Women OVER 40
Reclaim Youthful Energy

Page 20

PLUS:
Biggest Mistake Made by Longevity Enthusiasts
Page 7
With age, synapses that connect our brain cells wither.

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

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


Magtein® is a registered trademark of Magceutics, Inc. and is distributed exclusively by AIDP, Inc. Magtein® is protected under U.S. patents 8,178,118; 8,142,803; 8,163,301 and other patents pending.
ON THE COVER

HOW WOMEN OVER 40 CAN FEEL BETTER FAST

A clinically tested rhubarb extract has been shown to counteract common symptoms experienced by women over age 40. The addition of eight essential B vitamins further improves energy and mood.

FISH OIL & BRAIN HEALTH

Fish oil helps improve depression scores, reduce stroke damage, and preserve cognition.

WHAT’S IN YOUR MULTIVITAMIN FORMULA?

Commercial multivitamins often provide low potencies and fail to utilize enzymatically active forms of nutrients.

FIGHT BACK AGAINST VISIBLE SIGNS OF AGING

Oral ingestion of collagen peptides, solubilized keratin, and other nutrients helps restore skin, hair, and nails.

REDUCE JOINT PAIN & IMPROVE MOBILITY

A clinical trial of non-arthritic individuals shows improved joint pain, walking distance and speed, and knee range-of-motion with a blend of two plant extracts.

RAPAMYCIN UPDATE

Ross Pelton discusses the lifespan-enhancing effects of a drug in clinical trials called rapamycin and alternative ways of attaining its benefits today.

WORST MISTAKE MADE BY LONGEVITY ENTHUSIASTS

Readers of Life Extension Magazine® are dedicated health enthusiasts, but too many are making a mistake that results in tragic outcomes. Observations made over a 45-year period reveal easy steps to protect against common degenerative disorders, including type II diabetes.

IN THE NEWS

Astaxanthin reduces blood glucose; exercise protects against bone-related illnesses; calorie restriction improves immune health; long-term omega-3 supplementation may reduce Alzheimer’s risk.

ASK THE DOCTOR

Scott Fogle, ND, discusses blood tests for toxic metals, and two different genetic tests—one test uses nutrigenomics to assist with weight management goals, and the other offers nutritional recommendations based on your DNA.
N-ACETYL-L-CYSTEINE
Supports Healthy Respiratory Tract Function

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

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

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

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.

Item #01534
600 mg, 60 capsules
1 bottle $11.25
4 bottles $10 each

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 bioidentical 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, is 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. Frattellone, MD, RH, is the founder and executive medical director of Frattellone 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 Milano, 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, FAAFP, 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, is 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 full 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, has participated in groundbreaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction effects in animals and humans.

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

Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPath., FACP, is the Medical Director of the 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.
In with the Good

Out with the Bad

FLORASSIST® GI for a Healthy Digestion

Phages target bad intestinal bacteria, allowing beneficial strains to flourish.

FLORASSIST® GI provides a 7-strain blend of probiotics in a dual encapsulation formula to deliver beneficial bacteria and phages where you need them the most.

Dual-Encapsulation Delivery

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

Note: Color of inner capsule may vary but does not affect ingredients.

For full product description and to order FLORASSIST® GI with Phage Technology, 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.
When I founded Life Extension in 1977, our supporters had divergent theories about how to achieve optimal health and longevity.

Many advocated plant-based diets, others aggressive exercise, and some felt a single nutrient would confer meaningful benefits.

I was 22 years old back then. That early age gave me the privilege of observing what happens to widely differing individuals over a 45-year period.

When a Life Extension supporter contracted a premature illness or worse, I often knew a lot about their health history. I garnered more data from their family, physician, and in extreme cases, from autopsies I would arrange.

In virtually every instance, the disease had an underlying cause that was correctable.

What frustrated me is when supporters sent their medical records and asked for a lay opinion.

Many disregarded our suggestions to ask their physician to consider an important medication.

The typical reason was side-effect concerns that did not accurately reflect the low risk/high reward benefit (such as targeting systolic blood pressure under 120 mmHg).

When vascular inflammation, elevated lipids and/or high blood pressure were not corrected, the almost inevitable outcomes were cardiovascular diseases.

Please don’t let this happen to you.

Readers of this magazine have annual blood tests that function as a "report card" on how well they and their doctors have managed their health.

A bad result such as high blood sugar (measured by insulin + A1c + glucose) is often reversible. Yet I still encounter pushback when encouraging clinically validated solutions.

I’m going to describe a tragic case of an educated person whom I identified as having type II diabetes in 2002, but he chose to do nothing about it.

It’s one of many similar observations over the past 45 years.
The origin of many scientific discoveries is an observation combined with meticulous follow-up. John Snow, MD, is frequently identified as the founder of modern epidemiology. In the mid-1800s, cholera ravaged the city of London. Debates raged as to what caused it. Dr. Snow observed higher cholera rates in certain areas of London. He then narrowed it down to specific sources of drinking water.

By translating observations into detailed maps, Dr. Snow identified patterns of cholera occurring in areas where drinking water was contaminated by nearby cesspools.

Dr. Snow did not know that microscopic bacteria caused cholera. The “germ theory” of disease had not yet been recognized. He nonetheless discovered that contaminated water was killing thousands of London residents.

Few people of Dr. Snow’s era followed his admonition to boil drinking water.

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It’s Nearly as Bad Today

Rational decision making has not improved much on a relative basis since Dr. Snow’s time.

We live in the midst of an obesity/type II diabetes epidemic.

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Even slightly elevated blood glucose silently damages blood vessels.

Sometimes, excess insulin secreted by the pancreas suppresses rising blood sugar levels. This can cause glucose readings on a blood test to appear “normal,” or glucose may not reach a high enough level to diagnose type II diabetes.

An oral glucose tolerance test can be used to diagnose diabetes but is often not used because it consumes many hours of time. An overlooked ancillary method is to test blood for fasting insulin.

Life Extension believes an ideal fasting insulin level to be less than 5 μIU/mL.

If fasting insulin levels are elevated above 5 μIU/mL this may suggest an early diabetic state, despite glucose and A1c appearing “normal” or not reaching predefined conventional levels to diagnose diabetes. More practicing physicians today recognize that “prediabetes” causes nearly as much damage as full-blown type II diabetes.

Some physicians argue that the term “prediabetes” should be abolished and that anyone with fasting glucose over 99 mg/dL and/or A1c over 5.7% be treated with lifestyle modifications and drugs like metformin to prevent disease progression.

In 2021, the United States Preventive Task Force (USPTF) recommended screening for prediabetes and...
type II diabetes in adults aged 35 to 70 years who are overweight or obese.

Physicians were advised by the USPTF to offer patients with prediabetes effective preventive interventions.

These included both lifestyle interventions that focus on diet, physical activity, or both, and metformin to prevent or delay progression to diabetes in persons with prediabetes.6

You Don’t Get to Pick and Choose

Vascular diseases are our Achilles’ heel.

If a person lives long enough, they are likely to encounter arterial damage that predisposes them to stroke, cognitive deficit, heart attack, and/or impaired kidney function.

Pretending Does Not Work

In 2002, I urged an overweight friend to have a blood test panel that included fasting insulin.

When his glucose and A1c readings came back “normal,” he was elated to think he did not have type II diabetes.

I spoiled the day by pointing out that his fasting insulin was nearly 30 ulU/mL. It should ideally be under 5 ulU/mL.

I urged him to initiate metformin and vitamin D and lose some weight.

His comical response to my warning in 2002 was, “I’ll never have a blood test again.”

Move forward to 2016, and my friend started experiencing difficulties with his feet, which is often the first outward symptom of diabetes, i.e., lower leg neuropathy.

By 2018 the chronic foot pain reached a level that motivated him to have a comprehensive blood test. The results came back as full-blown type II diabetes with accompanying markers of vascular inflammation and lipid imbalances.

Several trips to the hospital spared my friend lower-leg amputation, as the nerves in his feet were significantly damaged. At the early age of 64-66, he is virtually crippled with relentless neuropathic pain.

Despite largely controlling his glucose and other diabetic blood markers (after developing severe neuropathy), he proceeded to suffer kidney and heart failure along with a host of other diabetic-related maladies. His feet never stop hurting.

When he complained in 2018-2020 about contracting so many diseases at the same time, I explained that elevated fasting insulin revealed underlying pathologies that were correctable long before clinically defined type II diabetes manifested.

This highly educated individual knows he could have avoided all of this by initiating anti-diabetic lifestyle and medical therapy in 2002.
Comprehensive blood tests can identify more than 17 independent risk factors linked to vascular disease, many of which can be easily corrected if simple steps are taken at the first sign of blood test abnormality.

Having discussed blood test results with Life Extension supporters since 1977, I’ve heard every excuse for why certain risk markers (like elevated LDL cholesterol) aren’t important to correct because the person engages in “other” healthy practices.

I am not a medical doctor, but a mere observer of people’s behavior patterns in response to adverse blood test findings.

People who make the effort to optimize their blood test “report card” derive real-world benefits.

Those who ignore the early warnings are fortunate if they make it to a hospital in time for a stent insertion or other procedure to open a blocked artery in their heart or brain.

Kidney damage is challenging to reverse, yet it can be detected via comprehensive blood testing and mitigated when caught at an early stage depending on the underlying cause.

The bottom line is that aging humans are vulnerable to a host of diseases that are detectable and preventable long before onset of disabilities and premature death.

Comprehensive Blood Tests at Discount Prices

Hurried physicians order blood tests that don’t always include critical measures of future disease risk.

They also lack the time to fully review results. Patients are often non-compliant with physician-suggested lifestyle and medication treatments.

Life Extension long ago developed Male or Female Blood Test Panels that cost a fraction of what commercial labs charge.

These comprehensive panels provide the best validated tests to assess risk for cardiovascular disorders, cancer, dementia, and organ failure.

Results come back in a few days and Wellness Specialists are available at no charge to discuss results as they relate to the published scientific literature.

I could write a book about my observations of different individuals over the past 45 years who needlessly suffered premature illnesses and death.

The next page describes the tests included in the Male and Female Panels that many of you do yearly... and take actions to correct when abnormalities are detected.

For longer life,

William Faloon
Co-Founder, Life Extension

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

Life Extension offers these same tests for $224 when the Male or Female Panel is ordered during the annual Lab Test Sale. This represents a savings of up to 90% compared to commercial labs.

**Regular Price: $299**
**Sale Price: $224**

**Add a Hepatitis C Antibody Test for only $34 during our annual Lab Test Sale.**

**LAB TEST SALE ENDS JULY 11, 2022**

To obtain these comprehensive Male or Female Panels at these low prices, call 1-800-208-3444 or visit www.LifeExtension.com/blood to order your requisition forms.

After you order and receive our form, you can visit a blood-draw facility we suggest at your convenience in your area or the Life Extension Nutrition Center in Ft. Lauderdale.

Lab tests are available in the continental United States and Anchorage, AK, only. Not available in Maryland.

IT’S THAT SIMPLE!
DON’T DELAY! CALL TODAY!

1-2-3 EASY

ORDER
Call 1- 800-208-3444 toll-free or visit LifeExtension.com/LabServices.

DRAW
For blood tests, take your form to a local lab. Collect at home for saliva, breath, etc.

REVIEW
Go over results for free with our Wellness Specialists by calling 1-800-226-2370. You may wish to review them with your doctor as well.

For Our Local Customers:
For those residing in the Ft. Lauderdale, Florida, area, blood-draws are also performed at the Life Extension Nutrition Center from 9 a.m. to 2 p.m. Monday through Saturday. Simply purchase the blood test and have it drawn with no wait! Our address is:

900 NORTH FEDERAL HIGHWAY
FT. LAUDERDALE, FL, 33304

Terms and Conditions
This lab-test service is for informational purposes only and no specific medical advice will be provided. National Diagnostics, Inc., and Life Extension contract with a physician who will order your test(s), but will not diagnose or treat you. Both the physician and the testing laboratory are independent contractors and neither National Diagnostics, Inc., nor Life Extension will be liable for their acts or omissions. Always seek the advice of a trained health professional for medical advice, diagnosis, or treatment. When you purchase a blood test from Life Extension/National Diagnostics, Inc., you are doing so with the understanding that you are privately paying for these tests. There will be absolutely no billing to Medicare, Medicaid, or private insurance.

MALE AND FEMALE PANELS

MALE — NOW WITH FERRITIN (LC322582)
CBC/Chemistry/Lipids Panel • DHEA-S • PSA (prostate-specific antigen)
• Homocysteine • C-Reactive Protein (high sensitivity) • ApoB • Free Testosterone • Total Testosterone • Estradiol • TSH for thyroid function
• Vitamin D (25-hydroxyvitamin D) • Hemoglobin A1c • Insulin • Magnesium

FEMALE — NOW WITH FERRITIN (LC322535)
CBC/Chemistry/Lipids Panel • DHEA-S • Estradiol • Homocysteine • ApoB
• C-Reactive Protein (high sensitivity) • Progesterone • Free Testosterone
• Total Testosterone • TSH for thyroid function • Vitamin D (25-hydroxyvitamin D)
• Hemoglobin A1c • Insulin • Magnesium

CARDIAC RISK ASSESSMENTS

NMR LIPOPROFILE (LC123810)
The NMR Lipoprofile directly measures LDL particle size and number as well as HDL particle number, total cholesterol, and triglycerides. It also provides a calculation of one’s risk of insulin resistance by assessing abnormalities in lipoprotein markers.$74.25

NMR LIPOPROFILE PLUS* (LC100049)
In-depth analysis of cardiovascular risk markers including: NMR LipoProfile, C-Reactive Protein, Myeloperoxidase, and Oxidized LDL.

OXIDIZED LDL (LC123023)
Oxidized low-density lipoprotein (LDL) cholesterol is one of the main causes of the formation of atherosclerotic plaque in the arterial wall. This blood test measures levels of oxidized LDL.

MYELOPEROXIDASE (MPO)* (LC123006)
The myeloperoxidase (MPO) test measures levels of an enzyme that oxidizes low-density lipoprotein (LDL) cholesterol, which could lead to increased arterial plaque formation.

ADVANCED OXIDIZED LDL PANEL* (LC100035)
This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic and cardiovascular disease as well as the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase, and Oxidized LDL.

OMEGA-3 INDEX COMPLETE** (LC100066)
Beneficial for everyone! People not taking omega-3/fish oil should check their baseline Omega-3 Index to see if it is in the desirable or concerning range. Those taking Omega-3/fish oil supplements should take the test to see if they need to adjust their dosage. You want to target a range of 8%-12% for your Omega-3 Index score.$74.25

CONDITION-SPECIFIC TESTS

PERSONALIZED AMINO ACID HEALTH ASSESSMENT** (LC100090)
An in-depth analysis of amino acid metabolism provides insight into various health concerns, such as malabsorption, GI dysbiosis, neurological issues and more, with a personalized report of diet and supplementation suggestions. Provided as an at-home urine collection kit.$224.25

COMPREHENSIVE VAGINOSIS PROFILE**† (LC100091)
This test uses a simple, self-collection swab to measure both healthy and unhealthy vaginal microflora to determine if there’s a problem. Susceptibility testing is performed on problematic microorganisms to determine effective remedies.$111.75

SALE

Annual Lab Test Sale
Through July 11, 2022

SAVE

25% on ALL Lab Tests

IT’S THAT SIMPLE!
DON’T DELAY! CALL TODAY!

ORDER
Call 1- 800-208-3444 toll-free or visit LifeExtension.com/LabServices.

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For blood tests, take your form to a local lab. Collect at home for saliva, breath, etc.

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BLOOD METALS PANEL BLOOD SPOT KIT **† (LC100092)  NEW $111.75
Convenient at-home test for blood levels of 8 important metals, providing insight into toxic metal burden and nutritional status with a quick and easy finger stick. Detects toxic metals: Lead, Mercury, Cadmium, Arsenic, Antimony and nutritional elements: Copper, Zinc, Selenium

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

NEUROTRANSMITTER PANEL-COMPREHENSIVE*** (LC100085) $221.25
Serotonin, Dopamine, Epinephrine, Norepinephrine, GABA, Glutamate, Glycine, Histamine, PEA, DOPAC, 3-MT, Normetanephrine, Metanephrine, 5-HIAA, Tryptamine, Tyrosine, Taurine, Tyramine. Alterations in neurotransmitters play a significant role in contributing to symptoms such as cognitive disorders, depression, anxiety, diminished drive, fatigue and sleep difficulties, craving, addictions, pain, and more. Not available in NY.

MTHFR/COMT GENETIC METHYLATION PROFILE** (LC100045) $111.75
Detect genetic variation in methylation, important for brain health, cardiovascular health, and more.

APOE GENETIC TEST FOR ALZHEIMER’S AND CARDIAC RISK** (LC100059) $111.75
Apolipoprotein E (ApoE) is an important regulator of cholesterol and triglyceride levels in your blood and supports lipid transport and injury repair in your brain. Genetically, E4 is the strongest risk factor for developing late onset Alzheimer’s disease. According to the National Institutes of Health, inheriting a single copy of ApoE4 increases the risk of Alzheimer’s disease by about three-fold. Inheriting two copies increases the risk by about 12-fold. In fact, almost 40% of AD patients have inherited an E4 allele.

FOOD SENSITIVITY PANEL-ELITE**† (LC100096) NEW $336.75
This in-depth food sensitivity assessment measures both IgG and IgA response to 208 foods.

CPP STOOL ANALYSIS (CPP) **† (LC100093) NEW $224.25
Good starting point for evaluating microbiome-related gastrointestinal concerns. Identifying presence of common pathogenic microorganisms associated with acute GI distress. Includes advanced bacteria/yeast culture, pathogen detection by PCR, and parasitology.

COMPREHENSIVE STOOL ANALYSIS (CSAP) **† (LC100083) $299.25
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MALE BASIC HORMONE PANEL (LC100012) DHEA-S • Estradiol • Total and Free Testosterone • PSA $56.25

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FEMALE BASIC HORMONE PANEL (LC100013) DHEA-S • Estradiol • Total and Free Testosterone • Progesterone $56.25

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LIVER FUNCTION
AST (SGOT) • ALT (SGPT) • LDH • Total Bilirubin • BUN • Creatinine • BUN/Creatinine Ratio • Uric Acid

BLOOD MINERALS
Calcium • Potassium • Sodium • Chloride • Iron

BLOOD COUNTS
Red Blood Cell Count • White Blood Cell Count • Hemoglobin • Hematocrit

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

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

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

* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit. Customer is responsible for obtaining dry ice.
** This test is packaged as a kit.
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Astaxanthin has Beneficial Effects on Glucose Metabolism

The journal *Nutrients* published the results of a randomized, placebo-controlled trial in which 53 participants with prediabetes took 12 mg of astaxanthin once daily or a placebo for 12 weeks.*

This study used a two-hour oral glucose tolerance test as a way of measuring *after-meal* sugar spikes.

The researchers found that glucose blood levels significantly decreased in these study subjects compared to what they were before astaxanthin supplementation.

Various markers of glucose metabolism, such as A1c, Apo E, and malondialdehyde-modified low-density lipoprotein, were beneficially reduced. The Matsuda index (a parameter of insulin resistance) also improved after supplementation with astaxanthin.

**Editor’s Note:** “Our results suggest that oral astaxanthin may have preventive effects against diabetes and atherosclerosis and may be a novel complementary treatment option for the prevention of diabetes in healthy volunteers, including subjects with prediabetes, without adverse effects,” the authors concluded.

* Nutrients. 2021 Dec 07; 13(12), 4381.
Exercise Helps Protect Against Bone-Related Illnesses

A study published in *Nature Regenerative Medicine* reported that exercise could help protect against bone cancer and other bone-related illnesses.*

Using innovative technology to recreate the strain that bone cells experience during exercise, researchers found that a single exercise session caused bone cells to activate DNA repair, the cell cycle, and the P53 gene (a gene that suppresses tumors and fights cancer).

Exercise also started ossification, a process that helps build new bone and strengthen existing bone.

**Editor’s Note:** “Individuals with chronic diseases like osteoporosis or cancer can benefit from exercise…since this limits the amount of bone loss and improves survival rates, respectively,” the authors stated.

* npj Regen Med, 2021; 6, 32.
Calorie Restriction Can Positively Affect Immune Health

Research reported in the journal *Science* explored the relationship of consuming fewer calories to human immune response and inflammation.*

The thymus gland produces immune cells known as T cells. However, the gland accumulates fat and produces fewer of these cells during aging, contributing to a decline in immune function.

Magnetic resonance imaging of the thymus glands of participants in a calorie restriction study revealed less thymus fat and a greater ability to generate T cells in healthy people who restricted calories by about 14% for two years. Those who didn’t restrict their calories experienced no change.

Although no alterations in gene expression were observed in the T cells of calorie-restricted individuals, changes were detected in fat tissue. Expression of the gene that encodes PLA2G7, a protein involved in a mechanism of inflammation, was inhibited by calorie restriction.

*Editor's Note:* “Moderately decreased food intake that does not cause malnutrition (caloric restriction) has beneficial effects on healthspan and lifespan in model organisms,” the authors stated.

Long-Term Omega-3 Supplementation May Reduce Risk for Alzheimer’s Disease

Use of omega-3 fatty acids over a longer term was associated with a reduced likelihood of developing late-onset Alzheimer’s disease among individuals with a genetic variant associated with increased risk, an article in the *European Journal of Neurology* reported.*

Researchers analyzed data from 1,670 individuals who did not have dementia upon enrollment in the Alzheimer’s Disease Neuroimaging Initiative cohort.

**Forty-one percent** of the participants in the study were carriers of the APOE4 variant of the APOE gene, which is the strongest genetic determinant of late-onset Alzheimer’s disease. Participants were followed for up to 10 years, during which progression from normal cognition or mild cognitive impairment to Alzheimer’s dementia was tracked.

Ten years or more duration of omega-3 use was associated with preserved cognition, as well as a reduction in cerebral amyloid and Alzheimer’s disease risk, among APOE4 carriers.

**Editor’s Note:** The authors concluded that, “These findings also indicated that genetic risk factors of Alzheimer’s disease could be modified, and their adverse effects can be attenuated and even neutralized by long-term omega-3 supplementation.”

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.

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How Women Over 40 Can Feel Better Fast
It starts around age 40. Some women feel a little “off,” while others experience significant changes in mood, energy, and stress.

This can signal the first stages of the hormonal rollercoaster that culminates in menopause.

Up to this point, women may experience any of 11 menopausal symptoms, including hot flashes, mood swings, sleep problems, and vaginal dryness.¹

Many women want to avoid conventional hormone treatments.

Scientists have developed a hormone-free alternative that can reduce symptoms of hormonal imbalance and the related symptoms of menopause.

The unique ingredient, a patented Siberian rhubarb extract, has been shown to improve all 11 menopause symptoms.

Human studies show that Siberian rhubarb extract can reduce overall symptom severity by up to 83%.²

This Siberian rhubarb can now be found in a formula with essential B vitamins also shown to improve energy, mood, and stress.
HOW WOMEN OVER 40 CAN FEEL BETTER FAST

Common Symptoms of Menopause

Most women go through menopause at around age 51.3

But any time after age 40, a decline in levels of the hormones estrogen and progesterone can begin to affect women physically and psychologically.3,4

Symptoms often include mood changes, low energy levels, and feelings of stress.3

Women may start experiencing these symptoms as early as in their mid-40s, a period known as perimenopause.5

During this time, regular menstrual cycling ceases and estrogen and progesterone levels sharply decrease.4

Experts have identified 11 common symptoms included in the Menopause Rating Scale. These symptoms, which may begin years before menopause, are:1

1. Hot flashes and excessive sweating,
2. Heart discomfort,
3. Sleep problems,
4. Joint and muscle discomfort,
5. Depressive mood,
6. Irritability,
7. Anxiety,
8. Physical and mental exhaustion,
9. Sexual problems,
10. Bladder issues, and
11. Vaginal dryness.

For women who prefer to avoid hormone treatments, there’s an alternative solution.

Scientists developed a hormone-free formula for women over 40 that combines a patented Siberian rhubarb root extract with eight essential B vitamins.

The Siberian rhubarb has been found to counteract all menopause symptoms while B vitamins additionally help improve energy and mood.

How Siberian Rhubarb Works

The root of the Siberian rhubarb plant is rich in compounds that bind to the same receptors in cells to which estrogen normally binds.6 By doing this, they trigger beneficial estrogen-like effects throughout the body, helping to relieve menopause symptoms.

There are different kinds of estrogen receptors, and the difference is critical:

• Activating the ER-alpha receptor can produce undesirable growth in some tissues, including initiating and promoting cancer.7 Activation of this receptor by conventional hormone replacement therapy is believed to be the cause of many of the ill effects of this treatment.8

• Activating the ER-beta receptor promotes beneficial effects on skin, brain, metabolism, blood vessels, and other tissues—and relieves menopausal symptoms.8,9 The proprietary patented extract of Siberian rhubarb has been shown in preclinical studies to selectively activate ER-beta but not ER-alpha.6

Siberian rhubarb extract has been recommended by doctors since the 1950s for relieving menopause symptoms, and its use is further supported by numerous clinical studies in recent years.10

In Germany, 6.7 million doses are sold annually. Scientists have reviewed safety data collected there over two decades and concluded that the extract is extremely safe for long-term use.10

Improving Common Symptoms

To test its benefits, researchers conducted a series of human studies.

In all of the following studies, taking 4 mg of the patented Siberian rhubarb extract daily resulted in significant improvement in every one of the 11 common menopause symptoms.2,11-13

• In a clinical trial of symptomatic perimenopausal women, taking Siberian rhubarb extract significantly reduced the number and severity of hot flashes within just one month. After three months, it led to a 54% reduction in overall severity of symptoms on the Menopause Rating Scale.11
After using the extract for one year, women who continued to take the product had a remarkable 83% reduction in overall severity of symptoms. These improvements were maintained in the women who continued taking Siberian rhubarb for a second year.²

In another study of perimenopausal women, taking Siberian rhubarb extract for just 12 weeks led to a reduction in daily hot flashes from a median of 12 to just two, an astonishing 83% decline.¹³

An observational study found that 56% of symptomatic perimenopausal or postmenopausal women who took Siberian rhubarb for six months reported major improvements, with pronounced improvements in hot flashes, sleep problems, and irritability.¹²

Compelling Clinical Data

Clinical trials demonstrate consistent findings in response to daily use of Siberian rhubarb extract. Some of the most dramatic benefits include:

- A decrease in the severity of sleep problems up to 69%.²,¹³
- An up to 67% reduction in urogenital symptoms,² which include bladder problems (such as incontinence or difficulty urinating), vaginal dryness, and sexual problems (including loss of sexual desire).¹⁴
- An average 58% improvement in physical and mental exhaustion after just three months and an average 73% improvement in feelings of exhaustion after a year.²
- A reduction in heart discomfort like palpitations by as much as 60% in three months.²,¹³
- Improvements in joint and muscle discomfort by up to 50%.²,¹³
- A 66% reduction in total anxiety scores, on a recognized scale, after three months.¹⁵

Relief for Menopause Symptoms and More

- Perimenopause and menopause are marked by 11 common symptoms, including hot flashes, irritability, bladder issues, and sexual problems.
- In addition, some women over 40 begin noticing hormone-related symptoms like mood problems, low energy, and feelings of stress.
- Human studies show that taking 4 mg of Siberian rhubarb extract provides relief from all 11 menopause symptoms and reduces overall symptom severity by up to 83%.
- Research has also shown that B vitamins can improve mood, energy, and stress symptoms.
- Combining all essential B vitamins with Siberian rhubarb provides an alternative to conventional hormone therapy to address a broad range of symptoms experienced by women over 40.
To provide additional benefits for women over 40, scientists combined this Siberian rhubarb extract with eight essential B vitamins:

- **B1** (thiamine),
- **B2** (riboflavin),
- **B3** (niacin),
- **B5** (pantothenic acid),
- **B6** (pyridoxine),
- **B7** (biotin),
- **B9** (folic acid), and
- **B12** (cobalamin).

These vitamins are needed to help the body carry out necessary daily functions, including protein, fat, and carbohydrate metabolism, DNA and RNA synthesis, red blood cell production, and neurotransmitter metabolism.16,17

**Each B Vitamin Supports a Vital Function**

In addition to improving symptoms relating to mood, energy, and stress, B vitamins support many vital body functions.17 Here are just a few:

- **B1** (thiamine) helps convert glucose, proteins, and lipids into energy, playing an essential role in metabolism.24
- **B2** (riboflavin) also helps convert nutrients into energy and provides antioxidant activity.25
- **B3** (niacin) plays a role in DNA repair, cellular signaling, and metabolism.26
- **B5** (pantothenic acid) helps produce hormones and converts proteins, carbohydrates, and fatty acids to energy.27
- **B6** (pyridoxine) helps metabolize amino acids and supports neurotransmitters and red blood cells’ production.28
- **B7** (biotin) regulates gene expression and is required for metabolism of fat and carbohydrates.29 It is also important for healthy hair and skin.30
- **B9** (folic acid or, for superior absorption, 5-MTHF31) is vital for cell growth, amino acid metabolism, production of red and white blood cells, healthy cell division, and proper fetal growth and development.32-35
- **B12** (cobalamin or methylcobalamin) is important for neurological function, development of red blood cells, production of DNA, and promoting healthy homocysteine levels.36-38

**Benefits of B Vitamins**

To provide additional benefits for women over 40, scientists combined this Siberian rhubarb extract with eight essential B vitamins:
B vitamins also assist in maintaining the function of the brain and nervous system and have been shown in numerous studies to reduce symptoms that include low energy and fatigue, mood swings, and stress, and improve mental well-being.\textsuperscript{18,19} 

**Deficiencies** in B vitamins may become increasingly common with aging due to declining food intake, medication interactions, and poor gastrointestinal absorption of nutrients.\textsuperscript{20} Direct oral supplementation can correct these deficiencies.

### Boosting Energy and Mood

B vitamins work together and are essential for healthy brain function and energy metabolism.\textsuperscript{16}

A review and meta-analysis of randomized controlled trials revealed that intake of different B vitamins was associated with reduced stress symptoms and may benefit mood in healthy and at-risk individuals.\textsuperscript{21}

An observational study following 3,503 older adults for an average of more than seven years found that higher intakes of vitamin B6 and vitamin B12 were associated with a lower likelihood of depression.\textsuperscript{22}

And a placebo-controlled study of healthy older women found that taking vitamin B1 daily led to a 69% improvement in general well-being and a 78% decrease in fatigue in just six weeks.\textsuperscript{23}

Combining B vitamins with Siberian rhubarb extract may provide greater relief for women over 40 suffering from symptoms like fatigue and anxiety.

### Siberian Rhubarb Improves Depressive Symptoms

In a clinical study, perimenopausal women with depressive mood symptoms had the following improvements after taking Siberian rhubarb extract.\textsuperscript{15}

<table>
<thead>
<tr>
<th></th>
<th>Siberian Rhubarb</th>
<th>Placebo</th>
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<tbody>
<tr>
<td>Patients with remission of depression symptoms</td>
<td>30.2%</td>
<td>1.8%</td>
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<tr>
<td>Patients with improvement of symptoms</td>
<td>60.4%</td>
<td>23.6%</td>
</tr>
<tr>
<td>Patients with no change in symptoms</td>
<td>9.4%</td>
<td>69.1%</td>
</tr>
</tbody>
</table>

### Summary

After age 40, many women begin to suffer from perimenopausal symptoms of low energy, mood problems, and feelings of stress.

As women approach menopause, most also experience some of the 11 common menopausal symptoms, including hot flashes, irritability, and sexual problems.

Multiple human studies show that 4 mg of Siberian rhubarb root extract provides safe, effective relief of all these common menopausal symptoms.

Scientists have developed a formula that includes eight essential B vitamins combined with Siberian rhubarb extract for women seeking hormone-free benefits after age 40.

If you have any questions on the scientific content of this article, please call a Life Extension Wellness Specialist at 1-866-864-3027.
Not All Extracts are the Same

Only the clinically studied form of Siberian rhubarb extract has been shown to relieve 11 symptoms of menopause. These are extracts that have been standardized to more than 54% rhaponticin and more than 27% desoxyrhaponticin.

References

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References

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Fish Oil and Brain Health

BY LAURIE MATHENA

Omega-3 fatty acids are known for cardiovascular benefits, such as lowering triglycerides and reducing inflammation.1-5

A meta-analysis found that people with the highest consumption of EPA and DHA (omega-3s in fish oil) have an associated 14% reduction in risk of death from any cause, compared to the lowest consumption.6

In addition, fish oil’s effect on brain health continues to make headlines. Here are a few recent highlights.

Protection Against Neurotoxins

A study published in the journal Neurology added to the evidence that omega-3s protect against neurotoxins, substances that damage the brain or nervous system.7

More than 1,300 elderly women underwent a brain MRI. In order to determine how much pollution exposure these women had, researchers used their addresses to assess their exposure to a category of air pollution (called PM2.5) for the three years prior to the MRI. This is known as a using a spatiotemporal model.

PM2.5 is known to have neurotoxic effects. Exposure is associated with smaller white matter volumes, which have been linked to strokes, cognitive decline, and dementia.8,9

The researchers examined the association between omega-3 blood levels and PM2.5 exposure with brain volumes.

Results showed that women with higher levels of omega-3 fatty acids had significantly greater volumes of hippocampus (an area of the brain associated with cognition and memory) and white matter (which contains the nerve fibers that connect brain cells).
Importantly, higher omega-3 levels reduced the negative connection between PM$_{2.5}$ exposure and white matter volumes in the total brain and in specific brain areas (frontal, parietal, and temporal).

These results indicate that women with higher levels of omega-3 fatty acids were protected against the brain-damaging effects of PM$_{2.5}$ exposure.

### Improved Depression Symptoms

In a meta-analysis published in *Translational Psychiatry*, researchers found that taking a daily omega-3 fatty acid supplement with a high ratio of EPA to DHA significantly improved symptoms of mild to moderate depression (including depressed mood, sleep problems, and fatigue) in pregnant and postpartum women.9

Omega-3 doses of the studies included ranged from 1 gram to 6 grams daily. These dosages were all well-tolerated.

### Better Stroke Outcomes

Several animal studies have found that resolvins (anti-inflammatory mediators the body produces from DHA and EPA) decreased brain damage caused by a stroke, and reversed stroke-induced neurological dysfunction.11

### Protecting Brain Structure

**Omega-3 fatty acids are a key structural component of all cell membranes.**

**Brain** cell membranes are especially rich in EPA/DHA.12

Electrical *signals* generated in brain cell membranes play a role in everything from simple movement, to language, reasoning, memory formation, and recall.

These *signals* cannot be conducted properly without *myelin*, which insulates the fibers of nerve cells.13

**Omega-3s** are an essential structural component of the *myelin sheaths* that cover nerve fibers.14

Preclinical data indicate that omega-3 intake impacts levels of *brain growth factors* that support the survival, development, and adaptability of neurons.15-17

A laboratory model study of Alzheimer’s disease found that even short-term omega-3 intake improved the *function of brain cells* in animals that had not yet developed *dementia* symptoms.18

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


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The dose used in human studies is one capsule, twice daily before meals.†

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<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Item #</th>
<th>Price</th>
<th>Bottle Size</th>
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<tr>
<td><strong>SUPER OMEGA-3 Fish oil</strong></td>
<td>EPA/DHA fish oil, sesame lignans and olive extract (Small, Easy-to-Swallow softgels)</td>
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<td>$24.75</td>
<td>240 softgels</td>
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<tr>
<td><strong>SUPER OMEGA-3 PLUS Fish oil</strong></td>
<td>EPA/DHA fish oil, krill, astaxanthin, sesame lignans, and olive extract</td>
<td>01988</td>
<td>$34.50</td>
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<tr>
<td><strong>SUPER OMEGA-3 Fish oil</strong></td>
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<td>01982</td>
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<td>120 softgels</td>
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</tbody>
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For full product description and to order all SUPER OMEGA-3, 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.

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What’s In Your MULTIVITAMIN FORMULA?
About 70% of Americans over age 64 take a multivitamin as a kind of insurance policy, to get minimum amounts of vitamins and minerals to help guard against deficiency.¹

A November 2021 report associated daily multivitamin use over three years with 60% slower cognitive aging.²

Another study found that, compared to non-users, those taking multivitamins had 5.1% longer telomeres on average.³ Shorter telomeres are a biomarker of aging linked to accelerated aging.⁴

These findings do not apply to all multivitamins. Many widely used multivitamins tend to have low potencies and may lack the optimal form of certain nutrients to provide anticipated benefits.

This is important because older people have a decreased capacity to absorb and utilize certain nutrients.⁵

Fortunately, American consumers have access to evidence-based blends of vitamins, minerals, and plant-based compounds at affordable prices.
Dangers of Deficiencies

Vitamins and minerals are cofactors for enzymes throughout the body. These enzymes are required to repair DNA, prevent oxidative damage, maintain cardiovascular health, and perform many functions essential for a healthy and long life. Up to 70% of Americans are deficient in one or more vital nutrient. Inadequate intake of these essential nutrients may increase the risk of age-related disease and premature aging.6

For example, the continuous creation of cellular DNA and RNA requires certain B vitamins that function as critical coenzymes.8

Higher Dosages

Many multivitamins contain the minimal dosage necessary to prevent diseases like scurvy and osteomalacia. Larger amounts of some nutrients are often needed to promote healthy longevity.

Inadequate dosages can be especially problematic for older adults who have more difficulty absorbing nutrients.5

An increasing number of Americans are switching to multinutrient formulas that provide vitamins, minerals, and plant extracts in higher dosages and more bioavailable forms.

The Best Forms of Nutrients

Folate is a B-vitamin vital cofactor for many enzymatic reactions, including those that detoxify homocysteine, a risk factor for vascular disease.9,10

Before folate can perform, it must be converted to its active form, L-methylfolate (5-MTHF).

Older individuals are challenged to convert dietary or supplemental folate into biologically active 5-MTHF. This helps explain why homocysteine levels often surge upwards in the elderly.11,12

A multivitamin should include folate in its bioavailable form, 5-MTHF. This means it is already active and can be easily absorbed and used by tissues immediately.

A superior multivitamin should also include beneficial nutrients not generally found in widely available formulas, such as:

- The mineral boron,
- The antioxidant alpha-lipoic acid,
- Plant extracts, such as the carotenoid lycopene, and
- Mixed tocopherols (natural forms of vitamin E that each provide different benefits).

Key Nutrients

Here are just a few of the nutrients that adults should look for in a multivitamin.

ZINC

Zinc supplementation supports a healthy immune system, as well as healthy inflammatory and free-radical defenses.13,14

VITAMIN C

This vitamin stimulates the production and function of immune cells.15,16 Vitamin C is also vital for the formation of collagen, the connective tissue found throughout healthy arterial walls, skin, bones, and teeth.15,17

SELENIUM

This mineral supports healthy inflammatory and immune responses and promotes cardiovascular, thyroid, and brain health.18-21 In fact, the thyroid gland is the organ with the highest amount of selenium per gram of tissue.19 Selenium comes in different forms: high-selenium yeast, Se-methyl L-selenocysteine, and sodium selenite. Each has distinct beneficial properties.

VITAMIN D

Vitamin D promotes immune function, as well as healthy cell division, cognitive function, and bone health.22-24 Minimum dosages to achieve what some consider “sufficient” potency are 2,000 IU daily taken with a meal that contains some fat. Many people today take an additional 1,000-5,000 IU of vitamin D3 daily to achieve optimal blood levels.
WHAT'S IN YOUR MULTIVITAMIN FORMULA?

VITAMIN A
This vitamin promotes healthy vision, formation of thyroid hormones, healthy skin and mucous membranes, the growth of bone, teeth, and soft tissues, and immune functions. Vitamin A is best obtained from two separate sources: the fatty acid retinyl acetate and the pigment beta-carotene.25,26

QUERCETIN
The flavonol quercetin inhibits the release of pro-inflammatory substances.27,28 It also promotes cellular health and function and may support the cardiovascular system by preserving the health and function of cells lining the insides of blood vessels.29

B VITAMINS
The B vitamins help break down nutrients the body’s cells need to carry out their daily functions.30 These vitamins work together, which is why a superior multivitamin should contain readily metabolized forms of riboflavin, vitamin B12, vitamin B6, folate, and others.

MOLYBDENUM
This mineral is required for several enzyme activities, including those that detoxify alcohol and metabolize sulfur.31 Most multivitamins don’t contain sufficient potencies of molybdenum.

MIXED VITAMIN E TOCOPHEROLS
The four forms of vitamin E tocopherols—alpha, beta, delta, and gamma—work together to optimize health. For example, combining alpha and gamma tocopherols is better for reducing chronic inflammation and oxidative stress than taking either alone.32 All four should be taken daily. These tocopherols are only available in formulas that utilize natural vitamin E, which is more expensive than synthetic vitamin E used in many commercial formulas.

ALPHA-LIPOIC ACID
This natural compound helps regenerate the free-radical scavenging properties of vitamin C and glutathione so they can fight against damaging free radicals.33–35 Most multivitamins contain no alpha-lipoic acid.

A scientifically designed multinutrient formula includes vitamins, minerals and plant extracts in the dosages and forms meant to help optimize their benefits to health and longevity.

WHAT YOU NEED TO KNOW

Better Multivitamins

- A good multivitamin should do more than help maintain basic life. It should support the body’s critical enzymes, promote health, and reduce the risk of early aging and premature death.

- Widely available formulas provide insufficient dosages and fail to include optimal forms, or the full array of nutrients to optimize health. This is a particular risk to older adults who have a decreased capacity to absorb and use many nutrients.

- Multi-nutrient formulas available today provide meaningful potencies of a broad array of health promoting compounds.

- Taken daily, multinutrient formulas can play an important role in promoting overall good health and longevity.
WHAT’S IN YOUR MULTIVITAMIN FORMULA?

Summary

American diets generally provide insufficient vitamins and minerals to support healthy longevity. Most adults could benefit from a good multivitamin. Widely advertised commercial formulas omit critical nutrients, may provide insufficient dosages, and do not use optimal forms of some nutrients.

Readers of this publication have long gained access to a blend of vitamins, minerals, and plant extracts that delivers the broadest array of health-promoting nutrients in their optimal dosages and forms.

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

18. Gesing A. The thyroid gland and the process of aging. Thyroid Research. 2015;8(Suppl 1):A8-A.
Lose What’s Weighing You Down

A supplement to keep your hunger in check… and a FREE app to motivate you to stick to the plan!

To download the Body Trim app, scan the QR code or visit the Apple & Android stores

Formulated with lemon verbena leaf and hibiscus flower extracts to promote satiety and encourage weight loss† in just 8 weeks.

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Metatolaid® is a registered trademark of MONTELOEDER, S.L.
† This supplement should be taken in conjunction with a healthy diet and regular exercise program. Individual results are not guaranteed and results may vary.

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HEALTHY BONES = HEALTHY HEART

THREE WAYS TO GET VITAMIN K

MEGA VITAMIN K2
Japanese physicians use high-dose vitamin K2 for those with challenges in maintaining healthy bone density. Mega Vitamin K2 costs 86 cents a day, based on the 4-bottle price, and provides in one daily capsule:

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Dolores
VERIFIED CUSTOMER REVIEW

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Vitamin K2 (MK-4) 1,500 mcg (for bone & vascular health)
Vitamin K2 (MK-7) 181 mcg (long-acting protection)
Vitamin K2 (MK-9) 43 mcg (added cardiovascular support)
Vitamin K2 (MK-6) 11 mcg (added cardiovascular support)

SUPER K ELITE Item #02335 • 30 softgels
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SUPER K is the best-selling vitamin K formula for bone and heart health. It costs only 23 cents a day, based on the 4-bottle price, and provides in one softgel:

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Vitamin K2 (MK-7) 100 mcg (long-acting protection)

SUPER K Item #02334 • 90 softgels
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Fight Back Against Visible Signs of AGING
Visible deterioration of hair, skin, and nails used to be unavoidable.\textsuperscript{1-3}

But there are ways to stop and even reverse this deterioration.

A factor involved with external degeneration is the loss of our structural foundations.\textsuperscript{4-7}

The most well-known of these structural proteins are:

- **Keratin**, a component of hair, nails, and the outer layer of skin,
- **Collagen**, the principal source of the skin’s strength, and
- **Elastin**, which allows tissues to resume their shape after stretching or contracting.

While thousands of dollars are often spent on external treatments, overlooked are oral compounds that have been shown to replenish these vital structural proteins in the hair, nails, and skin.
FIGHT BACK AGAINST VISIBLE SIGNS OF AGING

For women (ages 40-71) with obvious skin aging, the same keratin formulation reduced the appearance of lines and wrinkles, resulting in a:

- 30.4% increase in skin moisture,
- 16.8% improvement in skin elasticity,
- 17.9% improvement in skin smoothness, and
- Visible reduction in wrinkle depth among 58.3% of participants.

Collagen’s Vital Role

Collagen is a major component of nails and skin. It normally comprises 70% of the weight of the dermis, the inner layer of the skin. Collagen provides the structural foundation for elastin fibers, a key requirement for supple, flexible skin. Aging decreases the number of collagen fibers in the dermis and causes elastin fibers to fray and lose elasticity. This deterioration leads to wrinkled and sagging skin.

Restoring depleted collagen is not as simple as ingesting more collagen. The collagen first needs to be partially broken down through a special process in order to be bioavailable (absorbable).

Researchers developed a blend of bioactive collagen peptides (short chains of amino acids), derived from type I collagen, which is the most abundant form of collagen in the human body.

These highly bioavailable collagen peptides provide the building blocks for collagen synthesis and stimulate collagen and elastin production in the skin.

They also protect the skin by reducing the activity of metalloproteinase 2, a “protein-melting” enzyme that breaks down collagen and hastens skin aging.

The effect is a dramatic reduction of skin wrinkles. Scientists have also clinically demonstrated that these collagen peptides accelerate nail growth, reduce nail brittleness, and decrease frequency of nail breakage.

Collagen’s Clinical Benefits

Results from two placebo-controlled trials of female volunteers found that taking 2.5 grams of bioactive collagen peptides once daily for eight weeks resulted in healthier, more supple skin.

A Keratin Breakthrough

There’s a longstanding problem with taking oral keratin supplements to replace declining keratin levels in the body. The heat and other factors normally needed to process keratin rob it of its biological activity, rendering it all but useless.

But scientists have developed a form of keratin that is soluble and highly bioavailable.

This solubilized keratin is delivered to cells in the hair, skin, and nails. There, it replenishes keratin levels depleted in the aging process.

Laboratory studies show that solubilized keratin stimulates skin cells to proliferate at a rate up to 160% greater than they otherwise would, helping cells increase their own production of diminished structural proteins.

Clinical Keratin Studies

In a series of clinical trials, adult women were given either a daily placebo or 500 mg of solubilized keratin with additional vitamins and minerals (biotin, zinc, copper, and vitamins B3, B5, and B6).

After 90 days, clear improvements were seen to hair, skin, and nails, as demonstrated by the following results:

In one study of women with damaged, fragile, and stressed hair, the number of hairs lost during washing was reduced by 30%, hair strength increased by 12%, and hair appeared smoother and shinier.

In another trial, those who took this keratin had a:

- 47.1% subjective improvement in hair appearance,
- 47% reduction in the number of hairs that could be removed in a hair-pull test, and
- 9.2% increase in hair follicles in the growth phase.

Those taking novel keratin also had the following significant improvement to their nails:

- 87.5% reduction in tendency to break (compared with 28.5% among placebo subjects),
- 50% increase in nail hardness,
- 37.5% increase in nail smoothness, and
- 20.8% improvement in natural appearance.
Among the improvements were:

- 20.1% reduction in wrinkle depth,
- 65% increase in the accumulation of type I pro-collagen (a precursor of collagen),
- 18% increase in elastin fibers, and
- 7% improvement in skin elasticity (which persisted four weeks after treatment stopped).

A third study found that taking 2.5 grams of bioactive collagen peptides daily for six months reduced cellulite in women by 9% and decreased thigh skin waviness by 11.1%.²⁰

In a trial testing the effect on nails, healthy women who took 2.5 grams of bioactive collagen peptides once daily for 24 weeks had:

- 12% increase in nail growth rate,
- 42% decrease in the frequency of broken nails, and
- 64% reduction in brittleness.

Remarkably, four weeks after treatment ended, this reduction in brittleness extended to 88% of participants. This likely resulted from the effect of the peptides on the nail matrix.¹⁸

A whopping 80% of participants agreed that the collagen peptides improved their nails’ appearance and expressed complete satisfaction with the results.¹⁸

**Biotin For Better Nails**

Two other nutrients can act as catalysts in helping to rebuild damaged structural tissues: biotin and silicon.

A water-soluble B vitamin, biotin has been shown in animal²¹ and human²²-²⁴ studies to improve the hardness and integrity of nails.

In one study, taking 2.5 mg of oral biotin daily for an average of 5.5 months increased the firmness and hardness of aged, damaged nails in 91% of subjects.²²

In a similar study on women with brittle, splitting nails, taking 2.5 mg of biotin daily for at least one month improved nail integrity, brittleness, and splitting in 63% of subjects.²⁴

A third study of women with brittle and splitting fingernails showed that oral biotin reduced nail splitting and increased nail thickness by 25%.²³

---

**Healthy Skin, Hair, and Nails**

- Over time, the quality of our hair, skin, and nails deteriorates, leading to visible signs of aging.
- This occurs as a result of a decline in the quality and amount of the essential structural proteins keratin, collagen, and elastin.
- Taking highly bioavailable forms of solubilized keratin and collagen peptides can replenish these structural proteins.
- Results from clinical studies show that taking these compounds can reduce skin wrinkle depth by 20.1% and improve the strength, growth, and appearance of hair and nails.
- Two other nutrients, biotin and silicon, have been documented to complement these rejuvenation effects.
- Research shows that these oral ingredients can reverse the visible signs of aging that occur in hair, skin, and nails.
Silicon

Silicon also helps keratin and collagen to rebuild the cellular architecture of hair, skin, and nails.25-28

Scientists have suggested that hair strands with higher silicon content fall out at a lower rate and display greater brightness, and studies show that silicon use may improve hair strength and strands’ resistance to breakage.28

It is also associated with the synthesis of glycosaminoglycans, molecules that help create the substance that fills the space between collagen and elastin.26,28

Silicon is one of the most abundant minerals in the composition of nails.28 Soft and brittle nails can be an indicator of silicon deficiency.28

Taken together, keratin, collagen peptides, biotin, and silicon show great promise for rejuvenation of skin, hair, and nails, and reversal of visible signs of aging.

Summary

The loss of the amount and function of structural proteins as we age leads to thinning hair, sagging and wrinkled skin, and brittle, breakable nails.

Scientists have developed forms of keratin and collagen that are taken orally and help restore structural proteins from within, helping to maintain youthful structure and function with age.

Two additional nutrients, biotin and silicon, help restore the architecture that supports healthy hair, youthful-looking skin, and stronger nails.

These compounds can improve the strength, growth, and health of hair and nails, increase skin moisture and elasticity, and significantly reduce skin wrinkles.

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

10. ROXLOR. 2010.
Studies show that increasing AMPK activity encourages cells to stop storing fat and start burning it for energy. So we’ve created AMPK Metabolic Activator to help trigger AMPK, causing your body to burn unwanted fat—particularly around your abdomen.

For full product description and to order AMPK Metabolic Activator, call 1-800-544-4440 or visit LifeExtension.com

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

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Dryness and loss of firmness are outward signs of normal aging. One reason is loss of ceramides that are required for skin to retain its moisture and youthful suppleness.

**Skin Restoring Ceramides** contains wheat-derived ceramide lipids in an oral capsule that hydrate the skin and smooth the appearance of fine lines and wrinkles.

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Revive Hair, Skin, and Nails from Within

For full product description and to order **Hair, Skin & Nails Collagen Plus Formula**, call 1-800-544-4440 or visit www.LifeExtension.com

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The quickest way to betray your age is with a tired appearance...

Working from the inside out, **Hair, Skin & Nails Collagen Plus Formula** is an oral supplement with nutrients shown to benefit the hair, skin, and nails to keep them looking vibrant and healthy.

Rejuvenating nutrients include:

- **VERISOL® Bioactive Collagen Peptides®**—Stimulates the formation of new collagen and elastin to promote skin suppleness and elasticity
- **Cynatine® HNS Plus**—Provides solubilized keratin, zinc, B vitamins, biotin, and copper to boost production of keratin for strong hair, skin, and nails
- **Biotin**—Supports nail strength and integrity
- **Silicon**—For the formation of collagen and keratin molecules

References

Caution: Individuals with inborn errors of copper metabolism (e.g. Wilson’s disease) should avoid daily, chronic use of this product.

Item #02322 • 120 tablets
1 bottle $24 • 4 bottles $22 each

“I like what I see when I look in my mirror!”

Nancy
VERIFIED CUSTOMER REVIEW

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REDUCE JOINT PAIN & IMPROVE MOBILITY
Joint pain affects many adults, even those without arthritis, making daily activities like walking or bending difficult to perform.1-4

This reduces quality of life.

Most people suffering from chronic joint pain turn to over-the-counter pain medications for relief. These drugs can have dangerous side effects, including an increased risk of heart problems.5,6

Two plant extracts, tamarind and turmeric, have been shown to safely and effectively reduce joint pain and increase joint range of motion.

In a clinical trial of adults with non-arthritic knee joint pain following exercise, 400 mg of a blend of these extracts helped sufferers walk an impressive 137 feet farther in six minutes than those taking a placebo.7

Those taking 400 mg of the extracts also had greater flexibility, were able to climb stairs faster, and reported a stunning 42.8% decrease in scores on a joint-pain scale.7
What Drives Joint Pain?

Joint pain frequently stems from overuse or aging of the joints, which can lead to deteriorating cartilage, limited mobility, and inflammatory changes.8-13 Over time, this results in decreased range of motion, lower quality of life, and reduced muscle strength near the joints.14,15

For many suffering from joint pain, conventional pain medication is the only relief available. However, chronic use of these medications can have lasting effects, including heart damage and kidney failure.5,6,16

Researchers searching for safer alternatives found that two plants, tamarind and turmeric, contain compounds that block inflammation, leading to less joint pain and increased mobility.7

Turmeric’s Anti-Inflammatory Effects

Turmeric has been used in traditional medicine for thousands of years.17,18 Many of its health benefits come from use of turmeric’s rhizome (underground stem), which is an abundant source of polyphenols called curcuminoids.7 The best-known curcuminoid is curcumin, which has powerful anti-inflammatory effects.19,20

In animal and human studies, curcumin has demonstrated a number of benefits, including improvements in cardiovascular health, protection against neuro-degenerative diseases, anti-cancer activity, arthritis relief, and more.21-27

Tamarind Targets Pain

Tamarind is a plant that produces a fruit used in cooking around the world. It has anti-inflammatory properties that have been shown to alleviate pain in the joints, and it has long been used in traditional medicine to treat pain and inflammation.28,29

Tamarind is rich in another group of polyphenols called procyanidins, which have powerful antioxidant and anti-inflammatory effects.30,31 To test their impact on joint-pain relief, scientists combined these two anti-inflammatory powerhouses.7

Testing in Humans

A team of researchers from the U.S., Netherlands, and India conducted a randomized, controlled clinical trial to test a blend of extracts of tamarind seeds and turmeric rhizome.7 Ninety non-arthritic men and women who experienced knee joint pain and discomfort after physical activity were divided into three groups.

One received a placebo, one received 250 mg daily of the extract blend (in two 125 mg doses), and one received 400 mg daily (in two 200 mg doses). The study followed participants for 90 days and measured their progress in a few different ways:

- **Six-Minute Walk Test**: The distance a participant could walk in six minutes.
- **Stair-Climb Test**: The time it took a participant to walk up and down nine steps.
- **Visual Analog Scale**: A measurement of pain as described by each participant.
- **WOMAC (Western Ontario and McMaster Universities Arthritis Index) Scale**: A 24-question assessment of pain, stiffness, and physical limitations.
- **Range-of-Motion Knee Flexion**: The degree at which participants were able to bend their knee.
Improved Walking Speed and Distance

In any clinical trial, the primary endpoint is the measurement that is assessed to determine if the treatment works.

In this study, the primary endpoint was the Six-Minute Walk Test.

After 90 days, on average:

- Those in the placebo group were able to walk 18 feet farther than they could at the start of the study.
- Those taking 250 mg of the extract blend daily could walk 96 feet farther than at the start of the study.
- Those taking 400 mg of the extracts could walk a whopping 137 feet farther than when the study began.

The walking speed, on average, of those taking the extracts also improved over 90 days:

- Those taking a placebo walked just 0.04 mph faster,
- The 250 mg group walked 0.18 mph faster, and
- The 400 mg group increased their walking speed by 0.24 mph (from 2.51 mph to 2.75 mph).

Plant Extracts Improve Joint Mobility

- Millions of adults suffer from joint pain, which can make daily activities difficult to perform.
- Most pain medications only mask the underlying condition and can lead to other health problems, including heart disease.
- Tamarind and turmeric have been used in traditional medicine for years and have proven anti-inflammatory effects.
- In a clinical study of adults with non-arthritic knee joint pain following exercise, a blend of these extracts dramatically improved mobility, helping sufferers walk farther and faster. Subjects also had increased range of motion in the knee joint, less stiffness, and reported a 46% decrease in joint pain.
Results of the WOMAC scale were nearly as impressive, with the 400 mg group reporting a 38% reduction in pain, stiffness, and physical limitations, compared to 7% in the placebo group.

Increased Flexibility

A range-of-motion knee flexion test measures the angle in degrees that the knee can be bent away from a straightened position.

After 90 days, those taking the placebo had their knee flexibility increased by an average 0.82% improvement, compared to a 4.34% improvement in knee flexion from baseline in the turmeric-tamarind group. This represented an improvement in knee flexibility more than five times that of the placebo group.

The secondary endpoints confirm the results seen in the walk test: This extract blend decreases joint pain and stiffness while improving joint function and range of motion.
Summary

Many aging adults experience joint pain, which leads to impaired mobility and reduced quality of life. Researchers have found that extracts of tamarind and turmeric can improve range of motion and flexibility, and reduce discomfort while also addressing inflammation, without the potentially dangerous side effects of conventional pain medications.

In a study of 90 men and women with non-arthritic knee joint pain following exercise, a combination of these extracts led to improved walking speed and distance, enhanced range of motion, and decreased pain and stiffness after just three months. ●

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

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

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

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

For full product description and to order Fast-Acting Liquid Melatonin, call 1-800-544-4440 or visit www.LifeExtension.com
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Super Selenium Complex combines three complementary forms of selenium with vitamin E for additional antioxidant protection.

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Each bottle provides a supply that lasts more than three months.

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

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Get Moving!

Joint Mobility is a patent-pending blend of tamarind and turmeric extracts.

A placebo-controlled clinical trial* shows these plant extracts help:

- Support you to walk farther and faster
- Promote knee flexibility and range of motion
- Reduce occasional knee discomfort
- Inhibit inflammation to support continued joint health

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


Item #02424 • 60 vegetarian capsules
Each capsule provides 200 mg of tamarind-turmeric extract

1 bottle $18.75 • 4 bottles $17 each

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Your source for all your healthy footwear needs

The precisely designed footbeds of a Kenkoh Massage Sandal work by using acupressure to revitalize and stimulate the nerve endings in your feet. When worn daily, even for short periods of time, Kenkoh helps to increase circulation while providing a non-intrusive way of reducing pain in the feet, ankles, knees, legs, hips and back. The rejuvenating foot massage you receive with every step helps relieve stress and enhance your overall mood, offering optimal wellness from the ground up.

When wearing a Kenkoh, the soles of your feet will rest on roughly 1000 natural rubber “fingers” that will massage and stimulate key reflex points. This targeted therapy, known as reflexology, has long been practiced in Eastern cultures as a way of reducing pain, stress and anxiety.

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As progress in longevity science continues to accelerate, researchers are investigating three innovative strategies that can delay aging, reduce disease, and increase lifespan. Rapamycin, mTOR, and autophagy are at the forefront of the life extension revolution.

In this interview, Life Extension discusses these advances with pharmacist Ross Pelton, author of the book, Rapamycin, mTOR, Autophagy & Treating mTOR Syndrome.

LE: Ross, there’s been a lot of “buzz” lately about rapamycin, an FDA-approved drug used to prevent organ transplant rejection and treat certain cancers.¹ Why are people so excited?

Pelton: What has fascinated the scientific community is rapamycin’s ability to increase median life expectancy in animal models by up to 60%. The hope is that humans may gain significant improvements in health and increases in lifespan by taking rapamycin.

In addition, a clinical trial in elderly adults 65 years and older revealed that once-weekly dosing of everolimus (a rapamycin derivative with properties virtually the same as rapamycin) strengthened their immune system, evaluated by their enhanced response to influenza vaccine of about 20%.² This study is important because the immune system in all elderly people has declined significantly compared to the immune function of healthy adults in their 20s and 30s. The ability of rapamycin-like drugs to enhance the immune system in elderly adults is a major outcome.
LE: You said rapamycin can increase life expectancy by up to 60% in animals. Can you discuss that in more detail?

Pelton: When rapamycin therapy was initiated in middle-aged mice, median increases in life expectancy of up to 60% were observed. When rapamycin therapy was initiated in elderly male and female mice that were roughly the equivalent of 60-year-old humans, female mice achieved a 14% increase in lifespan and males achieved a 9% increase in lifespan. This may equate to an increase of more than seven years of human life.

LE: How does rapamycin work?

Pelton: Over the past 25 years, research into rapamycin’s mechanism of action has resulted in the discovery of a new understanding of cellular biology and the aging process. This research has revealed that mTOR and autophagy regulate the health and aging process of all living organisms.

Rapamycin inhibits mTOR and enables the process of autophagy to be activated, which restores youthful metabolic functions. Research reveals that rapamycin delays the onset of many age-related diseases that apply to human health.

In my mind, the mTOR/autophagy story is even more important than rapamycin. The understanding of mTOR and autophagy is revealing how we can delay the onset of age-related diseases and achieve significant increases in lifespan and healthspan.

LE: Can you explain what mTOR is for our readers?

Pelton: When calories are available to a cell, the protein mTOR sends signals that activate cellular metabolism, telling the cell to use the available calories to build new proteins, new enzymes, fat stores, and other cellular components. When mTOR is activated, it initiates anabolic (building) processes of cell growth and proliferation.

LE: And what is autophagy?

Pelton: Autophagy is the process in which damaged proteins, excess fat, and other worn cellular components are broken down for reuse or elimination. Autophagy has been referred to as the cellular house-keeping process or cellular trash removal. The problem is that chronically activated mTOR (caused by relentless calorie ingestion) precludes healthy autophagy.

LE: Is that a serious problem?

Pelton: Very. Throughout 99.9% of mankind’s evolution, people did not eat three meals per day. However, these days, refrigeration and the widespread availability of processed and packaged foods have resulted in food being easily available all the time. Modern humans spend far more time eating compared to our ancient ancestors.

This results in constant over-activation of mTOR and insufficient functioning of autophagy. This imbalance is a major contributing factor underlying today’s epidemic of health problems, such as cancer, obesity, and type II diabetes. I’ve chosen to call this condition “mTOR Syndrome”.

LE: How can people correct this imbalance? With intermittent fasting?
**Pelton:** Even aggressive fasting does not always induce meaningful reductions in body fat. Many individuals need additional support with compounds that induce beneficial autophagy. *Rapamycin* is a leading candidate. By inhibiting mTOR, rapamycin mimics calorie restriction and fasting.

**LE:** Does that mean rapamycin can help with weight loss?

**Pelton:** Yes. Research indicates that rapamycin may reduce fat mass and body weight as seen in cell and animal studies. And favorable findings from pilot studies in older people have prompted formal clinical trials to evaluate the anti-aging effects of rapamycin, including the ability to improve cardiac function and reduce visceral adiposity.

At this point, clinical trials have not yet been completed to determine how effective rapamycin might be as a drug to induce weight loss in humans. However, I will share my personal experience. In six months of taking rapamycin, I lost 15 pounds and noticed a substantial reduction in the “love handles” around my waist.

**LE:** What dose is optimal for weight loss?

**Pelton:** There may be up to 1,000 mTOR sites within each cell. When rapamycin is taken, it enters cells and binds to some of the mTOR sites, which results in partial inhibition of mTOR. The degree of mTOR inhibition is dose dependent. This is a critically important point. Some people may need to take higher doses of rapamycin to optimize the effect on mTOR and autophagy. One clinical trial is studying 5 mg and 10 mg weekly doses of rapamycin and using imaging scans before and after to measure how much visceral fat may be reduced.

**LE:** What is the most common dose being used by those seeking rapamycin’s potential longevity benefits?

**Pelton:** Pioneering physicians are discovering that taking 5-6 mg of rapamycin just once weekly partially inhibits mTOR. This enables autophagy to be expressed on a periodic basis, which provides a wide range of health benefits. When mTOR and autophagy are optimally balanced, every cell in the body can experience detoxification, renewal, and revitalization. Everything begins to work better.

Taking rapamycin for life extension is a very new field of science, so studies to determine the best dosage and frequency have not been conducted. Many life extension enthusiasts are self-experimenting by taking 5-6 mg once weekly. Eventually, lab tests to determine plasma levels of rapamycin will be readily available, which will help determine the best dose and frequency of taking rapamycin for each individual.

**LE:** At what age do you recommend people start taking rapamycin?

**Pelton:** This is a personal decision for everyone. However, I can offer some guidelines. mTOR is a master regulator of the growth activities in cells. Childhood, adolescence, and even young adulthood are periods of rapid growth. Hence, it would be inappropriate to have young people taking rapamycin. Although there is no agreed-upon age for people to start taking rapamycin, I don’t think people younger than 30 should.

**LE:** Can elderly people take rapamycin safely?

**Pelton:** Yes, but as the study of mice showed, the increase in life expectancy was greater when rapamycin was initiated in middle-aged mice. While we eagerly await results from ongoing human rapamycin studies, delays in suppressing excess mTOR and inducing autophagy may diminish the longevity-enhancing benefits.

**LE:** You mentioned that you take rapamycin. When did you start?

**Pelton:** I started taking 6 mg of rapamycin once weekly in June 2021. I had blood drawn for routine lab work in November 2021 and discovered that I was anemic. My red blood cell count, hemoglobin, and iron levels were below normal and my lymphocyte count was slightly low, which is an indicator of immune status. Based on my lab values, I reduced my rapamycin intake to 6 mg every other week. I rechecked my labs a month later and everything had returned to normal.

Why was 6 mg of rapamycin too high a dose for me? In addition to rapamycin, I engage in intermittent fasting most days, I exercise regularly, I take metformin twice daily and I take Life Extension® Senolytic Activator®. Based on the multiple components of my life-extension program, I discovered that taking 6 mg of rapamycin every other week is the best dose for me.

**LE:** Are there natural ways that people can inhibit mTOR and increase the expression of autophagy?
Pelton: Yes, there are. Remember, autophagy is activated when calories are unavailable. Intermittent fasting and time-restricted eating refer to eating protocols in which all your daily food is consumed within a shorter period of time. One of the most popular versions is the **16:8 protocol**, in which all your food is consumed within an eight-hour period, say from noon to 8 p.m. This leaves 16 hours (from 8 p.m. until noon the following day) of fasting, which enables autophagy to be activated.

**LE:** Do you go into greater detail about all this in your new book?

Pelton: Yes. I want to emphasize that decades of research on rapamycin’s mechanisms of action have resulted in a revolutionary new understanding of cellular metabolism, health, and the aging process.

My book, *Rapamycin, mTOR, Autophagy & Treating mTOR Syndrome*, reviews the history and scientific studies that explain rapamycin’s ability to improve health and delay the onset of age-related diseases. It also discusses alternatives to rapamycin for those who cannot find a physician willing to write them a prescription for rapamycin, and for people who want to wait for the results of clinical trials before initiating this medication.

My book also provides practical guidance on how to improve the mTOR/autophagy ratio, which holds the promise of increasing both healthspan and lifespan.

**LE:** Is there any new research that documents rapamycin’s effectiveness as a life extension drug?

Pelton: Yes, I want to report the exciting results from a study conducted by Dr. Vera Gorbunova, who is Co-Director of the Rochester Aging Research Center. Long-lived animals are known to have genes in common that negatively and positively affect lifespan. Dr. Gorbunova examined 10 prominent life extension therapies in mice and assessed how each intervention affected the genes associated with maximum lifespan. The interventions evaluated were rapamycin, 17-alpha-estradiol, pituitary-specific positive transcription Factor 1 (Pit1), growth hormone, rilmenidine, ascorbyl-palmitate, acarbose, calorie restriction, methionine restriction and protandim.

**RAPAMYCIN WINS:** Rapamycin had the greatest effect in reducing the activity of genes that have a negative effect on maximum lifespan AND, rapamycin also had the greatest effect at promoting the activity of genes that have a positive effect on maximum lifespan. This study provides powerful confirmation that rapamycin is a life extension drug that is ushering in a revolution in life extension and healthy aging. •

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**


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Ross Pelton is a pharmacist, a clinical nutritionist and the author of 12 books on topics on a variety of health topics. Ross’ website, bio and blog are at: [www.naturalpharmacist.net](http://www.naturalpharmacist.net)

For full description and to order *Rapamycin, mTOR, Autophagy and Treating mTOR Syndrome*, call 1-800-544-4440 or visit [www.LifeExtension.com/rapa](http://www.LifeExtension.com/rapa).

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In preclinical studies, fisetin:
- Mimics effects of calorie reduction²
- Targets longevity pathways³-⁶
- Extends lifespan of mice by about 10%⁷
- Removes senescent cells through senolytic action⁷
- Suppresses excess mTOR activation⁸

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References

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When middle-aged mice were given rapamycin, their median life expectancy was increased by up to 60%. Elderly mice taking rapamycin lived 9%-14% longer (equivalent of about seven human years).

Typical aging Americans suffer unwanted weight gain and metabolic disorders. Much of these pathologies relate to over-expression of mTOR and insufficient removal of cellular waste via autophagy.

This new book describes multiple ways to achieve a healthier mTOR/autophagy balance.

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**Rapamycin, mTOR, Autophagy and Treating mTOR Syndrome**

*By Ross Pelton, The Natural Pharmacist*


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New Tests to Guide Your Health Plans

BY DR. SCOTT FOGLE, ND

New lab tests can help determine if we need to increase intake of specific compounds and whether certain diets might be best for our bodies.

In this interview, Dr. Scott Fogle, ND, discusses testing for heavy metals, along with genetic testing that can assist with weight management and nutrient intake.

**LE:** What new tests are coming out for this year’s annual lab test sale?

**Dr. Fogle:** We have three exciting new tests. One looks at toxic metals and nutritional minerals. The other two are innovative genetic tests that can reveal beneficial data about yourself that you may not have known.

**LE:** Is it important to test for toxic metals?

**Dr. Fogle:** Yes, very. Our world is increasingly toxic, and toxic metals are some of the worst offenders when it comes to affecting your body in slow, insidious ways. These toxins build up in the body easily and affect different tissues, organs, metabolic enzymes, and more.

**LE:** Are certain metals more of a problem than others?

**Dr. Fogle:** Arsenic, lead, and mercury are some of the most toxic, and they are far too common. The Agency for Toxic Substances and Disease Registry creates a Substance Priority List that is updated every few years.
The top three items on their most recent list of 275 toxic substances are arsenic, lead, and mercury, in that order. This list is based on a combination of the toxins’ frequency, toxicity, and potential for human exposure.

**The Agency for Toxic Substances and Disease Registry 2019 Substance Priority List**

<table>
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<tr>
<th>2019 Rank</th>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>LEAD</td>
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<tr>
<td>3</td>
<td>MERCURY</td>
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Source: https://www.atsdr.cdc.gov/SPL/

Given their toxicity and that you may be exposed and not know it, it makes sense to check your levels periodically. The Blood Metals Panel Blood Spot Test Kit tests for all three.

**LE:** Why is arsenic number one on the Agency for Toxic Substances and Disease Registry list?

**Dr. Fogle:** It is highly toxic in its inorganic form and quickly deposits in the liver, kidney, spleen, skin, bone, and muscle. It is found in some water sources and irrigation water used for food crops. Other sources are smoking tobacco, rodent poison, contaminated shellfish, treated lumber for outdoor use, fungicides, pesticides, fireworks, and leather tanning.

**LE:** What other toxic metals does the test include?

**Dr. Fogle:** It looks for two other problematic metals, cadmium and antimony. Inhalation of cigarette smoke is a major source of cadmium exposure. It is also found in some metal hardware like nuts and bolts, batteries, paints, and other common industrial and household sources. Following exposure, cadmium concentrates in the liver, kidneys, and other tissues. It is thought to exert toxicity by disrupting zinc activity and has a very slow elimination rate from the body.

Antimony is a toxic element widely used in metal alloys found in industrial and household products. It is found in some metal hardware like nuts and bolts, batteries, paints, and other common industrial and household sources. Following exposure, cadmium concentrates in the liver, kidneys, and other tissues. It is thought to exert toxicity by disrupting zinc activity and has a very slow elimination rate from the body.

**Antimony** is a toxic element widely used in metal alloys found in industrial and household products. It likely interferes with cellular metabolism and accumulates in the liver.

**LE:** You mentioned that this test also checks levels of nutritional minerals?

**Dr. Fogle:** It does, and that’s one of the reasons I like this test so much. Not only do you get five toxic metals checked, but it also tests three minerals that support detox, immune health, tissue healing, and tissue integrity. Those are zinc, selenium, and copper.

With a lot of people taking zinc to support a healthy immune system nowadays, it is a good idea to check its level and to make sure zinc is not getting out of balance with copper. This test provides a helpful copper-to-zinc ratio.

Selenium is such an important mineral, and one of its abilities is to generate one of the most powerful detoxifiers the body has, glutathione. This detoxifier is like a bodyguard against toxins, binding to them and escorting them out of the body. Mercury is so toxic that it takes two glutathione molecules to escort a single mercury molecule out of the body. And selenium appears to protect other tissues from mercury and arsenic as well, by increasing excretion and inhibiting mercury accumulation.

**LE:** Mercury can be found in multiple forms. Which form does this test measure?
Dr. Fogle: This test checks the very toxic methylmercury form. Because of our polluted oceans and waterways, mercury is now found in many sea mammals and fish. The fish typically highest in mercury are swordfish, shark, tilefish, king mackerel, bigeye tuna, marlin, orange roughy, and Chilean sea bass.

LE: Does having more than one toxic metal present raise additional concerns?

Dr. Fogle: Unfortunately, yes. When added together, problems from toxic metals are exponentially worse due to the way these metals interact with each other. It’s like a gang of bad guys creating havoc, as opposed to just one bad guy. People with high levels of several toxic metals should seek out a doctor with expertise in toxic metals since detoxing multiple metals can be challenging and stressful on the body.

LE: Is this a blood test or urine test?

Dr. Fogle: It is a home finger-stick blood test kit. It is convenient, quick, and easy, and you don’t have to leave the house to do it.

LE: Can this test tell you whether you were recently exposed to toxic metals?

Dr. Fogle: It can. Circulating metals in the blood reflect recent exposure. Checking blood levels is looking at what you have been exposed to more recently.

LE: You mentioned two genetic tests that are being introduced. Can you tell us about those?

Dr. Fogle: One is very broad in scope, and one focuses on weight management. These tests use your genes to help predict what will likely be the most beneficial changes for you to make. They help suggest specific nutritional needs, laboratory recommendations, lifestyle recommendations, and even health precautions, such as avoiding gluten, all based on your individual DNA findings.

LE: How does the weight management test work?

Dr. Fogle: The NutriGen™ Genetic Weight Management Panel is a personalized genetic test for diet, wellness, and weight loss. Using nutrigenomics, it helps identify if genetic coding may be interfering with your weight management goals and provides insight into which dietary choices will have the most health benefits. It is the most complete nutrigenomic analysis on the market related to weight loss, response to exercise, food intolerances, nutritional needs, and more.

LE: What does the term nutrigenomics mean?

Dr. Fogle: It is the study of the complex interaction of nutrition and your genes, especially in relation to prevention and wellness. The genetic variations analyzed with this weight management panel are associated with 15 health and weight management categories: behavioral genetics in food intake, efficacy of exercise, flavor sensitivities, detoxification imbalances, supplementation intolerances, vitamin deficiency risk, matching your diet type, body shape genetics in overweight predisposition, inflammation, hormones, and metabolism of fats, carbohydrates, lipids, and glucose.

LE: How much do genes affect a person’s weight?

Dr. Fogle: Genetic factors determine between 40%-70% of an individual’s weight.

LE: Can the genetic weight management panel indicate which diet might work best for someone?

Dr. Fogle: Yes. Not everyone should be on the same type of diet. This test uses your genes to reveal the efficiency of the main diet types, such as a low-carb diet, low-calorie diet, and low-fat diet. These genetic differences are why people are constantly trying different ones to see which works best. Now, instead of trial and error, you can use your own genes to show you which diet is best to help you shed those extra pounds.

This test goes beyond suggesting a diet type. It generates a specific dietary plan from over 850 foods and suggests a daily calorie intake customized to you. It even provides a custom three-phase supplement plan based on your individual genetic profile and health concerns.

LE: That means it looks at vitamin and mineral needs in relation to weight management?

Dr. Fogle: Yes, it assesses your genetic need for vitamins A, B6, folate, B12, C, D, and E. It also looks at calcium malabsorption risk, iron overload and low iron risk, dysregulated magnesium and selenium levels, and sodium sensitivity.
Here’s a look at a sample report:

**Efficacies**

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**Matching Diet Type**

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**Risks**

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<td>Risk of iron overload</td>
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**Supplements**

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<td>Oxyntian</td>
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**Dr. Fogle:** The **Pro7 Advanced Nutrigenomic Panel** analyzes your genetics in **seven** key areas of health: methylation, neurotransmitter production, mitochondrial function, detoxification, neuroinflammation, inflammation due to environmental and dietary factors, and health precautions. It examines an amazingly wide range of your genetic code, then provides you with **genetically targeted nutritional suggestions.** Why guess when your genes can show you where and what to focus on?

**LE:** What can you tell us about the second genetic test?

**Dr. Fogle:** The **Pro7 Advanced Nutrigenomic Panel** analyzes your genetics in **seven** key areas of health: methylation, neurotransmitter production, mitochondrial function, detoxification, neuroinflammation, inflammation due to environmental and dietary factors, and health precautions. It examines an amazingly wide range of your genetic code, then provides you with **genetically targeted nutritional suggestions.** Why guess when your genes can show you where and what to focus on?

**LE:** This panel clearly covers a lot of genetic testing. Won’t that make it too expensive for most people?

**Dr. Fogle:** Years ago, this test would have been in the $3,000-$5,000 range. Fortunately for everyone, genetic testing has come down significantly in price, making this information more accessible than ever. By partnering with a premier genetic testing company, we are able to offer this panel for **$299** (and 25% off this price during the annual lab sale).

**LE:** Can you discuss some of the specific areas this nutrigenomic panel analyzes?

**Dr. Fogle:** Years ago, this test would have been in the $3,000-$5,000 range. Fortunately for everyone, genetic testing has come down significantly in price, making this information more accessible than ever. By partnering with a premier genetic testing company, we are able to offer this panel for **$299** (and 25% off this price during the annual lab sale).

**LE:** Can you discuss some of the specific areas this nutrigenomic panel analyzes?
and the health of our DNA. This test examines common gene variants which would indicate higher need for methylfolate and methylcobalamin (vitamin B12).

It also looks at supplements needed for proper neurotransmitter production, like B6, taurine, glycine, and methionine, and examines common variants in genes which are involved in the production, conversion, and breakdown of neurotransmitters.

**LE:** What about mitochondrial dysfunction, which is closely tied to aging and disease?

**Dr. Fogle:** Nutrients needed for mitochondrial and electron transport-chain function, like coenzyme Q10 (CoQ10), pyrroloquinoline quinone (PQQ), carnitine, and magnesium, are evaluated. So are nutrients needed for detoxification, including N-Acetyl-L-Cysteine (NAC), glutathione, lipoic acid, and antioxidants.

Detoxification is important for mitochondrial health because toxins target our mitochondria and nerve tissue first. The reason is that both lack the ability to protect and detoxify themselves. They are reliant on the overall detox capacity of the body to keep them healthy. If you aren’t taking in enough nutrients, toxins can overwhelm your mitochondria and nerve tissue and cause problems that will later manifest as disease and accelerated aging.

**LE:** You mentioned the vulnerability of nerve cells. Does this genetic test assess potential risk of inflammation of our nervous system and brain?

**Dr. Fogle:** Yes, genetic potential for neuroinflammation is assessed, along with supportive nutrients like curcumin, omegas, resveratrol, and quercetin. These nutrients are recommended for many people, but if you have a higher genetic potential for neuroinflammation, you should consider higher than standard dosing.

**LE:** More and more people are concerned about gluten and having too much histamine in their bodies. Are these areas also addressed with this test?

**Dr. Fogle:** Environmental and dietary inflammation risks like gluten sensitivity, ability to break down histamine, need for prebiotics and vitamins D and K, and expected benefits from curcumin are assessed. So are health precautions like risk from salt retention, concerning estrogen metabolites, and even hypothyroid risk. It is one of the most comprehensive genetic tests we have ever seen.

**LE:** Are these genetic tests also blood tests?

**Dr. Fogle:** No, these are simple at-home cheek swab tests which collect cells for DNA extraction. I hope people take advantage of these and the toxic metals test to take their health and wellness plans to the next level.

At Life Extension we have long advocated annual laboratory testing as one of the most important ways to optimize and maintain health.

These new diagnostic offerings from Life Extension, provide unique information on your personal health assessment.

Our Lab Test Super Sale starts on March 21, 2022 and ends on July 11, 2022.

**Dr. Scott Fogle** is the Executive Director of Clinical Information and Laboratory Services at Life Extension, where he oversees scientific and medical information as well as its laboratory division.

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

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<td>Tyrosine Tablets</td>
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### BLOOD PRESSURE & VASCULAR SUPPORT

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>01824</td>
<td>Advanced Olive Leaf Vascular Support</td>
</tr>
<tr>
<td>02004</td>
<td>Arterial Protect</td>
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<tr>
<td>02497</td>
<td>Endothelial Defense™ Pomegranate Plus</td>
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<tr>
<td>02320</td>
<td>NitroVasc™ Boost</td>
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<tr>
<td>00984</td>
<td>Optimal BP Management</td>
</tr>
<tr>
<td>01953</td>
<td>Pomegranate Complete</td>
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<td>00956</td>
<td>Pomegranate Fruit Extract</td>
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<tr>
<td>02024</td>
<td>Triple Action Blood Pressure AM/PM</td>
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<tr>
<td>02102</td>
<td>VenoFlow™</td>
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### BONE HEALTH

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>01726</td>
<td>Bone Restore</td>
</tr>
<tr>
<td>02123</td>
<td>Bone Restore Chewable Tablet</td>
</tr>
<tr>
<td>02416</td>
<td>Bone Restore Elite with Super Potent K2</td>
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<tr>
<td>01727</td>
<td>Bone Restore with Vitamin K2</td>
</tr>
<tr>
<td>01725</td>
<td>Bone Strength Collagen Formula</td>
</tr>
<tr>
<td>00313</td>
<td>Bone-Up™</td>
</tr>
<tr>
<td>01963</td>
<td>Calcium Citrate with Vitamin D</td>
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<tr>
<td>01506</td>
<td>Dr. Strum’s Intensive Bone Formula</td>
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<tr>
<td>02417</td>
<td>Mega Vitamin K2</td>
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<tr>
<td>01476</td>
<td>Strontium Caps</td>
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### BRAIN HEALTH

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<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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<tr>
<td>01524</td>
<td>Acetyl-L-Carnitine</td>
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<td>01974</td>
<td>Acetyl-L-Carnitine Arginate</td>
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<tr>
<td>02419</td>
<td>B12 Elite</td>
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<tr>
<td>02510</td>
<td>Brain Fog Relief</td>
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<tr>
<td>01659</td>
<td>CDP Choline</td>
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<tr>
<td>02321</td>
<td>Cognitex® Basics</td>
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<tr>
<td>02396</td>
<td>Cognitex® Elite</td>
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<td>02397</td>
<td>Cognitex® Elite Pregnancyolone</td>
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<tr>
<td>01540</td>
<td>DMAE Bitartrate</td>
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<td>02006</td>
<td>Dopa-Mind™</td>
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<td>02413</td>
<td>Dopamine Advantage</td>
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<tr>
<td>02212</td>
<td>Focus Tea™</td>
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<tr>
<td>01658</td>
<td>Ginkgo Biloba Certified Extract™</td>
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<td>01527</td>
<td>Huperzine A</td>
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<td>00020</td>
<td>Lecithin</td>
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<td>02101</td>
<td>Memory Protect</td>
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<td>01508</td>
<td>Regimint</td>
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<tr>
<td>01386</td>
<td>TruFiber®</td>
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### CHOLESTEROL MANAGEMENT

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>01828</td>
<td>Advanced Lipid Control</td>
</tr>
<tr>
<td>01359</td>
<td>Cho-Less™</td>
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<tr>
<td>01910</td>
<td>CHOL-Support™</td>
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<tr>
<td>01030</td>
<td>Red Yeast Rice</td>
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<tr>
<td>01304</td>
<td>Theaflavins Standardized Extract</td>
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<tr>
<td>00372</td>
<td>Vitamin B3 Niacin Caps</td>
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### DIGESTION SUPPORT

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>00709</td>
<td>Migra-Eeze™</td>
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<tr>
<td>01603</td>
<td>Neuro-Mag® Magnesium L-Threonate Caps</td>
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<tr>
<td>02032</td>
<td>Neuro-Mag® Magnesium L-Threonate Powder</td>
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<tr>
<td>00888</td>
<td>Optimized Ashwagandha</td>
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<tr>
<td>01676</td>
<td>PS (Phosphatidylserine) Caps</td>
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<tr>
<td>02406</td>
<td>Quick Brain Nootropic</td>
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<tr>
<td>01327</td>
<td>Vinpocetine</td>
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</tbody>
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### ENERGY MANAGEMENT

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>01923</td>
<td>Astaxanthin with Phospholipids</td>
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<tr>
<td>00893</td>
<td>Brite Eyes III</td>
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<tr>
<td>02323</td>
<td>Digital Eye Support</td>
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<tr>
<td>01514</td>
<td>Eye Pressure Support with Mirtogenol®</td>
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<tr>
<td>01992</td>
<td>MacuGuard® Ocular Support with Saffron</td>
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<tr>
<td>01993</td>
<td>MacuGuard® Ocular Support with Saffron &amp; Astaxanthin</td>
</tr>
<tr>
<td>01873</td>
<td>Standardized European Bilberry Extract</td>
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<tr>
<td>01918</td>
<td>Tear Support with MaquiBright®</td>
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### FISH OIL & OMEGAS

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>01937</td>
<td>Mega EPA/DHA</td>
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<tr>
<td>02218</td>
<td>Mega GLA Sesame Lignans</td>
</tr>
<tr>
<td>01983</td>
<td>Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans &amp; Olive Extract - 60 softgels</td>
</tr>
<tr>
<td>01988</td>
<td>Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill &amp; Astaxanthin</td>
</tr>
<tr>
<td>01982</td>
<td>Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans &amp; Olive Extract - 120 softgels</td>
</tr>
</tbody>
</table>
01985 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 enteric coated softgels
01984 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 enteric coated softgels
01986 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 240 softgels
01812 Provinal® Purified Omega-7
01640 Vegetarian DHA

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

GLUCOSE MANAGEMENT
01503 CinSulin® with InSea 2® and Crominex® 3+
01620 CoffeeGenic® Green Coffee Extract
02122 Glycemic Guard™
00925 Mega Benfotiamine
01803 Tri Sugar Shield®

HEART HEALTH
01066 Aspirin (Enteric Coated)
01842 BioActive Folate & Vitamin B12 Caps
01700 Cardio Peak™
02121 Homocysteine Resist
02018 Optimized Carnitine
01949 Super-Absorbable CoQ10 Ubiquinone with d-Limonene • 50 mg, 60 softgels
01951 Super-Absorbable CoQ10 Ubiquinone with d-Limonene • 100 mg, 60 softgels
01929 Super Ubiquinol CoQ10
01427 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 30 softgels
01425 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 100 softgels
01437 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 30 softgels
01426 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 60 softgels
01431 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 200 mg, 30 softgels
01733 Super Ubiquinol CoQ10 with PQQ
01859 TMG Liquid Capsules
00349 TMG Powder

HORMONE BALANCE
00454 DHEA • 15 mg, 100 capsules
00335 DHEA • 25 mg, 100 capsules
00882 DHEA • 50 mg, 60 capsules
00607 DHEA • 25 mg, 100 vegetarian dissolve in mouth tablets
01689 Arthro-Immune Joint Support
00965 Fast-Acting Joint Formula
02430 Fast Acting Relief
00522 Glucosamine/Chondroitin Capsules
02420 Glucosamine Sulfate
02424 Joint Mobility
01600 Krill Healthy Joint Formula
01050 Krill Oil
00451 MSM (Methylsulfonylmethane)
02231 NT2 Collagen™

IMMUNE SUPPORT
024115 Day Elderberry Immune
00681 AHCC®
02302 Bio-Quercetin®
02410 Black Elderberry + Vitamin C
01961 Enhanced Zinc Lozenges
01704 Immune Modulator with Tinofend®
02425 Immune Packs with Vitamin C & D, Zinc and Probiotic
02005 Immune Senescence Protection Formula™
00316 Kyolic® Garlic Formula 102
00789 Kyolic® Reserve
01681 Lactoferrin (Apolactoferrin) Caps
02426 Mushroom Immune with Beta Glucans
01903 NK Cell Activator™
01394 Optimized Garlic
01309 Optimized Quercetin
01811 Peony Immune
00525 ProBoost Thymic Protein A
01708 Reishi Extract Mushroom Complex
01906 Standardized Cistanche
13685 Ten Mushroom Formula®
01097 Ultra Soy Extract
01561 Zinc Lozenges

INFLAMMATION MANAGEMENT
01639 5-LOX Inhibitor with AprèsFlex®
02324 Advanced Curcumin Elite™ Turmeric Extract, Ginger & Turmerones
01709 Black Cumin Seed Oil
02310 Black Cumin Seed Oil and Curcumin Elite™
00202 Boswella
02467 Curcumin Elite™ Turmeric Extract • 30 veg capsules
02407 Curcumin Elite™ Turmeric Extract • 60 veg capsules
01804 Cytokine Suppress® with EGCg
02223 Pro-Resolving Mediators
00318 Serraflazeyme
01203 Specially-Coated Bromelain
00407 Super Bio-Curcumin® Turmeric Extract
01254 Zyflamend™ Whole Body

JOINT SUPPORT
02404 Arthro-Immune Joint Support
02238 ArthroMax® Advanced NT2 Collagen™ & AprèsFlex®
01617 ArthroMax® with Theaflavins & AprèsFlex®
02138 ArthroMax® Elite
00965 Fast-Acting Joint Formula
02430 Fast Acting Relief
00522 Glucosamine/Chondroitin Capsules
02420 Glucosamine Sulfate
02424 Joint Mobility
01600 Krill Healthy Joint Formula
01050 Krill Oil
00451 MSM (Methylsulfonylmethane)
02231 NT2 Collagen™

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

LIVER HEALTH & DETOXIFICATION
01922 Advanced Milk Thistle • 60 softgels
01925 Advanced Milk Thistle • 120 softgels
02240 Anti-Alcohol Complex
01651 Calcium D-Glucarate
01571 Chlorophyllin
01522 Milk Thistle • 60 veg capsules
02402 FLORASSIST® Liver Restore™
01541 Glutathione, Cysteine & C
01393 HepatoPro
01608 Liver Efficiency Formula
01534 N-Acetyl-L-Cysteine
00342 PectaSol-C® Modified Citrus Pectin Powder
01080 PectaSol-C® Modified Citrus Pectin Capsules
01884 Silymarin
02361 SOD Booster
## Products

### Longevity & Wellness
- **00457** Alpha-Lipoic Acid
- **01625** AppleWise
- **02414** Bio-Fisetin
- **01214** Blueberry Extract
- **01438** Blueberry Extract and Pomegranate
- **02270** DNA Protection Formula
- **02431** Essential Youth - L-Ergothioneine
- **02114** 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 and Beta-Sitosterol
- **01837** Pomi-T®
- **01373** Prelox® Enhanced Sex for Men
- **01940** Super MiraForte with Standardized Lignans
- **02500** Testosterone Elite
- **01909** Triple Strength ProstaPollen™
- **02029** Ultra Prostate Formula

### Minerals
- **01661** Boron
- **02107** Extend-Release Magnesium
- **01677** Iron Protein Plus
- **02403** Lithium
- **01459** Magnesium Caps
- **01682** Magnesium (Citrate)
- **01328** Only Trace Minerals
- **01504** Optimized Chromium with Crominex® 3+
- **02309** Potassium with Extend-Release Magnesium
- **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

### 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™
- **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

### Personal Care
- **01106** 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
- **01128** Life Extension Toothpaste
- **00408** Venotone
- **00409** Xyliwhite Mouthwash
- **02304** Youthful Collagen
- **02252** Youthful Legs

### Pet Care
- **01932** Cat Mix
- **01931** Dog Mix

### Probiotics
- **01622** Bifido GI Balance
- **01825** FLORASSIST® Balance
- **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** Theralec® 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
PRODUCTS

80179 Brightening Peptide Serum
80176 Collagen Boosting Peptide Cream
80156 Collagen Boosting Peptide Serum
02408 Collagen Peptides for Skin & Joints
80180 CoQ10 and Stem Cell Rejuvenation Cream
80169 Cucumber Hydra Peptide Eye Cream
02423 Daily Skin Defense
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
80206 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
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
01807 Advanced Appetite Suppress
02207 AMPK Metabolic Activator
02504 Body Trim and Appetite Control
02478 DHEA Complete
01738 Garcinia HCA
01908 Mediterranean Trim with Sinetrol™-XPur
01432 Optimized Saffron
00818 Super CLA Blend with Sesame Lignans
02509 Waistline Control™

WOMEN’S HEALTH

01942 Breast Health Formula
01626 Enhanced Sex for Women 50+
01894 Estrogen for Women
01064 Femmenessence MacaPause®
02204 Menopause 731™
02319 Prenatal Advantage
01441 Progesta-Care®
01649 Super-Absorbable Soy Isoflavones
02507 Youthful Woman 40+ with B-Complex
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.

For those already taking resveratrol, NAD+ Cell Regenerator™ provides 300 mg of nicotinamide riboside chloride.

Optimized NAD+ Cell Regenerator™ combines 300 mg of nicotinamide riboside chloride with resveratrol and other plant extracts.

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

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

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Multiple Benefits of

NAD+

• Energy production
• DNA support
• Gene expression (Sirtuin 1-7)
• Immune cell signalling

“I love this product. It’s helped clear my mind and given me tons of energy.”

Luis
VERIFIED CUSTOMER REVIEW

Item #02344
300 mg • 30 veg. caps.
1 bottle*

Item #02348
30 veg. caps.
1 bottle*
Educated consumers often choose the ubiquinol form of CoQ10 because of studies showing it is absorbed up to eight-times better!
7 MISTAKE MADE BY LONGEVITY ENTHUSIASTS
Observations made over a 45-year period reveal a mistake made by health enthusiasts that increase their risk of deadly disorders, including type II diabetes.

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A clinically tested rhubarb extract rapidly counteracts common symptoms experienced by women over age 40.

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Oral ingestion of collagen peptides, solubilized keratin, and other nutrients helps restore skin, hair, and nails.

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