michael R. Rose, MD, a board-certified ophthalmologist with the Rose Eye Medical Group in Los Angeles, CA, is on the staff of the University of Southern California and UCLA.

Ron Rothenberg, MD, is a clinical professor at the University of California San Diego School of Medicine and founder of California HealthSpan Institute in San Diego.

Roman Rozencwaig, MD, is a pioneer in research on melatonin and aging. He practices in Montreal, Canada, as research associate at Montreal General Hospital, Department of Medicine, McGill University.

Michael D. Seidman, MD, FACS, is the director of skull base surgery and wellness for the Adventist Health System in Celebration, FL.

Ronald L. Shuler, BS, DDS, CCN, LN, is involved in immunoncology for the prevention and treatment of cancer, human growth hormone secretagogues, and osteoporosis. He is board-certified in anti-aging medicine.
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, cryotherapy, 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), FRCPPath., FACPR, is the Medical Director of the Maharaj Institute of Immune Regenerative Medicine, 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.
If you experience general fatigue, it may be due to the decline of NAD⁺, an important coenzyme found in every cell.

NAD⁺ facilitates the production of ATP, which your body uses for fuel.

NAD⁺ Cell Regenerator™ formulas help maintain youthful levels of NAD⁺.

**NAD⁺ Cell Regenerator™ and Resveratrol**
Nicotinamide riboside (300 mg), trans-resveratrol and other cell-energizing nutrients in one capsule.
Item #02348 · 30 veg. caps.

**NAD⁺ Cell Regenerator™**
300 mg of nicotinamide riboside per capsule.
Item #02344 · 30 veg. caps.

* For Super Sale pricing available to readers of this magazine, call 1-800-544-4440 or visit LifeExtension.com/NAD

NIAGEN® is a registered trademark of ChromaDex, Inc., Patents see: www.ChromaDexPatents.com

For full product description and to order NAD⁺ Cell Regenerator™ or NAD⁺ Cell Regenerator™ with Resveratrol, call 1-800-544-4440 or visit www.LifeExtension.com

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.
Soaring Deaths From Pain-Relieving Drugs

Between 1999 and 2019, nearly 500,000 people died from an overdose involving natural and synthetic opioids.7

CDC data show that drug-related overdose deaths in 2020 hit a record high of 93,331 Americans.8,9

As you can see by the chart on this page, overdose deaths have surged higher since widespread prescribing of opioid drugs began around 1999.

Poisonings inflicted by non-opioid pain drugs continue to disable and kill.

This editorial describes an alternative that has been shown to work as well as acetaminophen for acute pain, without the side effects.

The leading cause of acute liver failure in the United States is acetaminophen toxicity.1

Each year, this popular drug is responsible for thousands of emergency room visits and hundreds of deaths in the United States.

It took decades for groups like Life Extension to force the FDA to mandate a warning on the label of acetaminophen drugs about liver toxicity.

Regular use of acetaminophen is associated with increased risk of kidney damage, kidney cancer, and dementia, yet nothing on the label warns of these dangers.2-4

Ibuprofen is another over-the-counter drug that pain sufferers often take daily. Regular use can inflict stomach and kidney injuries.5

In 1995, OxyContin® was approved for routine pain relief. Makers of this drug recognized the potential to cause addiction and the resistance they would face from doctors.6

The company developed a fraudulent marketing campaign designed to promote OxyContin® as a time-released drug that was less prone to abuse.6

Number of drug overdose deaths in the U.S. from 1999 to 2020*

* Historical data from 1999 to 2020. Source: Centers for Disease Control and Prevention
Relief from acute and chronic pain is a major medical challenge.

Powerful nonsteroidal anti-inflammatory drugs (NSAIDs) were introduced in the 1960s-1970s. Their effectiveness was impeded by increased risk of peptic ulcers that resulted in thousands of deaths a year from acute gastrointestinal hemorrhage.

In the late 1990s, more selective anti-inflammatory drugs like Vioxx® were approved that mitigated stomach damage but doubled the risk of heart attack and stroke.10

Merck® withdrew Vioxx® in 2004 and later paid $4.85 billion to settle litigation for hiding the cardiovascular risks of this purportedly safer pain reliever.11,12

Most side effects caused by Vioxx® were associated with longer-term duration of usage and escalating dosages.

**Our Position on Routine Pain Relief**

Acetaminophen, opioids, and some other analgesic drugs work in the central nervous system to dull the sense of pain.20

We at Life Extension have advocated for decades that it is more efficient to neutralize underlying causes. This includes pain resulting from joint cartilage degeneration or inflammation-induced musculoskeletal pain.

Reliance on drugs that block pain signals to the brain can enable the degenerative causes to worsen, leading many to increase their daily use of toxic pain relievers.

Many people find long-term relief using nutrients such as glucosamine, gamma linolenic acid (GLA) and/or omega-3s.

For those with acute discomfort, a novel nutrient blend has been shown to work as effectively as acetaminophen without the toxic side effects.

**Excess Dietary Omega-6 Fats Cause Painful Inflammation**

The American diet is loaded with omega-6 fats that are contributors to chronic inflammatory reactions.

Processed foods often contain fats high in omega-6s, like safflower, cottonseed, soybean, and corn oils.

When one ingests an omega-6 fat, there are two major pathways it follows in the body.

As shown on the chart on the next page, a common pathway is for an enzyme called delta-5-desaturase to convert omega-6s into pain-inducing prostaglandin E2 and leukotrienes.

The desired pathway for omega-6 fats is for enough of them to convert to an anti-inflammatory compound called prostaglandin E1.
A preclinical study showed that the sesame oil component known as sesamin inhibits the delta-5-desaturase enzyme, thus shunting more omega-6 fats away from pro-inflammatory pathways to anti-inflammatory prostaglandin E1.

Boswellia and turmeric extracts provide additional protection against omega-6 fats converting into leukotrienes and prostaglandin E2.

Contrast the beneficial mechanisms of nutrients to acetaminophen that blocks pain signals to the brain, or COX-2 inhibitors like Celebrex that impede only part of the pro-inflammatory omega-6 breakdown pathway.

**Clinical Trial Compares Nutrients to Acetaminophen**

To assess the efficacy of nutrients compared to acetaminophen, a clinical trial was conducted.

Half the people received 1,000 mg daily of acetaminophen while the other half received 1,000 mg daily of black sesame oil plus turmeric and Boswellia extracts.

The blend of these extracts relieved pain as quickly and effectively as acetaminophen.

Pain is more than just a physical experience. It also causes emotional strain.

The nutrient blend was 8.57 times better than acetaminophen at relieving the emotional distress and unpleasantness of acute pain.

This makes sense, as the nutrients combat underlying causes of musculoskeletal pain whereas acetaminophen works by blocking pain signals to the brain.

When assessing total pain relief endpoints in this study, the results showed the nutrient blend worked as well as acetaminophen.

**Fast- versus Slow-Acting Nutrients**

Nutrients like glucosamine and omega-3s do not provide immediate relief.

In contrast, a blend of black sesame oil plus turmeric and Boswellia extracts was shown to reduce pain scores to a similar degree as acetaminophen, starting day one.

These data indicate a potential for acute-pain sufferers to find fast-acting relief, and an opportunity for chronic-pain sufferers to use this nutrient blend for an extended period, as there are no toxicity concerns.

**Young Bodies Heal Fast**

Children’s injuries usually heal quickly.

Healing rates in older adults are so slow that there are those who suffer immobility caused by injuries and persistent inflammation.

Elderly individuals suffer musculoskeletal pain caused by degenerative processes that can be exacerbated by past or current injuries.
Chronic reliance on pain-relieving drugs can lead to side effects. A better solution is to restore older persons to more youthful functionality, to reverse frailty, and to extinguish inflammatory fires that typically accompany aging.

Those suffering from musculoskeletal pain may consider a proprietary blend of black sesame oil-turmeric-Boswellia and also:

- Reduce ingestion of dietary omega-6 fats,
- Consume more omega-3s, and
- Reduce all forms of sugar intake.

In this month's issue...

The article on page 50 of this month’s issue describes the research demonstrating pain relief in response to a combination of black sesame oil, turmeric and Boswellia.

Page 35 discusses a 2021 study showing that vinpocetine (used to boost cognitive function) can also help reverse certain forms of hearing loss.

Migraine sufferers continue to benefit from magnesium and a study described on page 70 of this issue further corroborates this.

Anti-Aging Update

In November 2020, headline news stories around the world announced findings from a hyperbaric oxygen study that lengthened telomeres by 20% in study subjects. The media proclaimed aging had been reversed for the first time in humans.

To achieve these telomere elongation benefits, study subjects underwent hyperbaric oxygen therapy plus breathing in pure oxygen five days a week for three consecutive months.

Telomeres are tips at the end our chromosomes that shorten with each cell division. When there is no more telomere structure, cells die.

We’ve been informed that a study will soon be published showing hyperbaric therapy combined with healthy behavior patterns elongated telomeres an average of 40% in older people!

We are carefully monitoring this research and interacting with the scientists to validate whether this telomere elongation is associated with indicators of systemic age reversal.

In the meantime, you can reduce your rate of telomere shortening by:

- Engaging in healthy lifestyles
- Doing high-intensity interval training
- Ensuring adequate antioxidant intake
- Consuming high amounts of omega-3s
- Including walnuts in your diet
- Restricting your calorie intake

Healthy choices you make today help protect against a wide range of degenerative disorders, including reducing inflammatory pain and maintaining longer telomeres.

Your support of Life Extension helps us fund research that aims to reestablish youthful structure and function in our aging bodies.

For longer life,

William Faloon, Co-Founder
Life Extension Buyers Club

Published in the Journal Aging on November 18, 2020

Hyperbaric oxygen therapy increases telomere length and decreases immunosenescence in isolated blood cells: a prospective trial

“Results: Telomeres length of T helper, T cytotoxic, natural killer and B cells increased significantly by over 20% following hyperbaric oxygen therapy (HBOT).... There was a significant decrease in the number of senescent T helpers by -37.30%±33.04 post-HBOT.

T-cytotoxic senescent cell percentages decreased significantly by -10.96%±12.59 post-HBOT.

In conclusion, the study indicates that HBOT may induce significant senolytic effects including significantly increasing telomere length and clearance of senescent cells in the aging populations.”

https://www.aging-us.com/article/202188/text
In 1995, the FDA approved a time-released opioid drug called OxyContin® that purportedly was less prone to addiction and abuse compared to other prescription opioids.

Aggressive promotion of OxyContin® along with the FDA's approval led to an epidemic of opioid addictions that continue to destroy the lives of millions of Americans.

Many endure the agonies of opioid withdrawal only to succumb to the powerful addicting properties and resume using prescription opioids or turn to street opioids like heroin and fentanyl.

The financial success of OxyContin® led about a dozen other pharma companies (including a subsidiary of Johnson & Johnson) to create their own opioid brands that were approved by the FDA and aggressively marketed to medical doctors and dentists.

The media blames opioid makers like Purdue Pharma for deliberately downplaying the addiction risk to doctors and illegally encouraging widespread prescribing.

While the actions of Purdue and other opioid makers are deplorable, I continue to argue that it was the FDA's approval of the opioid drugs that enabled the criminal behaviors of Big Pharma to occur.

Doctors prescribing practices are largely based on whether the drug is approved by the FDA to treat a specific indication. In the case of extended-release opioid prescription drugs, the FDA approved them for pain relief and said they were less prone to addiction and abuse.

Hurried physicians trusted the FDA's approval process, even though it was later discovered that two FDA-employed doctors who pushed OxyContin® through the approval process went to work for Purdue Pharma soon after. (This is known as the “revolving door” that breeds corruption throughout Congress and governmental agencies.)

Had the FDA recognized that any opioid carries an addiction risk, this drug class would never have been approved for widespread use.

Even after addiction and overdose deaths became apparent, the FDA continued to approve other opioid drugs that were then inappropriately marketed to physicians for widespread use.
References


Increase **AMPK**
to Better Manage Body Weight

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

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

**Reduce Cell Fat Storage**

Scientific studies show that increasing AMPK activity can encourage cells to store less fat and burn it as energy.²³

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

This Gynostemma pentaphyllum + hesperidin formula is designed to support healthy AMPK cellular activation.

**References**

For full product description and to order **AMPK Metabolic Activator**, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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

Actiponin® is a trademark of TG Biotech Co., Ltd.
Only two **bioactive** coenzyme forms of vitamin B12 can be used directly by the body and brain.

The **new B12 Elite** provides both:

**ADENOSYLCOBALAMIN**
- Active in brain cell mitochondria.
- Preclinical evidence suggests that it may support already healthy levels of dopamine.
- Supports cellular energy production.

**METHYLCOBALAMIN**
- Supports cognition within brain cells.
- Promotes red blood cell production.
- Helps maintain healthy homocysteine levels.

Dissolve in the mouth or chew one vegetarian lozenge daily.
Clinically studied **plant extracts** can safely relieve occasional minor soreness of muscles and joints.*

**Fast Acting Relief** delivers a blend of three **plant extracts**—**turmeric**, *Boswellia serrata*, and **black sesame seed**—which work together to promote a healthy inflammatory response and support comfortable joints.

For full product description and to order **Fast Acting Relief**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com).

* Rhuleave-K™ is a trademark of Arjuna Natural LLC.  
An answer for what ails you, whatever it is.

Stay healthier, longer.
Discover evidence-based protocols for over 130 conditions, including how to better manage cancer, cardiovascular disease, inflammatory and neurological disorders.

*Disease Prevention and Treatment* is a 1,500-page textbook that provides a wealth of novel solutions for challenging health issues.

*Disease Prevention and Treatment, 6th Edition* | Item #DPT06

The ultimate medical reference
Price: $59.95 | **SALE: $30.00**

To order, call 1-866-542-9349 or visit LifeExtension.com/BookSale

Use code BOOKSALE | Offer ends December 27, 2021
In the News

Whey Protein Improves Microvascular Function in Heart Failure Patients

Heart failure patients supplemented with whey protein showed improvement in systemic microvascular circulation, according to a report in the Brazilian Journal of Medical and Biological Research.*

A randomized, placebo-controlled trial included 25 participants, average age 66, who had New York Heart Association class I or II heart failure. Participants received whey protein or a placebo for 12 weeks.

“Our results suggested that dietary supplementation with whey protein improved microvascular endothelial function and possibly smooth muscle structure in patients with heart failure,” the authors concluded.

Editor’s Note: The endothelium is the lining of the body’s arteries, whose function may be impaired in cardiovascular diseases, thereby reducing the arteries’ ability to relax, which adversely affects circulation.

Greater Magnesium Intake Linked with Lower Liver Cancer Risk

Increased intake of magnesium has a protective effect against the risk of developing liver cancer, an article published in *The American Journal of Clinical Nutrition* reported.*

Researchers at Vanderbilt University Medical Center examined data from 536,359 participants in the National Institutes of Health-American Association of Retired Persons (NIH-AARP) Diet and Health Study cohort. Food-frequency questionnaire responses during 1995 to 1996 were analyzed for total magnesium intake from supplements and food. The subjects were followed through 2011.

Among those whose total magnesium intake was among the top 25% of participants, there was a 35% lower adjusted risk of developing liver cancer in comparison with participants whose intake was among the lowest 25%.

**Editor’s Note:** During the time of the study, 1,067 cases of liver cancer were diagnosed among the participants.

Time-Restricted Eating May Help Prevent and Manage Chronic Metabolic Disease

A form of intermittent fasting called time-restricted eating may have a role in the prevention of chronic metabolic diseases, according to an article in *Endocrine Reviews.*

Time-restricted eating is a technique in which all daily calories are consumed within a period of eight to 10 hours or less. Maintaining a long overnight fast is one way to conceptualize time-restricted eating. Long fasting periods have been associated with reduced chronic disease risk.

Research suggests that adopting a short window of feeding daily helps support healthy circadian rhythms. Circadian rhythms dictate the activity of genes, hormones, and metabolism at different times during a 24-hour day. Aligning when we eat with the body's internal clock optimizes health.

*Editor's Note:* “Intermittent fasting can improve sleep and a person’s quality of life as well as reduce the risk of obesity, diabetes and heart disease,” said senior author Dr. Satchidananda Panda.

* Endocr Rev. 2021 Sep 22;bnab027.
A meta-analysis of randomized, controlled trials revealed lower combined risk of stroke, heart attack and vascular death, as well as a reduction in homocysteine levels, in stroke patients who received supplements containing B vitamins, compared to a placebo.*

Researchers selected eight trials that included a total of 8,513 stroke patients. Trials were limited to those that evaluated homocysteine levels and recurrence of stroke, recurrence of cardiovascular disorders, and vascular death (separately or combined) among participants who received a placebo or vitamin B6, vitamin B12 and folate.

Analysis of the trials’ results found a significant reduction in average homocysteine levels among B-vitamin-supplemented participants compared to those who received placebo. When the combined risks of heart attack, stroke and vascular death were examined, there was an 11% lower risk among participants who received the vitamins compared to the placebo.

Editor’s Note: Homocysteine is an amino acid formed in the body which, when elevated, is a risk factor for cardiovascular disease and numerous other conditions.

Testosterone builds muscle, maintains sexual health, supports cardiac function, strengthens bones, and nourishes brain cells.1,2

Testosterone Elite helps maintain healthy testosterone levels.†

- A clinical trial showed that pomegranate and cacao elevated free testosterone levels 48% in just eight weeks.3
- Luteolin increases a protein for testosterone synthesis and inhibits aromatase, an enzyme that breaks down testosterone.4,5
- Just one capsule a day.

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

† This product is intended to support testosterone levels but does not contain testosterone. Tesnor® is a trademark of Laila Nutra and Gencor.

References
'Tis the season to save and stay well
It only happens once a year...every Life Extension supplement is on sale!

1-888-236-3992 | LifeExtension.com/Time2Save
Please use code TIME2SAVE
Patented turmeric and fenugreek blend (500 mg) results in **45 times** greater bioavailability of free curcuminoids.

**SUPER SALE PRICE**
Item #02407
500 mg, 60 vegetarian capsules

| 1 bottle $21.60 • 4 bottles $19.80 each |

Same 500 mg potency of patented turmeric and fenugreek blend with added benefits of ginger and other turmeric actives.

**SUPER SALE PRICE**
Item #02324
500 mg curcumin + gingerol, 30 softgels

| 1 bottle $18 • 4 bottles $16.20 each |

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

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.
Risks of Sitting Too Long
According to a study that evaluated sedentary behaviors, Americans spend more than half their waking hours sitting, whether at work, commuting, or at home.\(^1\)

Any extended period of sitting increases the risk of deep vein thrombosis.\(^2\)

These dangerous clots commonly develop in the legs,\(^3,4\) but can break loose and travel to the lungs. They cause as many as 300,000 deaths in the U.S. annually.\(^5\)

Scientists have identified two ingredients—the enzyme nattokinase and an extract of French maritime pine bark—that help prevent clotting and break down clots that start to form.\(^6-9\)

A combination of these compounds has been proven in clinical studies to help prevent venous clots even in high-risk individuals.\(^10\)
Sitting Too Long Can Be Deadly

Long, uninterrupted periods of sitting are a health hazard, even for those who exercise daily.\textsuperscript{11}

When we sit, our calf muscles aren’t contracting to help propel spent blood in the veins back up to the heart.\textsuperscript{12}

Prolonged sitting can reduce blood flow by up to two-thirds in the legs.\textsuperscript{13} When blood collects in the blood vessels of the legs, a thrombus (clot) is more likely to form.\textsuperscript{14}

A clot that develops in the deep veins of the body is called deep vein thrombosis (DVT).\textsuperscript{3}

If the clot breaks free and lodges in the arteries of the lungs, it can cause a pulmonary embolism, sometimes signaled by shortness of breath or chest pain. This urgent medical condition is fatal in up to 10\% of cases.\textsuperscript{4,15}

About half of individuals with deep vein thrombosis don’t have warning symptoms,\textsuperscript{16} like leg swelling or pain.
That doesn’t mean they’re not in danger.\textsuperscript{17}

The Risk Factors

Deep vein thrombosis can be triggered by long hours traveling in cramped conditions, such as those found on airplanes.\textsuperscript{13} This increased risk is highest within the two weeks after a long flight.\textsuperscript{18}

Deep vein thrombosis may also develop after hours spent sitting at the computer.\textsuperscript{19}

Other risk factors include recent orthopedic surgery, limited mobility, acute infections, taking estrogen or contraceptive pills, diabetes, hypertension, elevated cholesterol and homocysteine, dehydration, smoking, obesity, and pregnancy.\textsuperscript{20}

Though anyone can be affected, the risk of deep vein thrombosis increases after age 40.\textsuperscript{3}

As we get older, our clot-formation systems start to outpace our clot-breakdown systems, making us more prone to clots.\textsuperscript{21}

Researchers have found a potential solution to this problem: a combination of nattokinase and French maritime pine bark extract.

Anti-Clotting Activity of Nattokinase

Nattokinase is an enzyme extracted from fermented soybeans (natto).\textsuperscript{7}

Scientists found that the anti-clotting power of nattokinase is stronger than any other enzyme in 173 different natural foods tested.\textsuperscript{22}

Nattokinase combats unwanted clotting in several different ways, including by:\textsuperscript{6-8,23,24}

• Decreasing the activation of pro-clotting factors,
• Breaking apart fibrin, the main protein in clots,
• Reducing the conversion of fibrinogen (a fibrin precursor) to fibrin, and
• Inhibiting platelets from clumping to form a clot.

These actions add up to powerful defense against deep vein thrombosis.

Putting Nattokinase to the Test

In a placebo-controlled study, 12 healthy men were given a single dose of 2,000 fibrinolytic units of nattokinase.\textsuperscript{23}

Markers of the anti-clotting and clot-disrupting properties of nattokinase were detected in the subjects’ blood samples within two hours of just one single dose.

Other placebo-controlled human studies have shown that nattokinase can help decrease high blood pressure.\textsuperscript{25,26} In addition to increasing the risk of heart attacks and strokes, high blood pressure may raise the risk of clots.\textsuperscript{27,28}
Defend Against Deep Vein Thrombosis

- Prolonged periods of sitting increase the risk of deep vein thrombosis or clots, particularly in the legs.
- These clots can break free and move to the lungs, where they can be fatal.
- A combination of the enzyme nattokinase and French maritime pine bark extract provides a safe, natural approach to combating leg swelling and clotting.
- This plant-based duo works in several different ways to inhibit clot formation, disrupt existing clots, decrease edema, and support circulation.
- In a controlled trial of people prone to deep vein thrombosis, a blend of nattokinase and French maritime pine bark extract completely prevented thrombotic events on a long flight, while 5.4% of the placebo group developed deep vein clots.

Complete Relief

In a recent study, researchers tested nattokinase in 153 adults who sought medical treatment for deep vein thrombosis or related vascular disorders.

All subjects took a daily dose of 2,000 fibrinolytic units of nattokinase, either after a month-long course of an anticoagulant drug or after vascular surgery.

Nattokinase reduced symptoms beyond the previous drug or surgical treatment. It led to complete remission of subjects’ remaining vascular symptoms.

The nattokinase produced these benefits without side effects. By contrast, medications for thrombosis carry a risk of adverse events like internal bleeding.
How French Maritime Pine Bark Helps

Extracts of French maritime pine bark are rich in plant compounds called procyanidins. These components provide antioxidant, anti-inflammatory, and platelet-regulating benefits, which help protect blood vessels.

Another way the extract may help support veins is by promoting nitric oxide production. This gaseous molecule is found in the endothelium (lining) of blood vessels. It promotes healthy blood flow.

In a preclinical screening of 13 polyphenol-rich plant extracts, only French maritime pine bark improved nitric oxide availability in both healthy and dysfunctional endothelial cells of veins.

In a 12-month study, 156 patients with a history of a single, major thrombotic event were assigned either to take French maritime pine bark extract daily, wear compression socks, or do both.

The extract was significantly more effective than compression socks, from six months onward, for decreasing leg edema. Two new incidents of deep vein thrombosis developed in the compression-sock group within three to six months. No new thrombosis happened in the groups taking the pine bark extract.

Prevent DVT Recurrence

Approximately one-third of people who experience deep vein thrombosis have another episode within 10 years. The highest risk of recurrence is within the first year. But a heightened risk remains for the rest of a person’s life.

Lingering symptoms after recovery from deep vein thrombosis, called post-thrombotic syndrome, also occur in 43% of cases within two years. These symptoms can include chronic leg pain, swelling, discoloration, and new varicose veins.

In an extensive study, scientists tested 815 people every six months for six years after their initial deep vein thrombosis.

Stop Swelling

Edema (swelling) in the lower legs is a common problem for individuals with deep vein thrombosis. Normally, the one-way valves in leg veins prevent blood from flowing backwards and pooling in the lower legs. These valves also help move venous blood back to the heart. In people with deep vein thrombosis, the valves become damaged.

Doctors commonly recommend compression stockings to help reduce edema, but many people find them uncomfortable.

Edema

VEIN THROMBOSIS
More Powerful Together

Combining nattokinase and French maritime pine bark extract provides defense against deep vein thrombosis.\textsuperscript{10}

In a randomized, controlled study of 204 people taking long international flights, researchers gave half the group a blend of nattokinase and French maritime pine bark extract two hours before their flight, and again six hours later. The other half were given placebos.\textsuperscript{10}

All subjects were at high risk for deep vein thrombosis, based on their past medical history, including previous episodes of the condition. Preflight, the two groups had equal levels of leg edema.

Exercise and hydration suggestions were given to both groups. The exercise plan consisted of mild, mainly isometric exercise including standing and moving legs for 5 to 10 minutes every hour. The hydration suggestion was to drink 3.4 to 5 oz. of water every hour.

While 5.4\% of the placebo group developed flight-related deep vein thrombosis, the treatment group had no cases.

In addition, the placebo group had a 12\% increase in ankle edema while the treatment group had a 15\% decrease.

This study demonstrates the ability of the combination of nattokinase and French maritime pine bark extract to prevent edema and thrombosis.

Summary

The deep veins of our legs are prone to develop clots when we sit for long periods of time, such as on airplanes or at work.

Besides causing uncomfortable leg swelling, deep vein thrombosis carries the risk of the clot breaking free, traveling to the lungs, and causing a potentially fatal embolism.

Nattokinase and French maritime pine bark extract work together to promote healthy blood flow and inhibit venous blood clots.

Clinical trials have proven the protective circulatory benefits of these plant compounds in high-risk groups, including people on long flights and those with a history of deep vein thrombosis. •

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

All participants followed a standard lifestyle regimen of compression socks, weight control, and regular exercise.

Some participants also took pine bark extract, aspirin, or prescription drugs to prevent blood clots.

Only 3.6\% of those who took the extract developed recurrent deep vein thrombosis and post-thrombotic syndrome, while in the group that followed only the standard management, 14.9\% did.

Pine bark extract was significantly more effective than medications. Recurrent deep vein thrombosis and post-thrombotic syndrome occurred in 12.9\% of those using aspirin and in 6.7\% and 10.7\% of those treated with prescription anticoagulants (but only in 3.6\% of those taking pine bark extract).
RISKS OF SITTING TOO LONG

References


SIMPLIFY YOUR SUPPLEMENT INTAKE

Once Daily Health Booster and Mitochondrial Energy Optimizer with PQQ combine multiple ingredients into a single formula.

**Mitochondrial Energy Optimizer with PQQ**
Promotes healthy mitochondria, the cellular structures that produce energy needed by the entire body.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carnosine</td>
<td>1,000 mg</td>
</tr>
<tr>
<td>Taurine</td>
<td>800 mg</td>
</tr>
<tr>
<td>Benfotiamine</td>
<td>150 mg</td>
</tr>
<tr>
<td>R-lipoic acid</td>
<td>150 mg</td>
</tr>
<tr>
<td>Pyridoxal 5'-Phosphate</td>
<td>100 mg</td>
</tr>
<tr>
<td>PQQ—Pyroloquinoline quinone</td>
<td>10 mg</td>
</tr>
</tbody>
</table>

**SUPER SALE PRICE**
Mitochondrial Energy Optimizer with PQQ
Item #01868 | 120 vegetarian capsules
1 bottle $45.90 | 4 bottles $40.50 each

**Once-Daily Health Booster**
Vitamin K (four forms), vision guarding carotenoids, plus cell-protecting tocotrienols, lycopene and chlorophyllin.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin K1</td>
<td>2,000 mcg</td>
</tr>
<tr>
<td>Vitamin K2 (MK-4)</td>
<td>1,500 mcg</td>
</tr>
<tr>
<td>Vitamin K2 (MK-7)</td>
<td>181 mcg</td>
</tr>
<tr>
<td>Vitamin K2 (MK-9)</td>
<td>43 mcg</td>
</tr>
<tr>
<td>Vitamin K2 (MK-6)</td>
<td>11 mcg</td>
</tr>
<tr>
<td>Mixed tocotrienols</td>
<td>55 mg</td>
</tr>
<tr>
<td>Chlorophyllin</td>
<td>100 mg</td>
</tr>
<tr>
<td>Saffron</td>
<td>20 mg</td>
</tr>
<tr>
<td>Lycopene</td>
<td>10 mg</td>
</tr>
<tr>
<td>MacuGuard® (Zeaxanthin + Lutein + Meso-zeaxanthin)</td>
<td>173 mg</td>
</tr>
</tbody>
</table>

**SUPER SALE PRICE**
Once-Daily Health Booster*
Item #02291 | 60 softgels
1 bottle $40.50 | 4 bottles $36 each (2-month supply)

*Caution: If you are taking Warfarin (Coumadin®) or related medications, consult with your healthcare provider before taking this product.

For full product description and to order Mitochondrial Energy Optimizer with PQQ and/or Once-Daily Health Booster, call 1-800-544-4440 or visit www.LifeExtension.com

Bio-Enhanced® is a registered trademark of Geronova Research, Inc. Lyc-O-Mato® is a registered trademark of Lycored, Corp. LuteinPlus® and Mt® are registered trademarks of NutriProducts Ltd., UK, licensed under U.S. Patent 8,623,428. Trans menaquinone-7 as K2VITAL®, K2VITAL® is a registered trademark of Kappa BioScience.

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.
BROAD-SPECTRUM IMMUNE SUPPORT

Lactoferrin is a component of whey protein best known for its immune benefits.

An array of published studies describes how lactoferrin up-regulates innate and adaptive immune responses to a variety of antigens.

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
For those who find themselves sitting for long periods of time at the office, in daily commutes, or when traveling by plane, the proprietary blend of nutrients in VenoFlow™ promotes healthy venous blood flow.

Just one capsule of VenoFlow™ provides nattokinase (providing 2,000 fibrinolytic units) and procyanidins derived from French maritime pine bark (Pycnogenol®).

CAUTION: Consult your healthcare provider before use if taking medication (especially those affecting blood coagulation or blood pressure), being treated for a medical condition (especially bleeding disorders), under the age of 18, pregnant, or lactating.

Pycnogenol® is a registered trademark of Horphag Research Ltd.
Low-Cost Biologically Active

**Enzymatically Active Vitamins**

BioActive Complete B-Complex provides enzymatically active forms of meaningful potencies of each B vitamin.

This includes the *pyridoxal 5’-phosphate* form of vitamin B6 shown to protect lipids and proteins against *glycation* and the most biologically active form of *folate* called *5-methyltetrahydrofolate* (5-MTHF), which is up to 7 times more bioavailable than folic acid.*

**SUPER SALE PRICE**

Item #01945 • 60 vegetarian capsules

1 bottle $8.10 • 4 bottles $7.20 each

For full product description and to order BioActive Complete B-Complex, call 1-800-544-4440 or visit www.LifeExtension.com


Caution: Temporary flushing, itching, rash, or gastric disturbances may occur.
Vinpocetine is a derivative of a compound found in the periwinkle plant.\(^1\)

It has demonstrated benefits for a range of conditions, including cerebral vascular disorders, seizures, and hearing loss.\(^1,2\)

In a clinical study published in 2021, vinpocetine was tested on patients with sensorineural hearing loss, which is caused by damaged hair cells in the inner ear.\(^2\)

Twelve months of vinpocetine intake (30 mg/day) significantly reduced the rate of deterioration and improved hearing capacity.

The effects of vinpocetine on increasing brain blood flow, reducing injury to blood vessels, and enhancing cerebral metabolism were uncovered decades ago.\(^1\)

In preclinical models, vinpocetine has shown protective effects against ischemia-reperfusion injury, the damage that occurs to tissues and organs when, following blockage of an artery, the oxygen-rich blood flow is restored.\(^1\)
Research to improve stroke outcomes, in two randomized, controlled trials, showed that intravenous (IV) vinpocetine combined with conventional therapy significantly improved outcomes following an acute ischemic stroke compared to conventional therapy alone.3,4

Patients were given IV vinpocetine daily for one to two weeks after diagnosis of a stroke. In both studies, vinpocetine treatment led to a greater improvement on a range of outcomes such as mental state, inflammatory response, and neurological function.

Vinpocetine also displayed remarkable benefits for those with seizure disorder.

In a clinical trial, patients were treated with conventional anti-epileptic drugs and were randomized to receive either daily vinpocetine or a placebo.5 After eight weeks, 69% of the vinpocetine-treated patients had a 50% reduction in seizures, compared to only 13% of the placebo group.

New studies are now paving the way for further investigations into vinpocetine:

- In a cell culture study, vinpocetine reduced inflammation caused by the bacteria responsible for otitis media (middle ear infection).6
- In an animal model of Alzheimer’s disease, vinpocetine protected against deterioration in certain brain regions and reduced levels of beta-amyloid and phosphorylated tau proteins, both associated with Alzheimer’s disease severity.7

Vinpocetine provides wide-reaching benefits for brain and nervous system health. Research continues to uncover additional uses.

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

References

MacuGuard® Ocular Support provides:

> Lutein, trans-zeaxanthin, and meso-zeaxanthin help maintain structural integrity of the macula and retina.1-5
> Cyanidin-3-glucoside assists with night vision.6-8
> Saffron has been shown to help support vision as demonstrated by doctors’ eye exams.1
> Alpha-carotene further helps support macular density.1

For full product description and to order either of these MacuGuard® formulas, call 1-800-544-4440 or visit www.LifeExtension.com

References

MacuGuard® Ocular Support with Saffron + Astaxanthin
SUPER SALE PRICE
Item #01993 • 60 softgels
1 bottle $29.70 • 4 bottles $27 each

MacuGuard® Ocular Support with Saffron
SUPER SALE PRICE
Item #01992 • 60 softgels
1 bottle $16.88 • 4 bottles $15.75 each

(Each bottle lasts for two months.)

MacuGuard® Ocular Support is available with or without astaxanthin.

LuteinPlus® and Mz® are registered trademarks of NutriProducts Ltd., UK, licensed under U.S. Patent 8,623,428.

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.
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.

**SUPER SALE PRICE**
Item #02121 • 60 vegetarian capsules
1 bottle $17.55 • 4 bottles $15.75 each

Just one daily capsule of HOMOCYSTEINE RESIST provides:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-MTHF (activated folate)</td>
<td>8,500 mcg*</td>
</tr>
<tr>
<td>Methylcobalamin (activated vitamin B12)</td>
<td>1,000 mcg</td>
</tr>
<tr>
<td>Pyridoxal 5’-phosphate (activated vitamin B6)</td>
<td>100 mg</td>
</tr>
<tr>
<td>Riboflavin (vitamin B2)</td>
<td>25 mg</td>
</tr>
</tbody>
</table>

*DEF (Dietary Folate Equivalents)

**CAUTION:** Do not use this product if treated with methotrexate, fluorouracil, phenytoin, phenobarbital, primidone, or levodopa prior to consultation with your healthcare provider.

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

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

**VINPOCETINE**

A compound originally found in the leaf of the periwinkle plant, vinpocetine has been shown to support brain health and memory function as people age.

Among its many benefits, vinpocetine has been shown to:

- Provide support for age-related cognitive decline
- Support healthy blood flow inside the brain

Super Sale Price

Item #01327 • 100 vegetarian tablets

1 bottle $12.15
4 bottles $9.45 each

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Nearly **50%** of adults aged 65 and older suffer from early-stage **memory deficits**, mild cognitive impairment, or worse.¹

Over **30%** of those suffering from **early cognitive decline** will progress to full-blown **dementia** within just **five years**.²

But there’s good news: Two nutrients have been shown in **clinical studies** to help protect cognitive function, stop memory loss and even possibly **reverse** early symptoms of cognitive decline.³⁻⁶

In one study following patients over **four years**, a trend was observed in which **low-dose lithium** lowered the risk of mild cognitive impairment progressing to dementia by nearly **half**, compared to those who took a placebo.³

In another, **54%** of patients with early-stage Alzheimer’s who took a **proline-rich peptide complex** had ** Improvements in their cognitive scores** over the course of a year, while those taking a **placebo** deteriorated.⁵
A Progressive Condition

The risk for cognitive decline increases with age. It is also progressive, meaning it grows over time with symptoms that include confusion and memory loss.

Only about 3% of people aged 65 to 74 have a diagnosis of full-blown dementia. But that number jumps to nearly 30% in those 85 and older. ¹⁷

No approved drugs have been shown to significantly improve brain function once a diagnosis of dementia is made.

But scientists have found that some nutrients may slow the progression of the disease, and possibly halt or reverse its progression.³⁻⁶,⁸,⁹

Two of these nutrients, lithium and a proline-rich polypeptide complex, work by targeting the changes that occur in the brain with aging.

Brain Changes and Dementia

The brain undergoes structural changes as normal aging progresses.

These changes cause death and dysfunction of brain cells, shrinking the volume of the brain. This damage is associated with the memory deficits seen with mild cognitive impairment and dementia.

One of the most notable structural changes in the aging brain is the buildup of toxic protein clumps.

In youth, cells have means of clearing abnormal or damaged proteins. With older age, these cleaning mechanisms become less efficient, and the protein deposits build up.

Over time, these toxic proteins damage the brain and kill brain cells. They have generally been thought to interfere with brain function and healthy cognition.

A key player in brain aging is an enzyme known as glycogen synthase kinase 3 (GSK-3).

Ordinarily, this enzyme plays a role in the management of glucose metabolism. But in older age it can become overactive.¹⁰

Excess GSK-3 activity is a significant contributor to the formation of toxic protein clumps.¹¹,¹²

Much research has been dedicated to finding ways to prevent the buildup of toxic proteins and to normalize GSK-3 activity. Two nutrients have been identified that do just that.

Lithium Protects the Brain

Very high doses of lithium have long been used to treat the psychiatric condition bipolar disorder.

But research shows that lithium in low doses is important for overall health and cognition.⁶

One of the ways lithium can work to preserve mental function and prevent cognitive decline is by improving the brain’s ability to clear amyloid proteins. In a mouse model of Alzheimer’s, lithium treatment increased brain clearance of amyloid by 31% while reversing long-term memory deficits.¹³

Other studies show that low-dose lithium reduces toxic protein clumps in the brain as well.¹⁴
Additional animal and cell studies have shown that lithium also protects the brain by helping to improve cellular “housekeeping,” mitochondrial function, production of brain growth factors, and more.\textsuperscript{15}

**Human Trials of Lithium**

Lithium may help slow the worsening of cognitive decline.

In one clinical study, a micro-dose of just 300 mcg of lithium daily was found to significantly decrease cognitive decline in Alzheimer’s patients, compared to a placebo.\textsuperscript{6}

Another study evaluated low-dose lithium in older adults with mild cognitive impairment and memory loss.\textsuperscript{3} These patients are at high risk of progressing to worse cognitive function and, eventually, dementia.

Subjects were randomized to receive either lithium or a placebo for two years. The placebo group showed significant functional and cognitive decline on dementia scales over the study period.

The lithium group, on the other hand, remained stable, with better performance on memory and attention tasks.

Researchers continued to follow these patients for a total of four years and compared them to those who took a placebo. They observed a trend in which low-dose lithium lowered the risk of mild cognitive impairment progressing to dementia by nearly half.

---

**Help Prevent Brain Aging**

- Memory loss and cognitive decline are extremely common in older age. They often progress to full-blown dementia.

- Small doses of the mineral lithium inhibit the enzyme GSK-3, associated with risk for cognitive dysfunction and the progression of structural damage to the brain.

- A proline-rich polypeptide complex derived from milk has been shown in preclinical studies to reduce amyloid and tau protein deposition in the brain, as well as the resulting loss of brain cells.

- Clinical studies show that untreated individuals with mild cognitive impairment or Alzheimer’s disease tend to worsen significantly over time. But those given lithium or a proline-rich polypeptide complex remain stable or even experience improvement in cognitive function.
In laboratory studies, this polypeptide complex mimics the effects of nerve growth factors by causing changes in some cells, including helping immature cells mature into functional cells. This increases the growth of nerve fibers.\textsuperscript{18,19}

In a mouse model of accelerated aging, use of the proline-rich polypeptide complex improved learning and memory and extended average lifespan by 26\%.\textsuperscript{20}

### Human Studies of Proline-Rich Polypeptides

In a randomized controlled trial, subjects with early-stage Alzheimer's disease received either the proline-rich polypeptide complex or a placebo.\textsuperscript{5} Cognitive impairment was evaluated by scores on the Mini-Mental State Examination.\textsuperscript{21}

After one year, those in the placebo group had a significant reduction in Mini-Mental State Examination scores.

But an astonishing 54\% of those taking the polypeptides had improvements in their cognitive scores. The remainder were stable, without any worsening of cognitive function.

Those who had milder symptoms at the start of the study showed the greatest improvement on average, suggesting that starting to take the complex early is most beneficial.
The same group of researchers performed another study that followed subjects for a longer period, some for as long as 28 months. At every time interval tested, cognitive function scores continued to improve for those in the proline-rich polypeptide group.

Patients with an Alzheimer’s diagnosis typically deteriorate over any period of observation. To see an improvement in cognitive function is a remarkable achievement.

The proline-rich polypeptide complex and lithium work in very different ways to preserve cognitive function. Taking these nutrients in combination may maximize their ability to help protect the brain.

Summary

Memory loss and cognitive decline are common with advancing age. Many people with mild cognitive dysfunction eventually progress to Alzheimer’s disease or other forms of dementia.

Currently available medications do little to slow the progression of cognitive dysfunction. However, low doses of the trace mineral lithium and a milk-derived proline-rich polypeptide complex show great promise in clinical trials.

Both have shown that they help block the progression of the amyloid and tau protein structural damage that occurs in aging brains.

In human studies, the nutrients stabilize or even reverse signs of cognitive dysfunction, while those taking a placebo tend to deteriorate over time.

Many readers of this magazine take low-dose (1,000 mcg) lithium daily for potential longevity benefits, as well as neurological protection.

Those who want to take a combination of 300 mcg of lithium plus proline-rich polypeptide can safely continue supplementing with 1,000 mcg of lithium.

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


EASY WAY TO GET YOUR D AND K (plus Iodine)

Vitamins D and K as well as Iodine perform multiple functions for heart, bone and thyroid health.

Life Extension® brings these three nutrients together in one convenient capsule.

Just one capsule daily provides:

- Vitamin D3 125 mcg (5,000 IU)
- Vitamin K1 1,000 mcg
- Vitamin K2 (MK4) 1,000 mcg
- Vitamin K2 (MK7) 100 mcg
- Iodine 1,000 mcg

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.

SUPER SALE PRICE
Item #02040 • 60 capsules
1 bottle $16.20
4 bottles $14.85 each

CAUTION: Individuals consuming more than 50 mcg 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Do not exceed 250 mcg 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. If you are taking a vitamin K antagonist (e.g., warfarin), consult your healthcare practitioner before taking this product.

For full product description and to order Vitamins D and K with Sea-Iodine™, call 1-800-544-4440 or visit www.LifeExtension.com
THREE WAYS TO BUILD STRONGER BONES

CUSTOMIZE YOUR BONE-HEALTH PROGRAM

Bone Restore helps maintain healthy bone density with three different forms of calcium plus vitamin D3 and magnesium, boron, zinc, manganese, and silicon.

Bone Restore with Vitamin K2, same formula as Bone Restore plus 200 mcg of vitamin K2.

Bone Restore Elite, same formula as Bone Restore plus 45,000 mcg of vitamin K2.

Bone Restore
SUPER SALE PRICE
Item #01726 • 120 capsules
1 bottle $14.85 • 4 bottles $12.83 each

Bone Restore with Vitamin K2
SUPER SALE PRICE
Item #01727 • 120 capsules
1 bottle $16.20 • 4 bottles $14.85 each

Bone Restore Elite with Super Potent K2
SUPER SALE PRICE
Item #02416 • 120 capsules
1 bottle $31.05 • 4 bottles $28.35 each

For full product description and to order all BONE RESTORE products, call 1-800-544-4440 or visit www.LifeExtension.com

* CAUTION: If you are taking a vitamin K antagonist (e.g. warfarin), consult your healthcare practitioner before taking this product.

FruiteX B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, Inc. U.S. Patent No. 5,962,049.

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.
Dancing. Laughing. Smiling. These are your special moments ... and they should be memories you will cherish for many years to come.

Memory Protect is our most advanced memory and brain health supplement ever. It combines colostrinin, a milk peptide, with the trace mineral lithium for unrivaled memory and cognitive health support for your brain.

So live life your way. We’ll help you safeguard those precious moments with Memory Protect!

SUPER SALE PRICE
Item #02101 • 36 vegetarian capsules

1 box $16.20 • 4 boxes $14.40 each
36-DAY SUPPLY.
Contains milk.

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
FAST RELIEF for Acute Pain
Scientists have identified three plant extracts that work together to relieve musculoskeletal pain:

- Turmeric extract,
- *Boswellia serrata* extract, and
- Black sesame seed oil.

In a 2020 human study, a combination of these extracts relieved acute musculoskeletal pain as quickly and effectively as acetaminophen.¹

This study showed this herbal blend to be 8.57 times better than acetaminophen at relieving the emotional strain and unpleasantness of pain.
Acute Musculoskeletal Pain

Acute musculoskeletal pain refers to stiffness or aching in the muscles, bones, joints, ligaments, or tendons that develops suddenly and is caused by something specific. Causes may include falls, repetitive strain, incorrect posture, sudden exertion (like lifting something heavy), or simple wear and tear over time. People have turned to herbal remedies for pain relief since ancient times.

Modern science has now verified three plant extracts that effectively relieve musculoskeletal inflammation and pain:

- **Black sesame seeds** are rich in bioactive compounds, including sesamin, which has anti-inflammatory actions.1,4
- **Turmeric** is a spice rich in curcumin, a compound known for its anti-inflammatory and free-radical-scavenging properties.5,6
- **Boswellia serrata** is a tree resin long used as a traditional Ayurvedic pain remedy. Also known as Indian frankincense, it contains the anti-inflammatory compound AKBA (3-O-acetyl-11-keto-beta-boswellic acid).1

Pain-Relieving Plants

Researchers have conducted human studies to individually evaluate turmeric, Boswellia, and black sesame seed for their pain-relief benefits.1,5,8

In a meta-analysis of eight randomized controlled trials involving 606 patients, scientists found that curcuminoids from turmeric significantly reduced pain severity from a variety of causes, including arthritis and exercise-induced muscle soreness.6

A meta-analysis of seven trials involving 545 osteoarthritis patients showed that Boswellia serrata extract relieved pain and stiffness and improved joint function better than a placebo.8

In a controlled two-month trial of 50 patients (ages 50-70) with mild to moderate knee osteoarthritis, black sesame seeds significantly improved the signs and symptoms of knee pain. Scores on a standard test of mobility also significantly improved.9

Encouraged by these and other studies, scientists began testing a combination of the three plant extracts for acute pain.

In preclinical research, the three ingredients relieved acute pain and inflammation better together than the individual components did at a similar dosage.1
Testing the Combination

People need pain relief fast. Scientists conducted the first randomized controlled human trial of a combination of turmeric, *Boswellia serrata*, and black sesame seed oil extracts.¹

This study lasted seven days, and it was designed to determine if the herbal combination was as effective as the commonly used pain medication acetaminophen.

Researchers recruited 88 healthy men and women (ages 18-65) who had developed acute musculoskeletal pain within the past 24 hours and hadn’t taken any treatment.¹

People with arthritis or other chronic pain were excluded. In some cases, the pain was caused by musculoskeletal injuries, though in most of the cases it was simply described variously as muscle aches, neck pain, limb pain, low back pain, or joint pain.

At the start of the study, subjects rated their pain intensity on a scale from 0 (no pain) to 10 (the worst pain imaginable).

All participants started with a “distressing” level of pain that was 5 or above. That reflects a level they couldn’t stop thinking about and that interfered with their daily activities.

The treatment group received 1,000 mg of the proprietary herbal blend daily for one week. The control group received 1,000 mg of acetaminophen daily.

The plant extract combination worked as fast and as effectively as acetaminophen in relieving acute pain, starting on day one!

Safe and Effective Pain Relief

- Over-the-counter pain medicines like acetaminophen and ibuprofen can harm vital organs.

- Scientists have identified plant extracts that can quickly and effectively relieve acute pain without unwanted side effects.

- Turmeric, *Boswellia serrata*, and black sesame seed oil contain anti-inflammatory, pain-relieving compounds that are especially potent when combined.

- In healthy adults with acute musculoskeletal pain, a proprietary blend of these three plants was as fast and effective as acetaminophen at relieving pain.

- The herbal blend was 8.57 times better than acetaminophen at relieving the emotional suffering of acute pain.
Reduced Pain Intensity

In this study, the proprietary herbal combination and acetaminophen groups also experienced a similar reduction in pain intensity.

Both acetaminophen and the plant extract combination achieved this result. Compared to baseline, 66% of subjects in the herbal group achieved at least 50% pain relief within six hours on the first day of treatment, which was similar to the acetaminophen group.1

Based on the degree of pain relief in the study, about 73% of subjects in the proprietary herbal combination group were considered positive responders to the treatment, which was similar to that of the acetaminophen group.

What stands out about this human trial is that acetaminophen is a toxic drug that can acutely kill when combined with alcoholic beverages. Its destructive effects are too long to list but include kidney and liver failure in long-term users.10-13 Yet there are few warning labels on acetaminophen drugs and those who suffer acute or chronic pain often take large doses of acetaminophen not realizing it generates tissue-damaging free radicals.

Superior To Medication

Pain is more than just a physical experience. It also causes emotional strain.14

In this study, the short-form McGill Pain Questionnaire was used to evaluate the physical and emotional experience of pain on days one, three, and seven of the study.1

The questionnaire asks subjects to evaluate their pain experience on a scale of 0 (none) to 3 (severe) in terms of 15 descriptive words in two categories:15

- **Sensory (physical):** throbbing, shooting, stabbing, sharp, cramping, gnawing, hot-burning, aching, heavy, tender, and splitting.
- **Affective (emotional):** tiring-exhausting, sickening, fearful, and punishing-cruel.

Both groups in the study experienced equivalent physical pain relief, according to the McGill score. But the plant extract combination was 8.57 times better than acetaminophen at relieving the emotional distress and unpleasantness of acute pain.1
How It Works

Researchers chose the turmeric, *Boswellia*, and sesame seed extracts based on their previous history of effective pain relief, as well as their mechanisms of action.

*Curcumin* in turmeric and *AKBA* in *Boswellia* both inhibit 5-lipoxygenase (5-LOX).

5-LOX is the key *enzyme* that converts the omega-6 fatty acid *arachidonic acid* into proinflammatory *leukotrienes*.1

Curcumin also indirectly inhibits cyclooxygenase-2 (COX-2), an enzyme that promotes the production of inflammatory *prostaglandins*.

Black sesame seed oil works to inhibit delta-5-desaturase, an enzyme that produces arachidonic acid from omega-6 fats.1 That decreases the amount of arachidonic acid *available* to make inflammatory cytokines in the first place.

The herbal combination was better at reducing pain and inflammation compared with each individual component when tested in animals. The combination inhibits multiple pro-inflammatory pathways in the body that produce *prostaglandins* and *leukotrienes*. These are the two main inflammatory facilitators that can trigger pain symptoms.

The *sesamin* in sesame oil may also promote the body’s *absorption* of the other pain-relieving components in the blend.1

**Free From Side Effects**

The use of *acetaminophen* and *non-steroidal anti-inflammatory drugs (NSAIDs)* like aspirin and ibuprofen has been associated with adverse effects.

For example, NSAIDs use can affect the gastric mucosa, the cardiovascular, hepatic, hematologic (blood), and renal systems.16

The best-known danger of acetaminophen is the potential for *acute liver damage*.17 It is also extremely easy to *overuse* because it comes in many over-the-counter and prescription medications, including some used for coughs and colds.18 Long-term use increases risk of kidney cancer and organ damage.19-21

In the study that used the proprietary plant extract blend, “*There was no adverse event reported by any subject in the study.*”1

The combination of *turmeric*, *Boswellia*, and black sesame seed oil extracts provides a plant-based option for rapid pain relief.
Summary

People reach for acetaminophen or NSAIDs like ibuprofen to treat acute aches and pains. These painkillers carry the risk of harmful side effects. A controlled clinical study has shown that a combination of turmeric, *Boswellia serrata*, and black sesame seed oil extracts is as fast and effective as a standard dose of acetaminophen for reducing acute pain in healthy adults. This proprietary herbal blend was superior to acetaminophen for relieving the emotional strain and unpleasantness aspects of pain.

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

References

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

- Support healthy urination
- Promote healthy prostate function
- Support healthy prostate cell division

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

**SUPER SALE PRICE**

**Item #02029 • 60 softgels**

1 bottle $25.65 • 4 bottles $23.63 each
Educated consumers often choose the ubiquinol form of CoQ10 because of studies showing it absorbs up to 8-times better!
Clinically studied **plant extracts** can safely relieve occasional minor soreness of muscles and joints.*

**Fast Acting Relief** delivers a blend of three **plant extracts**—**turmeric**, **Boswellia serrata**, and **black sesame seed**—which work together to promote a healthy inflammatory response and support comfortable joints.

---

Rhuleave-K™ is a trademark of Arjuna Natural LLC.


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.
A Probiotic That Lowers Cholesterol

BY MICHAEL DOWNEY

Over 35 million Americans take statin drugs to reduce their cholesterol.¹

Yet some people are still unable to get their cholesterol under control,² and heart disease remains the leading killer of Americans.³

Science has found a novel way to help reduce cholesterol.

Probiotics are beneficial bacteria that can help keep the microorganisms in your gut balanced.

Clinical research has revealed that a specific probiotic strain lowers LDL ("bad") cholesterol and total cholesterol.²⁴

In just nine weeks, daily intake of this probiotic:²
- Lowered LDL cholesterol by nearly 12%,
- Lowered total cholesterol by more than 9%, and
- Lowered the ratio of LDL ("bad") to HDL ("good") cholesterol by more than 13%.

Using a probiotic to reduce cholesterol can be beneficial to those who are challenged to tolerate high-dose statins, as well as those who are unable to manage their cholesterol through diet and lifestyle.

Life Extension encourages most individuals to maintain LDL cholesterol levels less than 80 mg/dL and to take other actions, like lowering homocysteine and glucose, to help reduce risk of heart attack and stroke.

Individuals with preexisting conditions or at high risk for cardiovascular disease should aim for even lower levels of less than 70 mg/dL.
A PROBIOTIC THAT LOWERS CHOLESTEROL

The Importance of Gut Bacteria

It may sound surprising that bacteria in the gut can lower cholesterol.

But in recent years, research has shown that the gut microbiome plays a key role in maintaining optimal health throughout the body.

An imbalance in the types of bacteria and other microorganisms that make up our gut flora are strongly associated with the development of a host of diseases.\(^5,6\)

Research has shown that different probiotics can safely promote digestive, immune, and oral health. This field has now emerged as an important strategy for reducing the risk of cardiovascular disease.\(^7,8\)

Scientists have shown that the probiotic strain *Lactobacillus reuteri* NCIMB 30242 has the ability to safely reduce cholesterol levels. It does so by:\(^9,10\)

- Increasing cholesterol removal from the body, into the stool, and
- Increasing the metabolism (breakdown) of cholesterol in the liver.

Lowering Cholesterol in Human Studies

Researchers enlisted adults with high cholesterol. Some consumed regular yogurt, while others consumed yogurt with the probiotic strain *L. reuteri* NCIMB 30242.

After six weeks, the volunteers taking *L. reuteri* NCIMB 30242 had:\(^4\)

- A nearly 5\% reduction in total cholesterol,
- A nearly 9\% reduction in LDL cholesterol, and
- Significant reductions in concentration of apolipoprotein B (apoB), a marker of LDL particle numbers and a known risk factor for cardiovascular disease.\(^11-13\)

In another randomized, controlled trial of adults with high cholesterol, nine weeks of taking *L. reuteri* NCIMB 30242 capsules resulted in:\(^7,2\)

- A nearly 12\% reduction in LDL cholesterol,
- A greater than 9.1\% reduction in total cholesterol,
- A greater than 8.4\% reduction in apoB-100, and
- A 13.4\% reduction in the LDL-to-HDL cholesterol ratio.

Benefits Beyond Cholesterol

The nine-week study also showed that *L. reuteri* NCIMB 30242 intake reduced levels of C-reactive protein and fibrinogen.\(^2\)

C-reactive protein is a marker of inflammation that is often used to evaluate the risk of developing coronary artery disease, the most common cause of heart attacks.\(^14\)

Fibrinogen is a protein produced by the liver that promotes clotting. High levels are associated with an increased risk of harmful clots, heart disease, and strokes.\(^15-18\)

The high-cholesterol volunteers who took *L. reuteri* NCIMB 30242 were found to have:\(^2\)

- 62\% reductions (or reductions of 1.05 mg/L) in C-reactive protein (CRP), and
- 14\% reductions in fibrinogen.
A PROBIOTIC THAT LOWERS CHOLESTEROL

In patients who began the study with average or high-risk CRP:\(^2\)

- **27.1\%** of those taking *L. reuteri* NCIMB 30242 reduced their risk by **one or more** categories (from high to average risk, for example, or from high to low risk), compared to just **1.7\%** of control subjects, and

- **22\%** of the *L. reuteri* NCIMB 30242 group decreased their CRP risk by **one** category, compared to just **2\%** of controls.

Beyond these heart-health benefits, *L. reuteri* NCIMB 30242 has been shown to:

- Increase circulating **bile acid** levels, which may help prevent various chronic diseases,\(^2,19\)

- Boost **vitamin D** levels by more than **25\%**, potentially further reducing the risk of cardiovascular and other diseases,\(^20\) and

- Significantly improve **diarrhea** symptoms and scores in **gastrointestinal health** surveys.\(^21\)

---

**WHAT YOU NEED TO KNOW**

**Protect the Heart with a Probiotic**

- **Cardiovascular disease** is the leading cause of death for adults in America, partially driven by high levels of **LDL (“bad”) cholesterol** and **total cholesterol**.

- **Statins** lower LDL cholesterol, but they produce some side effects that that may cause some people to stop taking the drugs.

- Human studies show that the probiotic strain *L. reuteri* NCIMB 30242 has the ability to lower **total cholesterol** by more than **9\%**, reduce **LDL cholesterol** by nearly **12\%**, and significantly improve other cardiovascular risk factors.

- Shown to be safe and effective, *L. reuteri* NCIMB 30242 helps lower high or even normal cholesterol levels.

- Blood tests should be used to measure cardiovascular risk factors like **LDL** to ensure optimal levels **(under 80 mg/dL)** are being achieved.
How L. Reuteri NCIMB 30242 Works

One of the main functions of the gallbladder is to release a fluid called bile. Bile breaks down fats and oils in the intestinal tract, making cholesterol available for digestion.

This is important, because cholesterol is needed by the body to form cell membranes, create hormones, and perform other functions.

But cholesterol levels can become too high due to excess dietary intake, excess cholesterol release from the liver, or genetic predisposition. Higher blood levels of cholesterol raise the risk of cardiovascular disease.13,22

The probiotic strain L. reuteri NCIMB 30242 can produce an enzyme called bile salt hydrolase. This enzyme breaks certain chemical bonds of cholesterol and bile acids. This makes cholesterol less water-soluble and less absorbable.23

As a result, instead of entering the bloodstream (and then the walls of arteries), excess cholesterol becomes trapped in the gut. It is eventually excreted from the body in feces, reducing cholesterol levels in the blood.23

L. reuteri NCIMB 30242 may provide a second mechanism for cholesterol reduction.

When the enzyme released by this probiotic strain helps breaks down cholesterol, the resulting bile acids act as potent signaling molecules. These molecules regulate cholesterol metabolism, accelerating the breakdown and excretion of cholesterol.24-27

The end result is that L. reuteri NCIMB 30242 reduces total and LDL cholesterol levels.

Proven Safety

Many bacteria of the Lactobacillus family are classed as GRAS, or “generally recognized as safe,” by the U.S. Food and Drug Administration.

Lactobacillus reuteri NCIMB 30242, in particular, has undergone extensive laboratory characterization and safety testing.

L. reuteri NCIMB 30242 has demonstrated no adverse effects associated with its consumption.28,29

It is a safe and effective way to reduce cholesterol and lower risk of heart disease.

Summary

With advancing age, virtually every American is at risk for atherosclerotic disorders.

Clinical evidence shows that the probiotic strain L. reuteri NCIMB 30242 has the ability to lower total cholesterol by more than 9% and high-risk LDL cholesterol by almost 12%, while improving other cardiovascular risk factors like elevated C-reactive protein. •
A PROBIOTIC THAT LOWERS CHOLESTEROL

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

References


27. Li T, Chiang JY. Regulation of bile acid and cholesterol metabolism by PPARs. PPAR Res. 2009 2009/07/14;2009:501739.


This complementary combo promotes a healthy inflammatory response.

**Curcumin Elite™**
SUPER SALE PRICE
Item #02407 • 60 500 mg vegetarian capsules
1 bottle $21.60 | 4 bottles $19.80 each

**Pro-Resolving Mediators**
SUPER SALE PRICE
Item #02223 • 30 softgels
1 bottle $18.90 | 4 bottles $17.10 each

Want to Save More? Buy together for lowest possible price!

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

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.
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 used in clinical studies along with Gotu Kola.

SUPER SALE PRICE
Item #02004 • 30 vegetarian capsules
1 bottle $29.70
4 bottles $26.10 each


Pycnogenol® and Centelicum® are registered trademarks of Horphag Research and the use of this product is protected by international patents.

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

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
In clinical trials, the probiotic *Lactobacillus reuteri* NCIMB 30242 found in FlorAssist® Heart Health has been shown to support cholesterol levels already within normal range.\(^1,2\)

Additionally, *Lactobacillus reuteri* NCIMB 30242 supports healthy levels already within the normal range of:

- C-reactive protein
- Apolipoprotein B
- Fibrinogen.\(^3\)

For full product description and to order FlorAssist® Heart Health, call 1-800-544-4440 or visit www.LifeExtension.com

---

**SUPER SALE PRICE**

Item #01821 • 60 vegetarian capsules

1 bottle $21.60 • 4 bottles $18.90 each

---

References

MAGNESIUM
Mitigates Migraines
Migraines are among the leading causes of disability worldwide.¹

Roughly $78 billion is spent annually in medical costs for treatment.²

People who suffer from migraine commonly have low magnesium levels, especially during an attack.³⁻⁵

According to the National Health and Nutrition Examination Survey, about 48% of Americans are not reaching their magnesium minimum daily requirements.⁶

Magnesium helps to reduce arrhythmia, heart disease, and stroke risks, and helps maintain better bone density.⁷⁻⁸ Over 300 enzymes in the body rely on magnesium to function.⁹

New clinical trials have uncovered encouraging evidence for magnesium’s role in reducing migraine headaches.
**Magnesium vs Conventional Medication**

Two clinical trials published in 2021 compared the effect of magnesium to that of different types of conventional migraine medications.

In the first study, people with frequent migraines were randomized to receive either valproate sodium, a drug used to prevent migraines or 500 mg of oral magnesium every 12 hours for eight weeks.\(^\text{10}\)

The number of migraine attacks, days, and the mean duration significantly decreased in both groups, leading the authors to conclude that magnesium “appears to be effective in migraine prophylaxis similar to valproate sodium without significant adverse effect.”\(^\text{10}\)

A second trial compared intravenous magnesium to two conventional intravenous migraine medications, prochlorperazine and metoclopramide.\(^\text{11}\)

This study evaluated 157 patients, most of them female, who had to visit an emergency department due to the severity of their migraines.

Results showed that migraine pain decreased in all groups after 60 minutes, with none of the treatments showing clear superiority over the others.

**Women** are disproportionately affected by migraines, and a new analysis of data suggests that increasing magnesium intake is particularly effective for treating migraines in women.\(^\text{12}\)

---

**A Successful Combined Approach**

Preventing and treating migraines sometimes requires a multifaceted approach.

Several nutrients that work via different mechanisms have shown clinical benefits.

Riboflavin (vitamin B2) and coenzyme Q10 have shown good results in people who suffer frequent migraines.

Riboflavin’s migraine benefits have been known for decades, and a comprehensive review of the medical literature concluded that riboflavin reduces migraine frequency.\(^\text{14}\)

CoQ10 lowers levels of calcitonin gene-related peptide, which is a neuropeptide that causes the progression of migraines.\(^\text{15,16}\)

In a clinical trial of patients suffering three or more migraines a month, patients were randomized to receive either a placebo or an oral combination of 600 mg magnesium, 400 mg riboflavin, and 150 mg CoQ10 daily along with a multivitamin with minerals for three months.\(^\text{17}\)

Compared to those taking the placebo, patients receiving the nutrient combination reduced the number of days with migraines by almost two and had significantly reduced intensity of migraine pain.

Taken together, the data suggest that for many people, increasing magnesium intake could help prevent migraine attacks, and lessen their duration and severity.
**Summary**

Migraines are debilitating headaches that can last up to three days. Clinical trials have shown that magnesium can prevent and relieve migraines and is even more beneficial when combined with riboflavin and CoQ10. Magnesium is one of the most important minerals in the human body, but almost half of all Americans are not getting enough.

Increasing magnesium intake may help many people prevent migraines and lessen their severity and duration.

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

**Migraine Relief at Last**

- **Migraines** are severe, throbbing headaches that can last from a few hours to as long as three days.

- Oral magnesium has been shown to decrease the number of migraine attacks as well as their duration and severity.

- In two clinical trials, oral and intravenous magnesium were found to be as effective as different conventional migraine treatments.

- A combination of magnesium, riboflavin (vitamin B2) and CoQ10 led to significantly decreased migraine pain intensity.
MAGNESIUM MITIGATES MIGRAINES

References


For those seeking higher vitamin C levels throughout the day, Life Extension® has developed a Vitamin C Liposomal Hydrogel™ formula.

This combination of buffered ascorbate encased in two plant extracts (liposomes plus hydrogel fenugreek) increases blood (plasma) exposure nearly seven times more compared to an equivalent dose of regular vitamin C.

It also maintains higher vitamin levels throughout the day.¹

Just one vegetarian tablet daily provides around-the-clock vitamin C support.

SUPER SALE PRICE
Item #02501 • 60 vegetarian tablets
1 bottle $22.95 • 4 bottles $20.70 each

Super R-Lipoic Acid is more bioavailable, stable, and potent, achieving 10-30 times higher peak blood levels. Get powerful metabolic support to help reduce oxidative stress, body fat, and weight.

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Individual results are not guaranteed, and results may vary. CAUTION: If you are taking glucose-lowering medication, consult your healthcare provider before taking this product.

Bio-Enhanced® is a registered trademark of GeroNova Research, Inc.

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.
Whole-Body Support
Everything good takes time.

Magnesium is essential for a healthy heart and sturdy bones; it’s even great for your mood. But, most of us don’t get enough from our diets.

Our innovative formula delivers both immediate and extended-release magnesium, so you get the maximum benefits—for the long haul.

**SUPER SALE PRICE**

Item #02107

60 250 mg vegetarian capsules

1 bottle $8.78 • 4 bottles $7.88 each

**CAUTION:** If taken in high doses, magnesium may have a laxative effect. If this occurs, divide dosing, reduce intake, or discontinue product.

ZümXR® is a registered trademark and protected by patents. See www.ZümXR.com

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

Item #01813

50 mg • 90 vegetarian capsules

1 bottle $6.08 • 4 bottles $5.40 each

You know zinc is good for you—but are you getting enough?

Zinc promotes critical immune functions and healthy bones.

This formula provides 50 mg of zinc in a convenient, vegetarian capsule.

For full product description and to order Zinc Caps call 1-800-544-4440 or visit www.LifeExtension.com

Caution: Supplemental zinc can inhibit the absorption and availability of copper. If more than 50 mg of supplemental zinc is to be taken daily for more than four weeks, 2 mg of supplemental copper should also be taken to prevent copper deficiency.

OptiZinc® is a registered trademark of InterHealth Nutritionals, Inc.
Neurodegenerative disorders are on the rise in the U.S., Europe, and in most affluent nations of the world.

According to a recent study, deaths from Alzheimer’s disease and other dementias rose more than three-fold, and deaths from Parkinson’s disease doubled globally between 1990 and 2010.

Fortunately, scientific evidence indicates that we have substantial control over our risk for neurodegenerative diseases.

Dr. Preston Estep is an esteemed geneticist and the director of gerontology at the Personal Genome Project at Harvard Medical School.

In this interview with Life Extension®, Dr. Estep highlights the secrets of the “Mindspan Elite”—those populations that live longest with low levels of dementia.

Studying these populations—along with recent scientific evidence—has given Dr. Estep insights on how to extend both lifespan and mindspan.

He shares many of those ideas here for Life Extension® readers.

—LAURIE MATHENA
LE: Can you explain the difference between lifespan and mindspan?

Dr. Estep: Lifespan measures how long we live, but how fulfilling that life is depends on how well your mind works during that time. I use the term “mindspan” to capture this essential idea.

Lifespan refers only to longevity, while mindspan refers to the mind’s length of life plus its breadth and height of performance.

This pinnacle of living isn’t just a long lifespan, it is a maximum mindspan.

LE: Can you tell us about people you refer to as the Mindspan Elite?

Dr. Estep: People are living longer than ever. While this trend is good, there is a serious downside: Record numbers of people are experiencing greater levels of cognitive decline and other brain disorders in later life.

But some people seem mostly immune to such problems. I call these people the Mindspan Elite.

They live very long lives and remain as alert, active, and autonomous as people decades younger. Important discoveries from many sources have shed substantial light on the keys to their success, and now show the rest of us the way.

LE: After studying the Mindspan Elite, does it seem like their longevity is a result of genes or environment?

Dr. Estep: It is commonly believed that centenarians and supercentenarians have special genes that allow them to age slowly. Most experts agree that the contribution of genes explains only a small fraction of typical longevity, and a higher percentage of extreme longevity—maybe between 25% and 40% of extreme longevity.

That means environment is responsible for the remaining majority of the longevity equation, and diet is a major component of the environment.

When Japanese (who are part of the Mindspan Elite) move to other countries, their health typically goes downhill.

Japanese in the U.S. with the highest rates of disease, including Alzheimer’s disease and other dementias, have a more Western eating pattern. Their rates of dementia are similar to those of Americans of European ancestry.

So bad diet produces bad results—but luckily, this works both ways.

Many studies have shown that people who adopt healthy Asian and Mediterranean-style diets have lower levels of disease.

LE: What are some core diet commonalities of the Mindspan Elite?

Dr. Estep: Here is a short list:

- Less red meat and added sugar.
- Less liquid milk (moderate amounts of cheese, butter, sour cream).
- Moderate to fairly high amounts of fish and seafood, typically not deep-fried.
- More beans and other legumes.
- Fat consumption varies, but if it is high, then it is mostly monounsaturated (typically olive oil).
- Alcohol consumption varies but is routine, usually with meals, and is not extreme among the longest-lived.
- Abundant dietary phytochemicals, such as polyphenols and tannins, consumed with meals and present in fruits and vegetables, red wine, coffee, and tea.
- More fermented, pickled, and preserved foods, such as vinegar and dried fish.
- More greens. Key Mediterranean cuisines feature an abundance of greens and herbs. In Japan, sea vegetables (seaweed, kelp, etc.) are found in many meals.

LE: Many people erroneously promote a high-protein, low-carb diet. What can the Mindspan Elite teach us about protein?

Dr. Estep: Relatively low animal protein intake is a shared dietary attribute among Mindspan Elite regions and subcultures.
Research shows that animals raised on low-protein diets live longer than animals eating diets with typical amounts of protein.

The China Study, a well-known study done in the 1980s, found that dietary protein intake is a primary determinant of diseases in later life, including cardiovascular disease and cancers.

**LE:** What are key biomarkers we can use to determine our longevity and mindspan?

**Dr. Estep:** Some biomarkers are simply symptoms of a certain state or underlying process. But other biomarkers, such as telomere length, are more than just markers; they play critical roles in setting the pace of aging and senescence.

Telomeres are specialized stretches of DNA that protect the ends of chromosomes. Long, stable telomeres are robust predictors of good health and longevity. As we age, telomeres get broken down and become shorter.

In general, the shorter your telomeres are, the shorter your lifespan.

Most long-lived people in their eighties and nineties have telomeres as long as or longer than most people in their seventies.

**LE:** How can you influence the length of your telomeres?

**Dr. Estep:** The shortening of telomeres can be accelerated by certain environmental variables—including diet.

But here is the positive flip side: good diet and lifestyle factors can counteract this erosion.

Higher intake of omega-3 fats, good sleep, low stress, and routine exercise are all associated with longer telomere length.

**LE:** What other key biomarkers should people be testing?

**Dr. Estep:** Two of the most important and commonly measured cardiovascular biomarkers are cholesterol and triglyceride levels. If these are moderately elevated on their own, it’s not necessarily reason for alarm.

Longevity and mindspan are at much greater risk if these high biomarker levels are accompanied by high blood iron levels, which accelerate the oxidation of LDL cholesterol.

High oxidation plus high LDL is deadly for both your heart and your brain.

**LE:** Isn’t iron beneficial for the body?

**Dr. Estep:** Of all the dangerous double-edged swords, iron cuts the deepest of all.

The peril posed by iron is unique among all dietary minerals. It’s the most abundant and potent oxidant in the body, but your body doesn’t have a way to get rid of excess iron, unlike other minerals.

You can compare iron to a match in the presence of fuel and oxygen. In control, warmth and light are produced; out of control, the result is like a persistent, wind-driven wildfire.

Consider a car analogy: Dietary fats and sugars, like gasoline, are hydrocarbons that produce energy. Your body mixes this fuel with oxygen and then ignites it to create useful energy and heat.

We need iron to carry oxygen throughout the body for this essential process. But just as an older car rusts, so does your body.

Its rust comes in the form of deposits of “garbage”—for example, hemosiderin, lipofuscin, and amyloid plaques in the brain that are primary drivers of Alzheimer’s disease.

Rust also comes in the form of “damage,” such as oxidized components of cells and tissues (e.g., DNA and proteins), and iron is a primary driver in the creation of this garbage and damage.

The higher the iron burden in your body, the greater the burden of accumulated garbage and damage over time, especially to brain neurons.

**LE:** How does excess iron impact the brain specifically?

**Dr. Estep:** In youth, iron is a critical nutrient for proper brain development.

However, high body iron stores in adulthood increase the risk of Alzheimer’s disease, Parkinson’s disease, ALS (Lou Gehrig’s disease), stroke, and other diseases of the brain and nervous system.

In other words, we need lots of iron in youth, but as we get older, these amounts become harmful.

The brain typically has a higher concentration of iron than any other metal. Specific brain regions affected by very different neurodegenerative diseases have one commonality: They show high levels of iron deposits.

**LE:** Why do so many people have excess iron?

**Dr. Estep:** Because red meat consumption remains too high, and because of iron fortification. In the U.S. today, about half of dietary iron is obtained through fortified grain products.

Iron fortification is done with the best of intentions, but it is clear that low but sufficient iron poses no clear health risk to adults.
The problem with most iron-enriched grain products is that the iron is absorbed rapidly with large amounts of monosaccharide sugars from the breakdown of the starch in the grain.

This is a toxic and completely unnatural combination that produces unprecedented stresses on your body, especially your vasculature and your pancreas, which regulates insulin and glucose.

Some of the worst offenders are breakfast cereals that are hyper-enriched with iron.

And it is essential to understand that the amount of iron on nutritional labels is specific to menstruating women and is very misleading for everyone else. Older people and males need less than half of the recommended daily intake on food labels.

**LE:** So, red meats and iron-enriched grains are main sources of iron. Are there other largely invisible sources?

**Dr. Estep:** Veggie burgers used to consist of various beans and vegetables, but the new generation of plant-based meats, like Beyond and Impossible burgers taste more like meat because it was discovered recently that iron is a key ingredient that gives real meat its distinctive “meaty” flavor. There has been a lot of media coverage of these plant-based meats and many questions about whether or not they are good additions to a healthy diet. For premenopausal women and others with low iron, I think they are good substitutes for meat, but for everyone else, stick to low-iron, plant-based foods.

**LE:** As a geneticist, you have unique insights into how genes impact disease risk. Do genes also factor into your risk of Alzheimer’s disease?

**Dr. Estep:** Research scientists have turned up many clues about the genetic regulations of overall human and brain longevity, but two genes truly stand out, because they have by far the largest overall effects.

Those genes are called APOE and APP. Variants of both cause Alzheimer’s disease at an early age. The APOE gene has repeatedly been proven to have the most significant longevity effect of any gene. It comes in three variant forms: e2, e3, and e4.

Everyone carries two copies of the APOE gene, but the two most problematic duos are the e3/e4 combination, which typically increases risk for Alzheimer’s disease by **two to three times**, and the e4/e4 combination, which increases risk by more than **10 times**.

**LE:** Why are these genes so problematic for the brain?

**Dr. Estep:** Both genes are influenced by diet and lifestyle, since they interact with iron, and amplify the effects of iron in the brain.

Recent evidence has been building that implicates APOE in the transport of iron to the brain. In mid-2015 the APOE and iron connection was elevated to the level of a near certainty.

An international consortium of several Alzheimer’s disease studies published the results of an over seven-year study of three groups of people: non-demented, mild cognitive impairment, and Alzheimer’s disease.

They found that the cerebrospinal fluid level of ferritin (the main iron storage protein in the body) predicted the degree of cognitive decline—higher ferritin led to faster decline and dementia.

**LE:** What about APP?

**Dr. Estep:** The gene for APP (amyloid precursor protein) causes the plaque (known as amyloid beta) seen in brains afflicted with Alzheimer’s disease. Research suggests that the job of APP in the brain is to protect cells and tissue from iron’s oxidative damage.

The APP gene protects the brain, but in the long run also harms the brain through the long-term consequences of this mode of protection. There is a basic formula:

**GENES + ENVIRONMENT = TRAIT.**

Dietary iron is the key environmental co-conspirator. So, in this case:

**COMMON APP VARIANT + HIGH IRON = ALZHEIMER’S DISEASE.**

Adding APOE e4 to the equation increases risk. Reducing dietary iron improves the ENVIRONMENT part of the equation and also reduces Alzheimer’s risk.

This is extremely important because more than **99%** of us carry the common variant of APP, and our best option right now for reducing risk of Alzheimer’s disease is to exert control through environmental regulators of risk.

**LE:** Are there other genes we should be concerned about?

**Dr. Estep:** Other problematic variants are found in genes governing absorption of iron from food, and some of these are very common.
About a quarter of the U.S. population has at least one copy of the APOE e4 variant, but another quarter has one or more variants in the HFE gene that increase absorption of iron from food, increasing the risk of iron overload, or hemochromatosis. The HFE gene is involved in regulating how much iron is absorbed from food, and the body has no natural mechanism for regulating iron balance by getting rid of iron once it is absorbed. So, it is critical to measure iron levels to ensure that overload is avoided preventively, because it is difficult to reverse iron overload, although blood donation (phlebotomy) and the use of iron chelators are helpful.

**LE:** While too much iron can clearly be problematic, low iron levels can cause their own concerns, such as anemia and increased susceptibility to infections. What is the ideal range of iron levels in the body?

**Dr. Estep:** Again, ferritin is the main iron storage protein in the body, and serum ferritin is a key biomarker that provides the best non-invasive measure of the amount of iron stored in the body.

For men and women, aim for 10 to 40 ng/mL (standard units), or micrograms per liter (international units) for maximum health benefits. This range is based on historical levels in Japanese women. They have the lowest iron levels in the developed world, the longest lives, and low rates of Alzheimer’s disease.

**LE:** What’s your key takeaway for readers to help understand extending their mindspan?

**Dr. Estep:** When *The Mindspan Diet* was published a few years ago lots of evidence pointed to iron as a key regulator of mindspan, but it was mostly circumstantial and provided statistical association but not clear evidence of causation. More recently, the largest and most advanced studies of human longevity have strongly supported my conclusions about the importance of iron, showing that excess iron reduces longevity and that it isn’t merely associated with, but is a primary cause, of accelerated aging.

Recent research also indicates that Alzheimer’s disease is a close second to cancer as a cause of death in developed nations, and excess iron increases the risk of both these and other leading causes of death.

So, the bottom line is that iron is a critical nutrient for proper functioning of the body and mind, but I can’t emphasize enough that most adults in developed countries get far too much of it. And the only way for someone to know if they are at risk is to test serum ferritin and other critical markers of iron. When your life depends on it, don’t guess, test.

**LE:** Please tell us about your current projects.

**Dr. Estep:** In early 2020 I was planning the launch of a venture fund focused on starting and investing in biotech companies involved in increasing longevity and enhancing mindspan, but like many other people my plans changed as the pandemic unfolded. My main focus for the past year-and-a-half has been the Rapid Deployment Vaccine Collaborative (Radvac). As the pandemic gradually winds down I’m returning to focus on longevity/mindspan biotech startups and venture funding.

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


Dr. Preston Estep received his doctorate from Harvard University. He is Director of Gerontology and advisor to the Personal Genome Project at Harvard Medical School. He has founded or is a scientific adviser to many leading biotech startup companies. He is the author of the book *The Mindspan Diet* and has addressed professional and lay audiences around the world on a range of topics in biomedicine including mindspan, genetic testing and whole genome DNA sequencing, vaccines, and space biomedicine.

*The Mindspan Diet* was published by Ballantine Books, an imprint of Random House, a division of Penguin Random House LLC. Excerpts reprinted by permission.

To order a copy of *The Mindspan Diet* visit Amazon.com
**Life Extension** customers take extraordinary steps to stave off aging.

When customers buy from **Life Extension**, they are assured of receiving the **highest-quality** formulas based on the latest published scientific studies.

These pages reveal the **lower prices** that our customers enjoy during the annual **SUPER SALE**.

Each purchase at these **discount prices** qualifies for valuable **Rewards Dollars** that reduce the cost of future orders.

---

<table>
<thead>
<tr>
<th>Product Description</th>
<th>One Unit Price</th>
<th>Four-Unit Per-Bottle Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extend-Release Magnesium</strong></td>
<td>$8.78</td>
<td>$7.88</td>
</tr>
<tr>
<td>Provides immediate-release along with a 6-hour extended-release magnesium for sustained benefits.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Two-Per-Day Multivitamin</strong></td>
<td>$16.20</td>
<td>$14.40</td>
</tr>
<tr>
<td>120 capsules, Item #02314 (Two-month supply)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compared to commercial multivitamins, Two-Per-Day has up to <strong>50 times</strong> the potency of specific nutrients, as well as unique ingredients.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bio-Fisetin</strong></td>
<td>$10.13</td>
<td>$9</td>
</tr>
<tr>
<td>30 vegetarian capsules, Item #02414</td>
<td></td>
<td></td>
</tr>
<tr>
<td>After years of relentless research, an absorbable form of the plant flavonoid fisetin is finally available to target senescent cells.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BioActive Complete B-Complex</strong></td>
<td>$8.10</td>
<td>$7.20</td>
</tr>
<tr>
<td>60 vegetarian capsules, Item #01945</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enzymatically active forms of B vitamins.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Super Omega-3 Fish Oil, Sesame Lignans &amp; Olive Extract</strong></td>
<td>$21.60</td>
<td>$18.90</td>
</tr>
<tr>
<td>120 softgels, Item #01982</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly purified EPA (1,400 mg) and DHA (1,000 mg), sesame lignans plus potent olive extract, provides essential components of the Mediterranean diet in four softgels.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Zinc Caps</strong></td>
<td>$6.08</td>
<td>$5.40</td>
</tr>
<tr>
<td>90 vegetarian capsules, Item #01813</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc monomethionine and citrate provide <strong>50 mg</strong> of absorbable zinc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MacuGuard® Ocular Support with Saffron</strong></td>
<td>$16.88</td>
<td>$15.75</td>
</tr>
<tr>
<td>60 softgels, Item #01992</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lutein, trans-zeaxanthin, meso-zeaxanthin, and saffron help maintain structural integrity of the macula and retina. Just one softgel per day.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Advanced Curcumin Elite™ Turmeric Extract, Ginger &amp; Turmerones</strong></td>
<td>$18</td>
<td>$16.20</td>
</tr>
<tr>
<td>30 softgels, Item #02324</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 times greater free curcuminoid bioavailability, plus ginger and turmerones.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™</strong></td>
<td>$41.85</td>
<td>$35.10</td>
</tr>
<tr>
<td>100 mg, 60 softgels, Item #01426</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior absorbing ubiquinol plus shilajit, which complements CoQ10 effectiveness.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

*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.*
### Optimized Resveratrol
- 60 vegetarian capsules, Item #02230
- $30.38
- $27

This formula contains compounds that “turn on” longevity genes. It provides 250 mg of trans-resveratrol, quercetin (150 mg), and complementary plant extracts.

### Super Selenium Complex
- 100 vegetarian capsules, Item #01778
- $9.45
- $8.10

Combines three complementary forms of selenium with vitamin E for additional antioxidant protection.

### Ultra Prostate Formula
- 60 softgels, Item #02029
- $25.65
- $23.63

Comprehensive support for an aging prostate gland utilizing extracts from pygeum, nettle, flower pollen, and saw palmetto, plus boron, beta-sitosterol, and lycopene. (10-unit per-bottle price)

### Neuro-Mag® Magnesium L-Threonate
- 90 vegetarian capsules, Item #01603
- $27
- $24.30

MIT research shows this form of magnesium helps maintain structural integrity of synaptic connections in the brain.

### Bio-Quercetin
- 30 vegetarian capsules, Item #02302
- $8.10
- $7.20

Ultra-absorbable quercetin for immune and cardiovascular health.

### DHEA
- 25 mg, 100 capsules, Item #00335
- $10.80
- $9.90

Supports immune function, mood, and lean muscle mass.

### Optimized Ashwagandha
- 60 vegetarian capsules, Item #00888
- $6.75
- $6.08

Improves cognitive function, reduces stress, helps maintain brain cell structure.

### Super R-Lipoic Acid
- 240 mg, 60 vegetarian capsules, Item #01208
- $33.08
- $30.38

Superior efficacy compared to alpha-lipoic acid—supplies 240 mg of stabilized R-lipoic acid.

### Skin Restoring Ceramides
- 30 liquid vegetarian capsules, Item #02096
- $16.88
- $15.53

Restores smoother, youthful-looking skin from the inside and out.

### PQQ
- 10 mg, 30 vegetarian capsules, Item #01500
- $12.15
- $9.90

Promotes generation of new mitochondria in aging cells.

### Arterial Protect
- 30 vegetarian capsules, Item #02004
- $29.70
- $26.10

Helps stabilize endothelial plaque and promote healthy blood flow throughout the body.

### B12 Elite
- 60 vegetarian lozenges, Item #02419
- $7.43
- $6.75

Two bioactive coenzyme forms of B12 used directly by the brain.

### NAD+ Cell Regenerator™ and Resveratrol
- 30 vegetarian capsules, Item #02348
- NIAGEN® nicotinamide riboside, trans-resveratrol, quercetin, and more to support healthy cellular metabolism.

NIAGEN® is a registered trademark of ChromaDex, Inc., Patents see: www.ChromaDexPatents.com.

For Super Sale pricing available to readers of this magazine call 1-800-544-4440 or visit LifeExtension.com/NAD
Super Omega-3 provides components found in Mediterranean diets, including sesame lignans to extend the stability of DHA in the blood.

**Super Omega-3 Plus**
EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin
(2,520 mg of EPA + DHA in four softgels)

**SUPER SALE PRICE**
Item #01988 • 120 softgels
1 bottle $30.38 • 4 bottles $28.35 each

**Super Omega-3**
EPA/DHA Fish Oil, Sesame Lignans & Olive Extract
(2,400 mg of EPA + DHA in four softgels)

**SUPER SALE PRICE**
Item #01982 • 120 softgels
1 bottle $21.60 • 4 bottles $18.90 each

For full product description and to order Super Omega-3, or Super Omega-3 Plus, call 1-800-544-4440 or visit www.LifeExtension.com

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

* Highest Independent 5-star rating, International Fish Oil Society For Over Nine Years. 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.

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.
John Robbins
The Remarkable Legacy of the Baskin-Robbins Heir

BY LAURIE MATHENA

Not many people would turn down a billion-dollar family business to help promote the health and wellness of people and the planet.

But that’s exactly what John Robbins, presumed heir to the Baskin-Robbins ice cream empire, did when he was only 21 years old.

Instead of profiting from a business that promotes obesity and disease by selling a food high in sugar and saturated fat, Robbins has dedicated his life to helping provide healthy, ethical, sustainable food for people around the world.

He has written 10 books about healthy living that have sold millions of copies, founded EarthSave International, and co-founded Food Revolution Network.

He has made countless TV and radio appearances—including the shows Oprah and Donahue—and has received numerous awards for his humanitarian efforts.

At 74 years old, Robbins is the epitome of good health, showing that eating a plant-based diet, living with purpose, and taking targeted supplements are key elements to an optimal-longevity lifestyle.
Walking Away from the Family Business

Burt Baskin, John Robbins’ uncle and co-owner of Baskin-Robbins, died of a heart attack at the age of 54.

When Robbins questioned whether there was a connection between the amount of ice cream Burt had consumed and this fatal incident, the reply from Robbins’ father Irv, the other co-owner of the business, was a stern “no.”

“Different families have different taboo topics that don’t get discussed. In my family, it was that there could be any connection between food and health,” said Robbins. “My father didn’t want to think that the product he was selling was hurting anybody, much less that it could have contributed to the death of his beloved partner. But I was starting to believe that the more ice cream you ate, the more likely you were to have heart disease, diabetes, and obesity.”

He was also appalled by the cruelty he saw, first-hand, to the factory-farmed cows used to make the ice cream—animals that were unable to move, covered in flies, and standing in excrement up to their knees.

“I didn’t want to make my living from selling a product that was undermining people’s health,” said Robbins. “I also didn’t want to make a living selling a product that was based in such cruelty to animals.”

That’s why Robbins not only walked away from the family business—but also from any trust fund, or any other reliance on a fortune made from contributing to the poor health of millions.

Instead, over the next 50 years, Robbins built a different kind of empire: one that promoted life and health.

Instead, over the next 50 years, Robbins built a different kind of empire: one that promoted life and health.

A Legacy Better than Ice Cream

Robbins’ father Irv had developed a number of serious health problems, including type II diabetes and hypertension.

“His doctor told him all they could do was juggle his medications, control some of the side effects, and make his few remaining years more comfortable,” said Robbins. “But then he also gave him a copy of my book (without knowing the author was his son) and told him that if he was willing to consider making major changes in how he lived, there could be a different outcome.”

The book, called Diet for a New America: How Your Food Choices Affect Your Health, Happiness, and the Future of Life on Earth, was nominated for the Pulitzer Prize for General Nonfiction in 1987 and has been described as the single most eloquent argument for a vegetarian lifestyle ever published.

Irv had never believed in the connection between food and health. But after hearing this recommendation from his renowned cardiologist, he decided to read the book and put his son’s health advice into practice.

After just two years, his diabetes had reversed, and his blood pressure had normalized.

By simply making gradual changes to his diet, he no longer needed insulin, diabetic pills, or hypertension drugs.

“He lived another 20 healthy years after that. In the long run I felt I had been able to give him something more important than inventing a 32nd flavor,” said Robbins, referring to the famous 31 flavors of Baskin-Robbins.

Now, Robbins is working hard to create success stories like these for people all over the world.
In 2012, Robbins teamed up with his son, Ocean, to found Food Revolution Network, an organization dedicated to “healthy, ethical, sustainable food for all.”

It has grown to include half a million members, and their goal is to empower individuals and transform food systems to support healthy people and a healthy planet.

Robbins is passionate about educating people about the health consequences of eating processed foods, the cruelty to animals in industrialized feed lots, and the detrimental effects to the earth caused by factory farming.

“The data are clear that the highly processed foods that most of us are eating and drinking cause an enormous amount of physical disease,” said Robbins. “On the other hand, we have very convincing data that people who eat whole food, plant-based diets—and who don’t eat the factory-farmed meat and the industrially processed food—live longer and healthier. Their lifespan is increased, but even more importantly, their healthspan is increased.”

Industrialized farming is also causing enormous consequences to the planet, including the erosion of topsoil, depletion of groundwater, and the emission of greenhouse gases.

But simply eating a healthier diet can promote a healthier planet.

“One study showed that greenhouse gas emissions could be lowered more by eating a plant-based diet than by driving an electric car,” said Robbins.

One practical way Food Revolution Network is working to provide healthy food for all is by fighting to end the subsidies that spend tens of billions of taxpayer dollars in ways that bring down the price of white bread, high fructose corn syrup, and factory-farmed animal products.

“These are the very foods that every credible health authority is telling us we should be eating less of. If the government is going to subsidize anything, it should subsidize fruits, vegetables, nuts and seeds, and legumes—the foods that tens of thousands of medical studies are telling us we should be eating more of,” said Robbins.

They are also working to have taxes placed on soda and other grossly unhealthy foods and beverages, and then using the revenue to bring down the cost of healthy foods like fruits and vegetables.

“Steps like this would help make healthy food more affordable, more accessible, and more available to everyone, which is our ultimate goal,” said Robbins.

Robbins is also taking steps to have nutritional education taught in medical schools.

“I once had a Harvard doctor tell me that if food was medicine, he would have learned about it in medical school,” said Robbins. “This highlights the total lack of nutritional education in medical schools, which is quite disturbing.”
To address this issue, Robbins and his team at Food Revolution Network have joined with The American College of Lifestyle Medicine in a campaign to get nutritional education questions added to the licensure exams given to medical school graduates. They’ve gotten more than 1,000 approved questions added to the bank that medical schools can draw from, and these lifestyle medicine questions are already beginning to be used.

The goal is that in the coming years, questions on food and nutrition will come to make up 10% (or more) of the questions that are used. This would ultimately cause all medical schools to begin teaching food nutrition to their students.

Living a Vibrant Life

Robbins’ own personal health journey is just as remarkable as his professional accomplishments. After walking away from the Baskin-Robbins business, Robbins moved to a small island off the coast of British Columbia, Canada, built a one-room log cabin, and grew most of his own food. He lived off less than $500 per year.

But long before that, as a child, he had polio and was confined to a wheelchair for a period of time—something that has caused him to never take movement for granted.

For years he ran marathons and competed in triathlons. Now, at age 74, he still loves to hike, work out in his home gym, and do yoga. He eats the same whole-food, plant-based diet that he promotes with the Food Revolution Network.

“I wake up in a body that’s vital and vibrant, and that wants to live, where the energy is expansive,” said Robbins. He also takes targeted supplements for increased healthspan and lifespan.

“Even those of us who work really hard at eating a clean diet are still breathing polluted air and are still surrounded by toxic materials. It’s also very hard today to get all your nutrients from food,” said Robbins. “Because of this, I see a real role for supplements.”

As part of his daily routine, Robbins takes nearly a dozen supplements, including vitamins D, B12, and K, melatonin, R-lipoic acid, N-acetyl L-cysteine, L-theanine, ubiquinol, and more.

When people wonder how making simple food choices—like eating plant-based food instead of factory-farmed meat, or choosing to eat organic—could have such a major impact on their lives and the world, Robbins simply tells them this:

“Everybody needs to eat in order to live, and every bite you take is essentially a vote. You’re voting for the health you want and for the world you want. The votes you cast with your food choices literally change the course of your destiny and have a powerful impact on the future of life on earth.

“In addition to improving your lifespan and healthspan, you’re contributing to a world with fewer animals being tortured in factory farms, less erosion of our topsoil, and less depletion of our groundwater. You’ll be helping to create a world that will be healthier and more beautiful for future generations.”

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

To learn more about Food Revolution Network, visit www.foodrevolution.org

John Robbins has written 10 books on healthy living that have sold millions of copies and been translated into 30 languages. He founded EarthSave International and co-founded Food Revolution Network with his son, Ocean. He has been a keynote speaker at conferences sponsored by Physicians for Social Responsibility, the United Nations Environmental Program, UNICEF, and more. He has appeared on national shows including Oprah, Donahue, and Geraldo. And he is the recipient of the Rachel Carson Award, the Albert Schweitzer Humanitarian Award, the Peace Abbey’s Courage of Conscience Award, and lifetime achievement awards from groups including Green America.
Fennel

BY LAURIE MATHENA

Fennel is an herb that originated from the Mediterranean region. It is commonly used in Greek cooking for its licorice-like flavor, and its favorable effects on digestive, endocrine, reproductive, and respiratory issues.1

Benefits can be derived from both the fennel bulb and the seeds. Fennel is a rich source of health-promoting plant compounds, including the polyphenols rosmarinic acid, quercetin, and apigenin.

In-vitro and in-vivo studies show that these compounds have antimicrobial, antiviral, anti-inflammatory, anti-mutagenic, anti-spasmodic, anti-thrombotic, hypoglycemic, memory-enhancing, and stress-relieving properties.1

People in many cultures chew fennel seeds after meals to help with digestion and eliminate bad breath. And in Ayurvedic medicine, fennel seeds are used as a laxative, because they help move food through the intestines and promote excretion.

Fennel may be eaten raw in salads and snacks, and it can be stewed, boiled, grilled, or baked. It can also be used in the preparation of herbal teas or as an essential oil.

Reference
### Products

#### Active Lifestyle & Fitness
- 01529 Creatine Capsules
- 02020 Super Carnosine
- 02023 Tart Cherry with CherryPURE®
- 02146 Wellness Bar–Chocolate Brownie
- 02147 Wellness Bar–Cookie Dough
- 02246 Wellness Code® Advanced Whey Protein Isolate Vanilla
- 02221 Wellness Code® Muscle Strength & Restore Formula
- 02127 Wellness Code® Plant Protein Complete & Amino Acid Complex
- 02246 Wellness Code® Whey Protein Concentrate Chocolate
- 02260 Wellness Code® Whey Protein Concentrate Vanilla
- 02243 Wellness Code® Whey Protein Isolate Chocolate
- 02242 Wellness Code® Whey Protein Isolate Vanilla

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

#### Blood Pressure & Vascular Support
- 01824 Advanced Olive Leaf Vascular Support
- 02004 Arterial Protect
- 70000 Blood Pressure Monitor Arm Cuff
- 02497 Endothelial Defense™ Pomegranate Plus
- 02320 NitroVasc™ Boost
- 00984 Optimal BP Management
- 01953 Pomegranate Complete
- 00956 Pomegranate Fruit Extract
- 02024 Triple Action Blood Pressure AM/PM
- 02102 VenoFlow™

#### Bone Health
- 01726 Bone Restore
- 02123 Bone Restore Chewable Tablet
- 02416 Bone Restore Elite with Super Potent K2
- 01727 Bone Restore with Vitamin K2
- 01725 Bone Strength Collagen Formula
- 00313 Bone-Up™
- 01963 Calcium Citrate with Vitamin D
- 01506 Dr. Strum's Intensive Bone Formula
- 02417 Mega Vitamin K2
- 01476 Strontium Caps

#### Brain Health
- 01524 Acetyl-L-Carnitine
- 01974 Acetyl-L-Carnitine Arginate
- 02419 B12 Elite
- 01659 CDP Choline
- 02321 Cognitex® Basics
- 02396 Cognitex® Elite
- 02397 Cognitex® Elite Pregnenolone
- 01540 DMAE Bitartrate
- 02006 Dopa-Mind™
- 02413 Dopamine Advantage
- 02212 Focus Tea™
- 01658 Ginkgo Biloba Certified Extract™
- 01527 Huperzine A
- 00020 Lecithin
- 02101 Memory Protect

#### Cholesterol Management
- 01603 Neuro-Mag® Magnesium L-Threonate Caps
- 02032 Neuro-Mag® Magnesium L-Threonate Powder
- 00888 Optimized Ashwagandha
- 01676 PS (Phosphatidylserine) Caps
- 02406 Quick Brain Nootropic
- 01327 Vinpocetine

#### Digest Support
- 53348 Betaine HCI
- 02412 Bloat Relief
- 30747 Digest RC™
- 07136 Effervescent Vitamin C - Magnesium Crystals
- 02021 Enhanced Super Digestive Enzymes
- 02022 Enhanced Super Digestive Enzymes and Probiotics
- 02033 EsophaCool™
- 01737 Esophageal Guardian
- 01706 Extraordinary Enzymes
- 02100 Gastro-Ease™
- 01122 Ginger Force™
- 00605 Regimint
- 01386 TruFiber®

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

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

#### Fish Oil & Omegas
- 02311 Clearly EPA/DHA Fish Oil
- 01937 Mega EPA/DHA
- 02218 Mega GLA Sesame Lignans
- 01983 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 softgels
- 01988 Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin
- 01982 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 softgels
<table>
<thead>
<tr>
<th>Code</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01985</td>
<td>Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans &amp; Olive Extract • 60 enteric coated softgels</td>
</tr>
<tr>
<td>01984</td>
<td>Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans &amp; Olive Extract • 120 enteric coated softgels</td>
</tr>
<tr>
<td>01986</td>
<td>Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans &amp; Olive Extract • 240 softgels</td>
</tr>
<tr>
<td>01812</td>
<td>Provinal® Purified Omega-7</td>
</tr>
<tr>
<td>01640</td>
<td>Vegetarian DHA</td>
</tr>
<tr>
<td></td>
<td><strong>FOOD</strong></td>
</tr>
<tr>
<td>02008</td>
<td>California Estate Extra Virgin Olive Oil</td>
</tr>
<tr>
<td>02170</td>
<td>Rainforest Blend Decaf Ground Coffee</td>
</tr>
<tr>
<td>02169</td>
<td>Rainforest Blend Ground Coffee</td>
</tr>
<tr>
<td>02171</td>
<td>Rainforest Blend Whole Bean Coffee</td>
</tr>
<tr>
<td>00438</td>
<td>Stevia™ Organic Liquid Sweetner</td>
</tr>
<tr>
<td>00432</td>
<td>Stevia™ Sweetener</td>
</tr>
<tr>
<td></td>
<td><strong>GLUCOSE MANAGEMENT</strong></td>
</tr>
<tr>
<td>01503</td>
<td>CinSulin® with InSea 2® and Crominex® 3+</td>
</tr>
<tr>
<td>01620</td>
<td>CoffeeGenic® Green Coffee Extract</td>
</tr>
<tr>
<td>02122</td>
<td>Glycemic Guard™</td>
</tr>
<tr>
<td>00925</td>
<td>Mega Benfotiamine</td>
</tr>
<tr>
<td>01803</td>
<td>Tri Sugar Shield®</td>
</tr>
<tr>
<td></td>
<td><strong>HEART HEALTH</strong></td>
</tr>
<tr>
<td>01066</td>
<td>Aspirin (Enteric Coated)</td>
</tr>
<tr>
<td>01842</td>
<td>BioActive Folate &amp; Vitamin B12 Caps</td>
</tr>
<tr>
<td>01700</td>
<td>Cardio Peak™</td>
</tr>
<tr>
<td>02121</td>
<td>Homocysteine Resist</td>
</tr>
<tr>
<td>02018</td>
<td>Optimized Carnitine</td>
</tr>
<tr>
<td>01949</td>
<td>Super-Absorbable CoQ10 Ubiquinone with d-Limonene • 50 mg, 60 softgels</td>
</tr>
<tr>
<td>01951</td>
<td>Super-Absorbable CoQ10 Ubiquinone with d-Limonene • 100 mg, 60 softgels</td>
</tr>
<tr>
<td>01929</td>
<td>Super Ubiquinol CoQ10</td>
</tr>
<tr>
<td>01427</td>
<td>Super Ubiquinol CoQ10 with Enh Mitochondrial Support • 50 mg, 30 softgels</td>
</tr>
<tr>
<td>01425</td>
<td>Super Ubiquinol CoQ10 with Enh Mitochondrial Support • 50 mg, 100 softgels</td>
</tr>
<tr>
<td>01437</td>
<td>Super Ubiquinol CoQ10 with Enh Mitochondrial Support • 100 mg, 30 softgels</td>
</tr>
<tr>
<td>01426</td>
<td>Super Ubiquinol CoQ10 with Enh Mitochondrial Support • 100 mg, 60 softgels</td>
</tr>
<tr>
<td>01431</td>
<td>Super Ubiquinol CoQ10 with Enh Mitochondrial Support • 200 mg, 30 softgels</td>
</tr>
<tr>
<td>01733</td>
<td>Super Ubiquinol CoQ10 with PQO</td>
</tr>
<tr>
<td>01859</td>
<td>TMG Liquid Caps</td>
</tr>
<tr>
<td>00349</td>
<td>TMG Powder</td>
</tr>
<tr>
<td></td>
<td><strong>HORMONE BALANCE</strong></td>
</tr>
<tr>
<td>00454</td>
<td>DHEA • 15 mg, 100 capsules</td>
</tr>
<tr>
<td>00335</td>
<td>DHEA • 25 mg, 100 capsules</td>
</tr>
<tr>
<td>00882</td>
<td>DHEA • 50 mg, 60 capsules</td>
</tr>
<tr>
<td>00607</td>
<td>DHEA • 25 mg, 100 vegetarian dissolve in mouth tablets</td>
</tr>
<tr>
<td>01689</td>
<td>DHEA • 100 mg, 60 veg capsules</td>
</tr>
<tr>
<td>02368</td>
<td>Optimized Broccoli and Cruciferous Blend</td>
</tr>
<tr>
<td>00302</td>
<td>Pregnenolone • 50 mg, 100 capsules</td>
</tr>
<tr>
<td>00700</td>
<td>Pregnenolone • 100 mg, 100 capsules</td>
</tr>
<tr>
<td>01468</td>
<td>Triple Action Cruciferous Vegetable Extract</td>
</tr>
<tr>
<td>01469</td>
<td>Triple Action Cruciferous Vegetable Extract and Resveratrol</td>
</tr>
<tr>
<td></td>
<td><strong>IMMUNE SUPPORT</strong></td>
</tr>
<tr>
<td>02411</td>
<td>5 Day Elderberry Immune</td>
</tr>
<tr>
<td>00681</td>
<td>AHCC®</td>
</tr>
<tr>
<td>02302</td>
<td>Bio-Quercetin®</td>
</tr>
<tr>
<td>02410</td>
<td>Black Elderberry + Vitamin C</td>
</tr>
<tr>
<td>01961</td>
<td>Enhanced Zinc Lozenges</td>
</tr>
<tr>
<td>01704</td>
<td>Immune Modulator with Tinofend®</td>
</tr>
<tr>
<td>02425</td>
<td>Immune Packs with Vitamin C &amp; D, Zinc and Probiotic</td>
</tr>
<tr>
<td>02005</td>
<td>Immune Senescence Protection Formula™</td>
</tr>
<tr>
<td>00316</td>
<td>Kyolic® Garlic Formula 102</td>
</tr>
<tr>
<td>00789</td>
<td>Kyolic® Reserve</td>
</tr>
<tr>
<td>01681</td>
<td>Lactoferrin (Apalactoferin) Caps</td>
</tr>
<tr>
<td>02426</td>
<td>Mushroom Immune with Beta Glucans</td>
</tr>
<tr>
<td>01903</td>
<td>NK Cell Activator™</td>
</tr>
<tr>
<td>01394</td>
<td>Optimized Garlic</td>
</tr>
<tr>
<td>01309</td>
<td>Optimized Quercetin</td>
</tr>
<tr>
<td>01811</td>
<td>Peony Immune</td>
</tr>
<tr>
<td>00525</td>
<td>ProBoost Thymic Protein A</td>
</tr>
<tr>
<td>01708</td>
<td>Reishi Extract Mushroom Complex</td>
</tr>
<tr>
<td>01906</td>
<td>Standardized Cistanche</td>
</tr>
<tr>
<td>13685</td>
<td>Ten Mushroom Formula*</td>
</tr>
<tr>
<td>01097</td>
<td>Ultra Soy Extract</td>
</tr>
<tr>
<td>01561</td>
<td>Zinc Lozenges</td>
</tr>
<tr>
<td></td>
<td><strong>INFLAMMATION MANAGEMENT</strong></td>
</tr>
<tr>
<td>01639</td>
<td>5-LOX Inhibitor with AprèsFlex®</td>
</tr>
<tr>
<td>02324</td>
<td>Advanced Curcumin Elite™ Turmeric Extract, Ginger &amp; Turmerones</td>
</tr>
<tr>
<td>01709</td>
<td>Black Cumin Seed Oil</td>
</tr>
<tr>
<td>02310</td>
<td>Black Cumin Seed Oil and Curcumin Elite™</td>
</tr>
<tr>
<td>00202</td>
<td>Boswella</td>
</tr>
<tr>
<td>02467</td>
<td>Curcumin Elite™ Turmeric Extract • 30 veg capsules</td>
</tr>
<tr>
<td>02407</td>
<td>Curcumin Elite™ Turmeric Extract • 60 veg capsules</td>
</tr>
<tr>
<td>01804</td>
<td>Cytokine Supressors with EGCG</td>
</tr>
<tr>
<td>02223</td>
<td>Pro-Resolving Mediators</td>
</tr>
<tr>
<td>00318</td>
<td>Serrafazyme</td>
</tr>
<tr>
<td>01203</td>
<td>Specially-Coated Bromelain</td>
</tr>
<tr>
<td>00407</td>
<td>Super Bio-Curcumin® Turmeric Extract</td>
</tr>
<tr>
<td>01254</td>
<td>Zyflamend™ Whole Body</td>
</tr>
<tr>
<td></td>
<td><strong>JOINT SUPPORT</strong></td>
</tr>
<tr>
<td>02404</td>
<td>Arthro-Immune Joint Support</td>
</tr>
<tr>
<td>02238</td>
<td>ArthroMax™ Advanced NT2 Collagen™ &amp; AprèsFlex®</td>
</tr>
<tr>
<td>01617</td>
<td>ArthroMax™ with Theaflavins &amp; AprèsFlex®</td>
</tr>
<tr>
<td>02138</td>
<td>ArthroMax™ Elite</td>
</tr>
<tr>
<td>00965</td>
<td>Fast-Acting Joint Formula</td>
</tr>
<tr>
<td>02430</td>
<td>Fast Acting Relief</td>
</tr>
<tr>
<td>00522</td>
<td>Glucosamine/Chondroitin Caps</td>
</tr>
<tr>
<td>02420</td>
<td>Glucosamine Sulfate</td>
</tr>
<tr>
<td>02424</td>
<td>Joint Mobility</td>
</tr>
<tr>
<td>01600</td>
<td>Krill Healthy Joint Formula</td>
</tr>
<tr>
<td>01050</td>
<td>Krill Oil</td>
</tr>
<tr>
<td>00451</td>
<td>MSM (Methylsulfonylmethane)</td>
</tr>
<tr>
<td>02231</td>
<td>NT2 Collagen™</td>
</tr>
<tr>
<td></td>
<td><strong>KIDNEY &amp; BLADDER SUPPORT</strong></td>
</tr>
<tr>
<td>00862</td>
<td>Cran-Max® Cranberry Whole Fruit Concentrate</td>
</tr>
<tr>
<td>01424</td>
<td>Optimized Cran-Max® with Ellirose™</td>
</tr>
<tr>
<td>01921</td>
<td>Uric Acid Control</td>
</tr>
<tr>
<td>01209</td>
<td>Water-Soluble Pumpkin Seed Extract</td>
</tr>
<tr>
<td></td>
<td><strong>LIVER HEALTH &amp; DETOXIFICATION</strong></td>
</tr>
<tr>
<td>01922</td>
<td>Advanced Milk Thistle • 60 softgels</td>
</tr>
<tr>
<td>01925</td>
<td>Advanced Milk Thistle • 120 softgels</td>
</tr>
<tr>
<td>02240</td>
<td>Anti-Alcohol Complex</td>
</tr>
<tr>
<td>01651</td>
<td>Calcium D-Glucarate</td>
</tr>
<tr>
<td>01571</td>
<td>Chlorophyllin</td>
</tr>
<tr>
<td>01522</td>
<td>Milk Thistle • 60 veg capsules</td>
</tr>
<tr>
<td>02402</td>
<td>FLORASSIST® Liver Restore™</td>
</tr>
<tr>
<td>01541</td>
<td>Glutathione, Cysteine &amp; C</td>
</tr>
<tr>
<td>01393</td>
<td>HepatoPro</td>
</tr>
<tr>
<td>01608</td>
<td>Liver Efficiency Formula</td>
</tr>
<tr>
<td>01534</td>
<td>N-Acetyl-L-Cysteine</td>
</tr>
<tr>
<td>00342</td>
<td>PectaSol-C® Modified Citrus Pectin Powder</td>
</tr>
<tr>
<td>01080</td>
<td>PectaSol-C® Modified Citrus Pectin Caps</td>
</tr>
<tr>
<td>01884</td>
<td>Silymarin</td>
</tr>
<tr>
<td>02361</td>
<td>SOD Booster</td>
</tr>
</tbody>
</table>
**LONGEVITY & WELLNESS**

- 00457 Alpha-Lipoic Acid
- 01625 AppleWise
- 02414 Bio-Fisetin
- 01214 Blueberry Extract
- 01438 Blueberry Extract and Pomegranate
- 02270 DNA Protection Formula
- 02405 Endocannabinoid System Booster
- 02119 GEROPROTECT® Ageless Cell™
- 02415 GEROPROTECT® Autophagy Renew
- 02133 GEROPROTECT® Longevity A.I.™
- 02401 GEROPROTECT® Stem Cell
- 02211 Grapeseed Extract
- 00954 Mega Green Tea Extract (decaffeinated)
- 00953 Mega Green Tea Extract (lightly caffeinated)
- 01513 Optimized Fucoidan with Maritech® 926
- 02230 Optimized Resveratrol
- 01637 Pycnogenol® French Maritime Pine Bark Extract
- 02210 Resveratrol
- 00070 RNA (Ribonucleic Acid)
- 02301 Senolytic Activator®
- 01208 Super R-Lipoic Acid
- 01919 X-R Shield

**MEN’S HEALTH**

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

**MINERALS**

- 01661 Boron
- 02107 Extend-Release Magnesium
- 01677 Iron Protein Plus
- 02403 Lithium
- 01459 Magnesium Caps
- 01682 Magnesium (Citrate)
- 01328 Only Trace Minerals
- 01504 Optimized Chromium with Crominex® 3+
- 02309 Potassium with Extend-Release Magnesium
- 01740 Sea-Iodine™
- 01879 Se-Methyl L-Selenocysteine
- 01778 Super Selenium Complex
- 00213 Vanadyl Sulfate
- 01813 Zinc Caps

**MISCELLANEOUS**

- 00577 Potassium Iodide
- 00657 Solarshield® Sunglasses

**MOOD & STRESS MANAGEMENT**

- 02312 Cortisol-Stress Balance
- 00987 Enhanced Stress Relief
- 01074 5 HTP
- 01683 L-Theanine
- 02175 SAMe (S-Adenosyl-Methionine) 200 mg, 30 enteric coated vegetarian tablets
- 02176 SAMe (S-Adenosyl-Methionine) 400 mg, 30 enteric coated vegetarian tablets
- 02174 SAMe (S-Adenosyl-Methionine) 400 mg, 60 enteric coated vegetarian tablets
- 02429 Theanine XR™ Stress Relief

**MULTIVITAMINS**

- 02199 Children’s Formula Life Extension Mix™
- 02498 Comprehensive Nutrient Packs ADVANCED
- 02354 Life Extension Mix™ Capsules
- 02364 Life Extension Mix™ Capsules without Copper
- 02356 Life Extension Mix™ Powder
- 02355 Life Extension Mix™ Tablets
- 02357 Life Extension Mix™ Tablets with Extra Niacin
- 02365 Life Extension Mix™ Tablets without Copper
- 02292 Once-Daily Health Booster - 30 softgels
- 02291 Once-Daily Health Booster - 60 softgels
- 02313 One-Per-Day Tablets
- 02428 Plant-Based Multivitamin
- 02317 Two-Per-Day Capsules - 60 capsules
- 02314 Two-Per-Day Capsules - 120 capsules
- 02316 Two-Per-Day Tablets - 60 tablets
- 02315 Two-Per-Day Tablets - 120 tablets

**NERVE & COMFORT SUPPORT**

- 02202 ComfortMAX™
- 02303 Discomfort Relief

**PERSONAL CARE**

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

**PET CARE**

- 01932 Cat Mix
- 01931 Dog Mix

**PROBIOTICS**

- 01622 Bifido GI Balance
- 01825 FLORASSIST® Balance
- 02421 FLORASSIST® Daily Bowel Regularity
- 02125 FLORASSIST® GI with Phage Technology
- 01821 FLORASSIST® Heart Health
- 02250 FLORASSIST® Mood Improve
- 02208 FLORASSIST® Immune & Nasal Defense
- 02120 FLORASSIST® Oral Hygiene
- 02203 FLORASSIST® Prebiotic
- 01920 FLORASSIST® Throat Health
- 02400 FLORASSIST® Winter Immune Support
- 52142 Jarro-Dophilus® for Women
- 00056 Jarro-Dophilus EPS® - 60 veg capsules
- 21201 Jarro-Dophilus EPS® - 120 veg capsules
- 01038 Therlac® Probiotics
- 01389 TruFlora® Probiotics

**SKIN CARE**

- 80157 Advanced Anti-Glycation Peptide Serum
- 80165 Advanced Growth Factor Serum
- 80170 Advanced Hyaluronic Acid Serum
- 80154 Advanced Lightening Cream
- 80155 Advanced Peptide Hand Therapy
- 80175 Advanced Probiotic-Fermented Eye Serum
- 80177 Advanced Retinol Serum
- 80152 Advanced Triple Peptide Serum
- 80140 Advanced Under Eye Serum with Stem Cells
- 80137 All-Purpose Soothing Relief Cream
- 80139 Amber Self MicroDermAbrasion
- 80118 Anti-Aging Mask
- 80151 Anti-Aging Rejuvenating Face Cream
80153 Anti-Aging Rejuvenating Scalp Serum
80179 Brightening Peptide Serum
80156 Collagen Boosting Peptide Cream
02408 Collagen Peptides for Skin & Joints
80180 CoQ10 and Stem Cell Rejuvenation Cream
80169 Cucumber Hydra Peptide Eye Cream
02423 Daily Skin Defense
80141 DNA Support Cream
80163 Eye Lift Cream
80123 Face Rejuvenating Anti-Oxidant Cream
80109 Hyaluronic Facial Moisturizer
80110 Hyaluronic Oil-Free Facial Moisturizer
80138 Hydrating Anti-Oxidant Facial Mist
00661 Hydroderm
55495 Intensive Moisturizing Cream
80103 Lifting & Tightening Complex
80168 Melatonin Advanced Peptide Cream
80114 Mild Facial Cleanser
80172 Multi Stem Cell Hydration Cream
80159 Multi Stem Cell Skin Tightening Complex
80122 Neck Rejuvenating Anti-Oxidant Cream
80174 Purifying Facial Mask
80150 Renewing Eye Cream
80142 Resveratrol Anti-Oxidant Serum
01938 Shade Factor™
02129 Skin Care Collection Anti-Aging Serum
02130 Skin Care Collection Day Cream
02131 Skin Care Collection Night Cream
80166 Skin Firming Complex
02096 Skin Restoring Ceramides
80130 Skin Stem Cell Serum
80164 Skin Tone Equalizer
80143 Stem Cell Cream with Alpine Rose
80148 Tightening & Firming Neck Cream
80161 Triple-Action Vitamin C Cream
80162 Ultimate MicroDermabrasion
80173 Ultimate Peptide Serum
80178 Ultimate Telomere Cream
80160 Ultra Eyelash Booster
80101 Ultra Wrinkle Relaxer
80113 Under Eye Refining Serum
80104 Under Eye Rescue Cream
80171 Vitamin C Lip Rejuvenator
80129 Vitamin C Serum
80136 Vitamin D Lotion
80102 Vitamin K Cream

SLEEP

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

01786 Melatonin 6 Hour Timed Release • 3 mg, 60 veg tablets
01721 Optimized Tryptophan Plus
01444 Quiet Sleep
01445 Quiet Sleep Melatonin
02502 Rest & Renew

VITAMINS

01533 Ascorbyl Palmitate
00920 Benfotiamine with Thiamine
00664 Beta-Carotene
01945 BioActive Complete B-Complex
00102 Biotin
00084 Buffered Vitamin C Powder
02229 Fast-C® and Bio-Quercetin Phytosome
02075 Gamma E Mixed Tocopherol Enhanced with Sesame Lignans
02070 Gamma E Mixed Tocopherol & Tocotrienols
01913 High Potency Optimized Folate
01674 Inositol Caps
02244 Liquid Vitamin D3 • 50 mcg (2000 IU)
02232 Liquid Vitamin D3 (Mint) • 50 mcg (2000 IU)
01936 Low-Dose Vitamin K2
00065 MK-7
00373 No Flush Niacin
01939 Optimized Folate (L-Methylfolate)
01217 Pyridoxal 5’-Phosphate Caps
01400 Super Absorbable Tocotrienols
02334 Super K
02335 Super K Elite
01863 Super Vitamin E
02422 Vegan Vitamin D3
02028 Vitamin B5 (Pantothenic Acid)
01535 Vitamin B6
00361 Vitamin B12 Methylcobalamin
01536 Vitamin B12 Methylcobalamin • 1 mg, 60 veg lozenges
01537 Vitamin B12 Methylcobalamin • 5 mg, 60 veg lozenges
02228 Vitamin C and Bio-Quercetin Phytosome • 60 veg tablets
02227 Vitamin C and Bio-Quercetin Phytosome • 250 veg tablets
01753 Vitamin D3 • 25 mcg (1000 IU), 90 softgels
01751 Vitamin D3 • 25 mcg (1000 IU), 250 softgels
01713 Vitamin D3 • 125 mcg (5000 IU), 60 softgels
01718 Vitamin D3 • 175 mcg (7000 IU), 60 softgels
01758 Vitamin D3 with Sea-Iodine™
02040 Vitamins D and K with Sea-Iodine™

WEIGHT MANAGEMENT & BODY COMPOSITION

02479 7-Keto® DHEA Metabolite • 100 mg, 60 veg capsules
01509 Advanced Anti-Adipocyte Formula
01807 Advanced Appetite Suppress
02207 AMPK Metabolic Activator
02478 DHEA Complete
01738 Garcinia HCA
01908 Mediterranean Trim with Sinetrol™ -XPur
01432 Optimized Saffron
00818 Super CLA Blend with Sesame Lignans

WOMEN’S HEALTH

01942 Breast Health Formula
01626 Enhanced Sex for Women 50+
01894 Estrogen for Women
01064 Femmenessence MacaPause®
02204 Menopause 731™
02319 Prenatal Advantage
01441 Progesta-Care®
01649 Super-Absorbable Soy Isoflavones
Fisetin has a range of benefits that may increase lifespan. Most impressively, it’s better than other plant compounds at clearing out senescent cells that are no longer functioning effectively. Our Bio-Fisetin formula is up to 25 times more bioavailable than other fisetin formulas—another way to reverse the clock!

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

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

**LIFE EXTENSION®**

**TWO-PER-DAY MULTIVITAMIN**

Compared to Centrum®

| Nutrient       | Compared To Centrum®
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin B1</td>
<td>50 times</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>25 times</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>12 times</td>
</tr>
<tr>
<td>Biotin</td>
<td>10 times</td>
</tr>
<tr>
<td>Selenium</td>
<td>10 times</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>8 times</td>
</tr>
<tr>
<td>Vitamin B3</td>
<td>2.5 times</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>2 times</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>3 times</td>
</tr>
<tr>
<td>Zinc</td>
<td>2 times</td>
</tr>
</tbody>
</table>

**Two-Per-Day Multivitamin Tablets**

**SUPER SALE PRICE**

Item #02315 • 120 tablets (two-month supply)

1 bottle $15.53 • 4 bottles $13.95 each

**Two-Per-Day Multivitamin Capsules**

**SUPER SALE PRICE**

Item #02314 • 120 capsules (two-month supply)

1 bottle $16.20 • 4 bottles $14.40 each

Each bottle provides a two-month supply.

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

Lycored LycoBeads® is a registered trademark of Lycored; Orange, New Jersey. SelenoExcell® is a registered trademark of Cypress Systems Inc. L-OptiZinc® and logo are trademarks of Lonza or its affiliates. Crominex® 3+, Capros® and PrimaVie® are registered trademarks of Natreon, Inc.

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.
24 RISKS OF SITTING TOO LONG
Americans spend more than half their waking time sitting, which can lead to deep vein thrombosis.

35 VINPOCETINE IMPROVES HEARING CAPACITY
A 2021 clinical study found that vinpocetine, a brain-boosting compound, also improved hearing capacity.

40 NUTRIENTS THAT PROTECT AGAINST MEMORY LOSS
Two nutrients have been clinically shown to improve memory function and stabilize cognitive dysfunction.

50 SAFE RELIEF FROM ACUTE PAIN
A 2020 human study shows a plant extract combination relieved musculoskeletal pain as quickly as acetaminophen.

60 PROBIOTIC THAT LOWERS CHOLESTEROL
In a clinical trial, a unique probiotic reduced LDL by 12% and total cholesterol by 9% in nine weeks.

70 MAGNESIUM MITIGATES MIGRAINES
Magnesium combined with riboflavin and CoQ10 helps prevent migraines and lessens their duration and severity.