How Bone Loss Speeds Aging

Plant Protein Reduces Muscle Loss

Restore Youthful Hair, Skin & Nails

Novel Chewable Mineral Lozenge

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REPORTS

26 RHODIOLA QUICKLY COMBATS FATIGUE
Fatigue is a common complaint heard by physicians. A new study shows that low-cost rhodiola extract improves symptoms of fatigue in less than a week.

34 CONVENIENT WAY TO MAINTAIN BONE HEALTH
Osteoporosis prevention requires sufficient intake of calcium, magnesium, zinc, boron, and vitamin D. Until now, four capsules had to be swallowed each day. A new chocolate chewable tablet simplifies skeletal maintenance by providing optimal potencies of bone-building nutrients.

54 PEA PROTEIN: A DAIRY-FREE OPTION
Some older adults require more protein to avoid frailty and muscle wasting. Organic pea protein powder provides a nutrient-dense, low-fat protein that is high in essential amino acids, with excellent digestibility.

64 REBUILD SKIN, HAIR, AND NAILS FROM WITHIN
Oral ingestion of collagen peptides, solubilized keratin, biotin, and silicon can help restore youthful skin, hair, and nails.

75 RESEARCH UPDATE: ASTAXANTHIN AND CANCER
Scientists have discovered that astaxanthin may combat cancer—including liver, colorectal, lung, and prostate malignancies—through six different mechanisms.

DEPARTMENTS

17 IN THE NEWS
Coffee drinkers may live longer; curcumin shows promise against zika; brain benefit of blueberries; green tea associated with lower mortality risk; high cholesterol triggers osteoarthritis; latest protocols in Disease Prevention and Treatment book.

83 HEALTHY EATING:
THE HAPPINESS DIET
Try these four sample recipes from the book The Happiness Diet, a guide to meals that not only counter depression, but also target mental clarity, energy, and quality sleep.

89 WELLNESS PROFILE: DANIEL COHN:
LIVING THE GOOD LIFE
Wine company CEO Dan Cohn’s rigorous work and travel schedule would pose a serious health risk if it weren’t for his lifestyle, philosophy, and supplement program.

95 BOOK REVIEW: THE WHOLE FOODS DIET

99 SUPER FOODS: KALE
Kale is one of the most nutrient-dense foods on Earth, boosting anticancer effects, oxidant reduction, and vision protection.
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Editorial
Editor-in-Chief • Philip Smith
Executive Managing Editor • Renee Price
Medical Editor • Hernando Latorre, MD, MSc
Senior Copy Editor • Laurie Mathena
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Michael D. Ozner, MD, FACC • Jonathan V. Wright, MD, Xiaozi Wei, PhD

Director of Scientific Affairs
Anita Boddie, PhD, FACN, RDN

Contributors
Michael Downey • Garry Messick • Jack H. Raber, Pharm D.
Susan Rogers • Jon VanZile • Margaret Willington

Advertising
Vice President of Marketing • Rey Searles • rsearles@lifeextension.com
National Advertising Manager • Leslie Stockton • 404-347-1755

Vice President of Sales and Business Development
Ron Antriasian • rantriasian@lifeextension.com • 781-271-0089

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Wellness specialists: 800-226-2370 • Wellness email: wellness@LifeExtension.com

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Item # 02107 • 60 vegetarian capsules

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Academy of Anti-Aging Medicine and has obtained John DeLuca, MD, DC, executive medical director of Fratellone Associates. Dr. Dzugan’s current cardiovascular surgery at the Donetsk Regional Medical Center in Donetsk, Ukraine. Dr. Dzugan’s current primary interests are anti-aging and biological therapy for cancer, cholesterol, and hormonal disorders. Patrick M. Fratellone, MD, is the founder and executive medical director of Fratellone Associates. He completed his internal medicine and cardiology fellowship at Lenox Hill Hospital in 1994, before becoming the medical director for the Atkins Center for Complementary Medicine. Carmen Fusco, MS, RN, CNS, is a research scientist and clinical nutritionist in New York City who has lectured and written numerous articles on the biochemical approach to the prevention of aging and degenerative diseases.

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. Bezek, MD, FACR, FAARRM, 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 US patents for a multivitamin/mineral supplement, an Alzheimer’s/dementia compilation, and a diabetic regimen.

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

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

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

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

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

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

Carmen Fusco, MS, RN, CNS, is a research scientist and clinical nutritionist in New York City who has lectured and written numerous articles on the biochemical approach to the prevention of aging and degenerative diseases.

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 hemopoietic 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, AZ-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.

Prof. Francesco Marotta, MD, PhD, of Montenapoleone Medical Center, Milan, Italy, is a gastroenterologist and nutrigenomics expert with extensive international university experience. He is also a consulting professor at the WHO-affiliated Center for Biotech & Traditional Medicine, University of Milan, Italy and hon. res. professor, Human Nutrition Dept, TWU, USA. He is the author of over 130 papers and 400 congress 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 considered a pioneer in functional and anti-aging medicine in Italy where he also works as a journalist and a writer.

Herbert Pardell, DO, FAAIM, practices internal medicine at the Emerald Hills Medical Center in Hollywood, FL. He is a medical director of the Life Extension Foundation.

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

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

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

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

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

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

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

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.

Paul Wand, MD, Fort Lauderdale, FL, is a clinical neurologist with special expertise in treating and reversing diabetic peripheral neuropathy and brain injuries from various causes.
Scientific Advisory Board

Örn Adalsteinsson, PhD, is chairman of the Life Extension® Scientific Advisory board. He holds a master’s and doctorate from the Massachusetts Institute of Technology (MIT). He has specialized in human therapeutics including vaccines, monoclonal antibodies, product development, nutraceuticals, formulations, artificial intelligence, hormones, and nutritional supplementation. He has also authored articles and contributed to peer-reviewed publications and served as an editor for the Journal of Medicinal Food.

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 obtained 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 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.

Frank Eichhorn, MD, is a urologist specializing in prostate cancer for 10 years. He has a private practice in Bad Reichenhall, Germany, and is prostate cancer consultant at the Urologische Klinik Castringius, Planegg, Munich. In his integrative approach to prostate cancer he works together with an international network of experts to improve treatment outcomes for prostate cancer patients with a special focus on natural and translational medicine.

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 new University of Central Florida Medical School.

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

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

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

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

This includes the pyridoxal 5’-phosphate form of vitamin B6 (the metabolically active form, shown to protect lipids and proteins against glycation reactions) and the most biologically active form of folate called 5-methyltetrahydrofolate (5-MTHF), which is up to 7 times more bioavailable than folic acid.¹

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Item #01945 • 60 vegetarian capsules

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Reference

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When people think about osteoporosis, they assume it refers only to decreased bone density and increased fracture risk.

The reality is far worse.

As skeletal mass is lost, bone-derived growth factors are released that may contribute to atherosclerosis, inflammation, calcification, and cancer.

Osteoporosis is mostly associated with women, but it also occurs in men. In both men and women, it lays the groundwork for chronic age-related illnesses. These pathologies almost always develop before bone loss is detected.

Maintaining skeletal integrity is a lifelong process that involves the dissolving of old bone and precise restoration by laying down minerals such as calcium.

In the absence of bone-building nutrients and hormones, growth factors that should remain in bone are instead released into the blood where they create systemic havoc.

Osteoporosis in men is underestimated. In the setting of newly diagnosed prostate cancer, evidence of significant bone loss has been observed virtually 100% of the time. Prostate cancer-cell propagation increases in response to growth factors released as bone remodels.

When osteoporotic fractures occur in older men, death rates are higher than women with fractures.

Awareness of osteoporosis risk motivates health-conscious women (and some men) to proactively protect against bone loss.

For those who want to reduce their intake of encapsulated minerals, a chewable tablet now provides optimal potencies with a natural chocolate-flavor taste.

This issue of Life Extension Magazine describes hidden causes of bone loss that can be rectified with lifestyle changes, hormone/mineral balance, and avoidance of bone-depleting drugs.
Both sexes can benefit from DHEA, a hormone that converts to estrogen and testosterone in a highly individualistic manner.31

What’s important to understand is that bone is not static. Our skeleton comprises energized tissues that are rich in bone-derived growth factors.

Keeping these growth factors in bone and out of soft tissues is essential for healthy longevity.

Overlooked Role of Magnesium

When Life Extension® was founded 37 years ago, most dietary supplements designed to prevent osteoporosis contained only calcium and a little vitamin D.

We argued that magnesium was also important to maintain aging bones.

A large volume of evidence now substantiates the role magnesium plays in bone health.

A study published in 2017 produced compelling findings showing that low serum magnesium concentration is independently associated with an increased risk of fractures in middle-aged Caucasian men.37

For this study, researchers evaluated 2,200 men over a median follow-up of 25.6 years. They found that men in the lowest quartile of serum magnesium had a two-fold increased risk of bone fractures, compared to those in the highest quartile. This study found that 63.4% of these fractures involved the femur—the major weight-bearing bone of the lower extremity.

Of 22 men in this study with above-normal magnesium levels at baseline, none experienced a fracture.

What’s revealing here is that only 1% of men had above-normal magnesium serum levels. This may indicate how widespread magnesium deficiency is in the general population.

The researchers who conducted this study commented that it would be difficult for aging people to obtain optimal blood

People may lose bone mass at any age, and it is a common part of normal degenerative processes.

Documented methods exist to slow and reverse bone loss.

As bone density declines, inflammatory cytokines are released into the blood such as interleukin-6, tumor necrosis factor-alpha, and interleukin 1.19-21

These pro-inflammatory factors may accelerate vascular disease and dementia while shortening overall longevity.22-26 It is important to note that inflammation, aging and cancer are inter-related.

Bone contains growth factors that are needed to maintain skeletal density. When bone breaks down, these growth factors are released into the blood where they can fuel cancer cell propagation.10,11

Testosterone plays an important role in maintaining bone density in men.27,28 Women rely more on estrogen and progesterone.29,30

Anatomy of the Femur

Medullary cavity
Epiphyseal line
Yellow marrow
Compact bone
Spongy bone
Compact bone
Periosteum
Articular cartilage

Nerves
Arteries
Veins
Compact bone
Distal epiphysis

Diaphysis

Yellow marrow

Spongy bone
Compact bone
Periosteum
Articular cartilage

Distal epiphysis

Epiphyseal line

Medullary cavity

Spongy bone
Compact bone
Periosteum
Articular cartilage

Nerves
Arteries
Veins
Compact bone
Distal epiphysis

Diaphysis
magnesium levels via diet. They suggested using supplements to ensure higher magnesium blood levels.

When looking at the data showing magnesium's multiple benefits, it makes sense to ensure one is obtaining optimal amounts of this mineral that is deficient in most American diets.

**Osteoporosis Runs Rampant**

**Bone fractures** are a leading cause of disability and ill health among the aging population. Fracture incidence worsens as more people are prescribed bone-robbing drugs in the face of epidemic nutrient deficiencies.

In American white women over age 50, roughly four in ten will experience a hip, spine or wrist fracture sometime during the remainder of their lives. Lifetime risk of fractures will increase for all ethnic groups as people live longer.

By 2020, one of every two Americans over age 50 is expected to have, or be at risk of developing, osteoporosis of the hip. Even more will be at risk of developing osteoporosis at any skeletal site.

The high prevalence of osteoporosis in women has caused many men to be complacent about their bone health.

We at *Life Extension* have observed clinical data indicating that bone loss is associated with coronary artery blockage, carotid artery/aortic valve stenosis and/or prostate cancer.

In other words, as bone mass breaks down and releases its contents into the blood, there is systemic ossification (bone formation) of soft tissues and widespread inflammation, along with bone-derived growth factors acting as biological fuel for cancer cell proliferation.

So in a nutshell, maintaining and restoring youthful bone density reduces not only fractures but also risk of the most common degenerative disorders.

**You Don’t Have to be a Victim!**

Data on osteoporosis incidence is frightening. One should find comfort that they have the ability to improve bone health at any age.

Bone loss is exacerbated in those who ingest excess phosphates (such as those found in soda beverages), consume too much alcohol, and/or smoke cigarettes.

Thyroid or parathyroid disorders can cause bone density loss as can sex hormone deficits (estrogen, testosterone, progesterone, DHEA).

Loss of bone mass is attributed to mineral deficiencies such as boron, magnesium and calcium.

Vitamin K2 is essential to keep calcium in bone and out of soft tissues like arteries and heart valves.

Those taking any drug that causes bone mass loss should be particularly vigilant. We describe common bone-depleting drugs in the osteoporosis article appearing on page 34 of this month’s issue.

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**The Bone Remodeling Process**

Lay people often mistakenly think of bone as calcified rock that slowly erodes with aging.

In reality, your bones “remodel” through a lifelong process where old bone tissue is removed from the skeleton and new bone tissue formed.

An imbalance in the regulation of bone “remodeling” results in disorders such as osteoporosis.

Bone tissue is removed by osteoclasts, and new bone tissue is formed by osteoblasts. Both processes utilize the signaling cytokines transforming growth factor-beta (TGF-β) and insulin-like growth factor (IGF).

When bone breaks down, it releases TGF-8 and IGF into the blood where these growth factors can fuel cancer cell proliferation.
New Way to Take Bone-Building Minerals

There are a number of well-designed formulas that provide calcium, magnesium and other nutrients for bone health. To obtain optimal potencies, consumers usually have to swallow about four capsules a day.

Minerals don’t taste bad the way B-vitamins and some amino acids do.

That prompted us to combine optimal potencies of calcium, magnesium, boron and other nutrients to create a pleasant-tasting chewable chocolate tablet.

I was surprised when I tried this mineral tablet because it tasted as good as sugar-free chocolate I’ve used in the past. Just two of these nice-tasting tablets provide the same potencies of nutrients as are found in four capsules of popular bone-building formulas.

No one should risk complications of osteoporosis when there are low-cost options available, with robust published scientific data to support efficacy.

For longer life,

William Faloon, Co-Founder Life Extension Buyers Club

New Tasty Chocolate Chewable Mineral Tablets

References


As We See It


N-acetyl-L-cysteine supports healthy levels of glutathione, a molecule utilized by all cells for protection against free radical damage and attacks from foreign compounds.

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

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

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Bone Restore combines skeletal-strengthening nutrients in a four capsule per day formula.

Retail Price | Your Price
-------------|------------
1 bottle      | $22        |
4 bottles     | $16.50     |
$14.25 each   |

Item #01726 - 120 capsules

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Bone-Building NUTRIENTS In a Tasty CHEWABLE TABLET

To obtain enough calcium and other bone-building nutrients requires swallowing four capsules a day.

You can now ingest these potencies with two Chewable Chocolate Tablets of the new Bone Restore.

You’ll be pleasantly surprised how good these Chocolate Chewables taste.

<table>
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Just two of the new Bone Restore Chewable Tablets provide:

Note: Recent recommendations for supplemental calcium dosing are around 700 mg based on typical amounts of dietary calcium consumed.

ITEM # 02123 • 60 chewable tablets • Non-GMO • Retail price $22 • Your price $16.50 • 4 bottles $14.25 each

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Chew tablets before swallowing. Keep out of reach of children. Do not exceed recommended dose.

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Super Bio-Curcumin® features a patented extract from turmeric root that absorbs up to 7 times better than standard curcumin. This product is ideal for those seeking to support normal cell-cycle growth and healthy inflammatory response.

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Coffee Drinkers May Live Longer

The largest study of its kind to date has revealed an association between drinking approximately three cups of coffee per day and a lower risk of mortality from any cause during an average follow-up period of 16.4 years.*

The study included 521,330 men and women who were enrolled in the European Prospective Investigation into Cancer and Nutrition study. Over an average 16.4-year follow-up, there were 41,693 deaths. Among men whose intake of coffee was among the top 25%, the risk of all-cause mortality over follow-up was 12% lower than those who did not drink coffee, and for women, the risk was 9% lower.

Mortality from digestive diseases was 59% lower for men in the top 25% and 40% lower for women.

Women who consumed the highest amount of coffee also benefitted from a 22% lower risk of circulatory disease mortality and a 30% lower risk of cerebrovascular disease mortality compared to nondrinkers.

Editor's Note: In a subset of subjects, an association was observed between higher coffee intake and lower liver enzyme levels, and for women, an association was also observed with lower C-reactive protein, lipoprotein(a) and glycated hemoglobin levels. "We found that drinking more coffee was associated with a more favorable liver function profile and immune response," observed lead author Dr. Marc Gunter of the International Agency for Research on Cancer. "This, along with the consistency of the results with other studies in the U.S. and Japan gives us greater confidence that coffee may have beneficial health effects."

Curcumin Shows Promise Against Zika

An article in *Antiviral Research* reports that curcumin, a compound occurring in the spice turmeric, acts against Zika and chikungunya, two mosquito-borne viruses.*

Cells were pretreated with curcumin or its analogs prior to infection with chikungunya or Zika. Researchers Bryan C. Mounce and colleagues observed a decrease in the viruses in association with pretreatment with curcumin in comparison with untreated controls. Curcumin was more effective when administered prior to or at the time of infection than after infection.

The compound, when directly administered to the viruses, reduced their infectiousness.

The team determined that curcumin interfered with the binding of enveloped viruses to cell surfaces. The data suggest that curcumin does not destroy viral particles, but alters their membranes, and that curcumin could affect host lipid membranes involved in viral infection.

*Editor's Note:* “Altogether curcumin holds significant promise in the treatment of enveloped virus infection, including outbreak viruses such as Zika virus and chikungunya virus,” the authors conclude.

Blueberry Brain Benefit

A randomized, double-blind trial has revealed increased neural response in men and women who supplemented with freeze-dried **blueberry powder** for 16 weeks.*

Participants between the ages of 68 and 92 with mild cognitive impairment who did not have dementia or other neurologic conditions received either a placebo powder or a powder that provided the equivalent of a half cup of whole blueberries, taken twice daily for 16 weeks. Functional magnetic resonance imaging (fMRI) administered during a task involving working memory was conducted before and after the treatment period to evaluate changes in the brain.

Compared to functional magnetic resonance imaging results at the beginning of the study, participants whose diets were supplemented with **blueberry** powder had significant *increases* in activity in three regions of the brain after treatment, while the placebo group experienced a small region of *decreased* activation.

**Editor’s Note:** Those who received blueberry also experienced improvement in one aspect of memory accuracy. The authors remark that the findings support the hypothesis that flavonoid compounds such as those found in blueberries contribute to improved vascular function.

Green Tea Associated With Lower Mortality Risk

An analysis of two ongoing prospective studies conducted in China found an association between regular consumption of **green tea** and a lower risk of cardiovascular and all-cause mortality during a median follow-up period of 8.3 years for men and 14.2 years for women.*

The analysis included 51,920 men enrolled in the Shanghai Men’s Health Study, established in 2002 to 2006, and 64,034 participants in the Shanghai Women’s Health Study, established from 1997 to 2000.

During the follow-up periods, 2,741 deaths were documented among the men and 3,776 fatalities occurred among the women. Compared to non-green tea drinkers, there was a 5% lower adjusted risk of mortality from any cause in association with drinking green tea regularly, and an 11% lower risk among green tea drinkers who never smoked.

**Editor’s Note:** When deaths from cardiovascular disease were examined, the reduction in risk over follow-up was 14% lower for regular consumers of green tea.

High Cholesterol Triggers Osteoarthritis

Besides its harmful cardiovascular effects, high cholesterol may also prompt mitochondrial oxidative stress, according to recent research.* This can kill cartilage cells, leading to osteoarthritis.

The study provided innovative proof-of-concept of the possible use of oxidant reducers to target mitochondria as a means of treating osteoarthritis.

“Our team has already begun working alongside dietitians to try to educate the public about healthy eating and how to keep cholesterol levels at a manageable level that won’t damage joints,” said researcher Indira Prasadam, PhD.

For the study, researchers used two animal models: one consisted of mice with altered genes that led to them having hypercholesterolemia (high cholesterol), the other was made up of unaltered rats. Both animal models were fed either a control normal diet or a high cholesterol diet. Surgery was then performed on the rodents to create a condition analogous to human knee injuries that lead to osteoarthritis.

Both animal models on the high cholesterol diet had worse osteoarthritis than the animals fed a normal diet. But the ones given mitochondrion-targeted antioxidants and the cholesterol-lowering drug atorvastatin had the least severe osteoarthritis of all.

Editor’s Note: “Just when we thought all the angles on osteoarthritis had been uncovered, a new lead like this comes along,” remarked Thoru Pederson, PhD, editor-in-chief of the FASEB Journal. “The focus of hypercholesterolemia, whether familial or sporadic, has, of course, always been on arterial disease. But here we have a fascinating new discovery.”

Just-Published Protocol in the Disease Prevention and Treatment Book

The scientists and writers at Life Extension® continuously update the online Disease Prevention and Treatment protocol chapters based on the latest research. Recent updates are briefly summarized here with complete versions of these chapters and references available online at:

http://www.lifeextension.com/Protocols

Peptic Ulcers

*Helicobacter pylori* (a bacterium) and excessive use of non-steroidal anti-inflammatory drugs (NSAIDs) are the most common causes of peptic ulcers. Fortunately, medical ulcer treatments are much more effective than they used to be thanks to new discoveries. Also, integrative interventions including deglycyrrhizinated licorice (DGL), zinc-carnosine, and vitamin C have powerful anti-*H. pylori* and ulcer-healing effects. Probiotics, particularly a strain called *Lactobacillus reuteri DSM17648*, appear to help control *H. pylori* and reduce inflammation. Treatment with probiotics can also enhance the ability of antibiotics to eliminate *H. pylori* infection and reduce drug side effects. Finally, lifestyle measures including smoking cessation, stress reduction, and avoidance of NSAIDs and excess alcohol help promote ulcer healing and prevent recurrence.
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- Support healthy blood sugar levels²
- Enhance heart health³
- Boost brain function⁴
- Support strong bones⁵
- Maintain healthy cholesterol levels already within normal range⁶

Each cost-effective bottle lasts over three months!

References

Note: EGCG is the acronym for epigallocatechin gallate, which is the polyphenol in green tea that has demonstrated the most robust health benefits.
Healthy sleep is one of the best ways to feel revitalized and maintain optimal health. Increasingly, research has shown the health benefits of a good night’s sleep. Melatonin is one of the most popular supplements for supporting sleep.

For optimal results, melatonin should be taken within 30-60 minutes before going to sleep.

**Melatonin 3 mg**
Item #00330 • 60 vegetarian capsules

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RHODIOLA
Quickly Combats Fatigue
One of the most common complaints of older adults to their physician is a lack of energy, or a feeling of being “tired all the time.” These are just a few of the symptoms of fatigue.

As many as one-third of adults suffer from fatigue symptoms that substantially interfere with their daily lives. In fact, it is so common in elderly people that many physicians either ignore it, or chalk it up to “normal aging.”

There have been growing concerns that if left untreated, fatigue can progress to a debilitating condition known as chronic fatigue syndrome. That means that a large group of otherwise healthy older adults are suffering from a progressive condition without adequate therapy.

But what if there was a way to start feeling like yourself again in as little as one week?

A new study shows that supplementation with an extract of the plant *Rhodiola rosea* produces statistically significant improvements in symptoms associated with fatigue—and it starts working in less than a week.

*Rhodiola* represents a safe and effective way to combat the real-world fatigue that so many adults face as they grow older.
Rhodiola Combats Prolonged and Chronic Fatigue

An article published online in February 2017 in the journal Complementary Medicine Research reports on an important study of subjects with prolonged fatigue (fatigue lasting between one and six months), and those with chronic fatigue syndrome (fatigue lasting longer than six months).1

This is important because of growing concerns that fatigue worsens without effective treatment.1,2

Successfully treating patients with fatigue lasting less than 6 months would be a major breakthrough. It could prevent prolonged fatigue from progressing to debilitating chronic fatigue syndrome.1

The investigators studied extracts of Rhodiola rosea, which has adaptogenic properties. Adaptogens are natural compounds that help your body adapt to stress—a major contributor to fatigue.

Rhodiola has long been popular in Eastern European and Asian traditional medical systems for its nervous system stimulation, antidepressive, fatigue-eliminating, and performance-enhancing properties.3 Research shows that adaptogens improve mental performance and enhance endurance in people with fatigue.14

Let’s look at the details of this 2017 study.1

Reduce Fatigue Symptoms in Just One Week

The 2017 study included 100 subjects with either prolonged or chronic fatigue.1 All subjects took 400 mg (200 mg twice per day) of Rhodiola rosea extract every day for eight weeks. They were then administered standard tests and received scores relating to fatigue and functional impairment.

By the end of the study, there was a significant decrease in all measures of fatigue and impairment used.1

The subjects didn’t have to wait long to see results. The fastest decline across all outcome measures occurred in the very first week of the study, and these measures continued to fall significantly between week four and the end of the study.1

Rapid improvement in levels of stress, sleep quality, anxiety/panic/phobia, depression, and executive function (the ability to sort priorities and execute intentions) were also seen. In addition, scores on the Clinical Global Impression scale showed that 83% of subjects reported themselves to be “very much” or “much” improved by the end of the study.1

The safety profile of this extract was also favorable.1

This was a large clinical trial with uniformly positive results, and included a substantial number of subjects with prolonged as well as chronic fatigue, making it groundbreaking in its own way.

This study did not include a placebo arm. Other studies were placebo-controlled and have shown encouraging results with Rhodiola extracts in the setting of fatigue and its major input, stress.

Stress-Reducing Adaptogen Combats Fatigue

Stress exacerbates fatigue, reduces sleep quality, induces depression, and generally robs us of energy.5-7 In fact, a study immediately after Hurricane Andrew in 1992 showed that physical symptoms of chronic fatigue were sharply increased by the brutal storm and its aftermath.8

Research shows the body’s major stress-response system (called the hypothalamic-pituitary-adrenal axis, or HPA), is strongly implicated in chronic fatigue syndrome, which helps to explain why stress seems to worsen the condition.9

As one of the best known and most thoroughly documented adaptogens, Rhodiola has a lot to offer people who are suffering from fatigue that is either brought on by stress or exacerbated by it. Clinical trials have produced some exciting results for Rhodiola extracts in this context.
One such study evaluated a population of people with life-stress symptoms. In this study, 101 subjects received 400 mg (200 mg twice per day) of *Rhodiola* per day for four weeks.

As with the 2017 study of *Rhodiola* in fatigued patients, all of the stress scores evaluated improved during the study, showing reductions in stress symptoms, disability, and functional impairment. And patients started seeing improvements in just three days! Remarkably, these improvements continued to grow for the entire four weeks of the study.

**The True Test of Stress Reduction**

There's hardly a more stressed, fatigued group than physicians doing night duty, when the biological clock is disrupted, meals are irregular, sleep is scarce, and stress is high.

In a study of the effects of *Rhodiola* on fatigue in 56 healthy young physicians, subjects received either a standardized *Rhodiola* extract or placebo, and then underwent five different tests of stress and fatigue at the beginning and end of a two-week period of night duty. The group receiving the *Rhodiola* extract experienced a significant improvement in all of these tests. This is a clear indication of *Rhodiola*’s stress- and fatigue-fighting adaptogenic properties.

Several other randomized, placebo-controlled studies have confirmed or extended these findings in people undergoing stress and experiencing fatigue—including college students during exam periods, military cadets in basic training, and otherwise healthy adults with stress-related fatigue. 

**What You Need to Know**

**Fight Fatigue with Rhodiola**

- Fatigue affects up to one-third of the US adult population, impacting quality of life, work productivity, and relaxation.
- Modern medical care has little to offer people with fatigue, and in fact may belittle their problems.
- *Rhodiola rosea* (golden root) has been revered as an *adaptogen* in traditional medical systems for centuries, targeting people with low energy, anxiety, depression, and stress.
- Studies now show that *Rhodiola* extracts act directly and indirectly on the body’s stress-response systems at a biochemical level, enhancing our ability to overcome stress and improve energy levels.
- A new open-label clinical trial just out in 2017 has shown across-the-board improvements in symptoms in *Rhodiola*-supplemented subjects with prolonged or chronic fatigue, validating and extending findings from earlier randomized, placebo-controlled studies.
- It is now clear that *Rhodiola*’s *adaptogenic* properties make it an ideal candidate for battling fatigue as well as the stresses that generate and sustain it.
- Anyone suffering unremitting fatigue for one month or more should explore the fatigue-resisting, stress-relieving powers of *Rhodiola*. 
Rhodiola’s Adaptogenic Properties
Fight Fatigue-Inducing Stress

Rhodiola rosea has a lengthy history in traditional medical systems in Eastern Europe and Asia, where it is considered an adaptogen.3,18 The term “adaptogen” has only recently gained credibility in our Western-dominated, cause-and-effect-oriented scientific communities, but the concept is now well-supported by key biochemical discoveries.4

A review in Current Clinical Pharmacology, a journal that publishes peer-reviewed articles on the latest advances in clinical pharmacology, defined adaptogens as, “A pharmacological group of herbal preparations that increase tolerance to mental exhaustion and enhance attention and mental endurance in situations of decreased performance.”4

In other words, adaptogens help your body adapt to stress. Adaptogens essentially help regulate the HPA axis or the body’s major stress response system.

Since stress is a major contributor to fatigue, helping your body better manage stress represents an important way to help combat fatigue.

Rhodiola rosea extracts have been found to improve key stress-related features of prolonged and chronic fatigue, including attention, cognitive function, and mental performance.4

Research now shows that adaptogens like Rhodiola protect against stress by modulating interactions between the hypothalamus, the pituitary, and the adrenal glands, where the stress hormone cortisol is produced.4

Biochemically, Rhodiola extracts up-regulate the “stress-sensor” protein called Hsp70, which is a core regulator of cell survival or death. When Hsp70 is activated, it inhibits the production of stress-induced nitric oxide, and modulates levels of circulating cortisol.

These changes in turn result in increased production of ATP, the energy-rich molecule that all cells use for power, which increases endurance and performance (mental as well as physical).4

It is these adaptogenic properties that give Rhodiola extracts their stress- and fatigue-specific effects. These studies all used slightly different outcome measures, but reached startlingly similar results, showing that Rhodiola rosea extract significantly improved:

- Physical fitness, mental fatigue, and performance on neurological and motor tests
- Self-assessed general well-being
- Scores on a specially-designed anti-fatigue index
- Scores on a standardized “burnout” scale
- Mental health measures
- Cognitive tests of attention
- Cortisol responses to stress

Studies in laboratory animals corroborate these effects. For example, Rhodiola extract significantly induced antidepressant-like, antianxiety-like, and energy-stimulating effects in mice.15 In rats subjected to a forced-swim test, animals supplemented with Rhodiola extract for four weeks demonstrated significantly increased swimming performance and longer swimming times, a demonstration of increased energy and endurance.16,17

The evidence shows that the way Rhodiola achieved these effects was by inhibiting oxidative stress in blood, liver, and skeletal muscles, while increasing stress-responsiveness (this was measured by higher levels of the stress-resisting protein Hsp70).16,17
**Summary**

Prolonged fatigue—the kind that interferes with daily work, home life, and pleasure—affects up to one-third of US adults. If not dealt with, it can progress to full-blown chronic fatigue syndrome.

There is no safe, acceptable pharmacological cure for prolonged fatigue, leaving sufferers to live with poor quality of life and often leading to significant anxiety and depression.

In traditional medical systems of Eastern Europe and Asia, such symptoms have long been treated with extracts of *Rhodiola rosea*, which is known as an adaptogen.

Modern science has shown that *Rhodiola* extracts enhance the body’s systems for dealing with chronic stress, which is a major contributor to all forms of fatigue.

Clinical studies show that *Rhodiola*’s adaptogenic properties significantly improve symptoms associated with fatigue. This includes improving scores on multiple scales of fatigue, cognitive performance, attention, and more, while reducing measurable stress levels.

In addition to the research described in this article, studies published by other clinicians have used a range of doses to evaluate the effects of *Rhodiola* on stress and cognitive fatigue.11-13,19

Those suffering from fatigue severe enough to interfere with quality of life, cognition, or attention may consider supplementing with 250 mg of standardized *Rhodiola* extract before breakfast and a second 250 mg capsule before lunchtime, both doses on an empty stomach. ●

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**References**


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Item # 01066 • 300 enteric coated tablets

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Do not exceed recommended dosage. Drink a full glass of water with each dose. Adults and children 12 years of age and over: take 4 to 8 tablets every four hours not to exceed 48 tablets in 24 hours, unless directed by a doctor. Children under 12 years of age: consult a doctor. **Reye's syndrome**: Children and teenagers who have or are recovering from chicken pox or flu-like symptoms should not use this product. When using this product, if changes in behavior with nausea and vomiting occur, consult a doctor because these symptoms could be an early sign of Reye's syndrome, a rare but serious illness. **Allergy alert**: Aspirin may cause a severe allergic reaction which may include hives, facial swelling, asthma (wheezing), or shock. **Stomach bleeding warning**: This product contains a nonsteroidal anti-inflammatory drug (NSAID), which may cause stomach bleeding. The chance is higher if you: are age 60 or older, have had stomach ulcers or bleeding problems, take a blood thinning (anticoagulant) or steroid drug, take other drugs containing prescription or nonprescription NSAIDs (aspirin, ibuprofen, naproxen, or others), have 3 or more alcoholic drinks every day while using this product, or take more or for longer time than directed. **Do not use** if you have ever had an allergic reaction to any other pain reliever/fever reducer. **Ask a doctor if**: stomach bleeding warning applies to you, you have a history of stomach problems, such as heartburn, you have high blood pressure, heart disease, liver cirrhosis, or kidney disease, you are taking a diuretic, or you have asthma. **Stop use and ask a doctor** if you experience any of the following signs of stomach bleeding: feel faint, vomit blood, have bloody or black stools, have stomach pain that does not get better, allergic reaction occurs, ringing in the ears or a loss of hearing occurs, pain gets worse or lasts more than 10 days, fever gets worse or lasts more than 3 days, any new symptoms appear, or redness or swelling is present in the painful area. **If pregnant or breast-feeding**, ask a health professional before use. It is especially important not to use aspirin during the last 3 months of pregnancy unless definitely directed to do so by a doctor because it may cause problems in the unborn child or complications during the delivery. Keep out of reach of children. In case of overdose, get medical help or contact a Poison Control Center right away.

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Prized for its potent adaptogenic properties, Rhodiola has long been used by elite athletes, soldiers, and even cosmonauts to enhance mental and physical stamina. 

Rhodiola Extract is uniquely standardized for adaptogenic compounds rosavins and salidrosides.

Life Extension’s® Rhodiola Extract provides 250 mg of Rhodiola rosea extract in each capsule.

Based upon the literature as a whole, as well as the experience of natural medicine practitioners well-versed in the use of adaptogenic herbs, daily doses of Rhodiola rosea (standardized to 3% rosavins and 1% salidrosides) in a range of approximately 250 mg to 500 mg, ideally in divided doses, are likely to yield sustained benefits for perceived stress and cognitive fatigue.

Rhodiola Extract

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Caution: Individuals with manic or bipolar disorder should not use rhodiola. Take early in the day if Rhodiola Extract interferes with your sleep.
The Overlooked Importance of BONE HEALTH
The reality is that more than half of adults over age 50 in the United States—including men—have bone loss or osteoporosis.¹,²

Up to one-quarter of men over 50 will suffer an osteoporosis-related fracture. Men who suffer from a major fracture are more likely than women to die from the same injury.³

Poor bone health predisposes us to fractures. A bone fracture not only creates painful loss of mobility, but is also life-threatening.

In older adults with hip fractures who are bedridden, risk of pneumonia and formation of deadly clots skyrockets.⁴⁻⁶

Osteoporosis is associated with an increased risk of other age-related conditions, including cancer,⁷ atherosclerosis,⁸ dementia,⁹,¹⁰ and depression.¹¹

This makes it essential for men and women to take active steps to prevent bone loss.

In addition to calcium and vitamin D, researchers have identified other key nutrients that promote bone formation, including magnesium, silicon, and boron.¹²⁻¹⁴

We need to be sure we’re getting these nutrients to optimize bone density—and overall health—as we age.
Calcium Stops Bone Loss

Most people associate calcium with bone health, and for good reason. Adequate calcium intake is needed for the proper mineralization, strength, and structure of bones. Despite this common knowledge, most Americans fail to get enough calcium in their diets.

Studies show that supplementation with calcium (in the form of calcium citrate or calcium carbonate) makes a substantial difference in the rate at which bone breakdown and loss of minerals occurs.

In multiple studies of early- and mid-postmenopausal women, supplementing with 800 mg-1,000 mg of calcium citrate daily was shown to effectively stop bone loss in the lower vertebrae and forearm, two common fracture sites in older adults. It also significantly improved bone density at other sites, including the hip and total body, compared to placebo recipients.

Research has also shown that several markers of bone resorption, or breakdown, decreased in the patients supplementing with calcium citrate.

A 2014 comparison study found that calcium citrate and calcium carbonate are effective in raising serum calcium levels and reducing markers of bone loss.

Ample calcium intake is a prerequisite for good bone health, but bones are made of more than calcium. They rely on a variety of nutritional and lifestyle factors to support their health.

One key nutrient that works in conjunction with calcium is vitamin D.

Vitamin D’s Bone Health Benefits

Most people don’t get anywhere near the recommended intake of vitamin D.

This is a major concern because vitamin D insufficiency (below 20 ng/mL) can accelerate osteoporosis, especially in aging men and women.

Current recommendations are that people with vitamin D levels below 20 ng/mL should supplement with 800-1,000 IU/day, along with adequate calcium intake.

Life Extension believes people should strive for precise individualized dosing (5,000-8,000 IU/day) to achieve a blood level between 50 and 80 ng/mL.

Vitamin D works hand-in-hand with calcium to reduce the risk of osteoporosis. It promotes intestinal absorption of calcium and helps direct how calcium is incorporated into bone. It also facilitates the transfer of calcium from the blood and other extracellular fluids to the surface of bones, where it makes them stronger and less likely to break. Vitamin D helps the body absorb zinc and manganese as well, which are trace elements essential for bone metabolism.

A 2017 study demonstrated that three years of calcium and vitamin D supplementation powerfully influenced both the mineral and the organic protein matrix of bone.

In a 2016 meta-analysis of eight studies involving nearly 31,000 subjects, supplementation with calcium plus vitamin D was found to reduce the risk of fractures. Together, these two nutrients produced a 15% reduction in the risk of any fracture, and a significant 30% reduction in the risk of hip fractures, which are so often the beginning of the end for frail, elderly people.

Calcium and vitamin D are especially important for people taking prescription drugs for osteoporosis.

One study found that up to 30% of those taking bone-protective bisphosphonate drugs did not respond well to treatment, which could be a result of low vitamin D levels. Non-responders tended to have low vitamin D and higher loss of a marker of bone loss.

This study showed that people with vitamin D levels lower than 30 ng/mL were more than four times as likely to fail to respond to drug treatment for osteoporosis.

Despite the consistency of these findings, many physicians who prescribe bisphosphonate drugs for osteoporosis fail to supplement their patients with these critical nutrients.

Magnesium Slows Bone Turnover

Magnesium is another essential component of the bone mineral matrix. About half of all magnesium in the body is stored in bone.

It’s not surprising that animal studies show a positive correlation between magnesium intake and bone mineral density. Magnesium deficiency has been shown to reduce the number of osteoblasts (cells that build new bone) and increase the number of osteoclasts (cells that break down bone).
The good news is that in animal models of postmenopause, restoring magnesium levels improved bone formation, reduced breakdown, and ultimately improved bone strength. Other studies have shown similar results in male animals as well.

Human studies support these findings, demonstrating significant reductions in bone turnover rates—particularly in markers of bone resorption—in both men and women who took magnesium daily.

**Zinc Promotes New Bone Formation**

Zinc is another key nutrient that is essential for bone health. Research shows that higher levels of zinc correlate with better bone mineral density, while lower blood levels have been associated with osteoporosis. That may be because zinc stimulates the activity of bone-forming osteoblasts, while suppressing bone-resorbing osteoclasts. Zinc also suppresses the bone-destroying effects of inflammatory compounds by modulating activity of the “master regulator of inflammation” nuclear factor-kappaB (NF-kB).

In an animal study of postmenopause, zinc supplementation led to potent increases in bone mineralization as well as improvements in overall bone structure. In humans, oral supplementation of zinc prevented significant decreases in whole-body bone density and bone mineralization in women with low zinc consumption.

**Manganese Inhibits Postmenopausal Bone Loss**

Manganese is a trace element with numerous properties that promote healthy bones.

In a rat model of postmenopause, manganese supplementation significantly improved both bone mineral content and bone mineral density in the femur, the large bone in the thigh.

And in a study of postmenopausal women, combination of manganese, zinc and copper with calcium stopped bone loss in its tracks.

**What You Need to Know**

**Key Nutrients for Bone Health**

- Osteoporosis is a growing problem in the aging population for both men and women.
- In addition to causing bone loss and increasing the risk for fractures, osteoporosis can lead to many other conditions.
- Osteoporosis is at least partially preventable by careful and appropriate use of nutritional supplements.
- While calcium and vitamin D remain the mainstays of bone nutrition, they cannot fully optimize bone health by themselves.
- Additional minerals are required for overall bone strength and mineralization, including magnesium, zinc, manganese, silicon, and boron.
- For the best bone-maintenance, osteoporosis-prevention program, it’s important to include the full profile of bone nutrients.
Biological Silicon Promotes New Bone Formation

Silicon is the second most abundant element in the Earth’s crust. Most people think of this element in terms of its role in computers and engineering applications, but it plays a significant role in a number of life-science areas, including bone mineralization.

Animal studies of postmenopause show that silicon supplementation stops bone loss both in the vertebral column and in the femur (upper leg), while promoting bone growth and mineral density in the femur and tibia (lower leg). Closer examination in one animal model of postmenopause showed that silicon improved bone quality by reducing bone resorption—especially in those with low calcium intake.

Human and animal studies indicate that silicon improves bone quality and strength and increases bone mineral density. Our bodies don’t absorb silicon very well in its elemental form. Fortunately, animal and human studies show that bioavailable silicon effectively promotes bone formation.

Understanding Osteoporosis and Loss of Bone Mineral Density

We typically think of bones as solid, static structures. In reality, they are living tissues that are constantly changing and responding to environmental stresses and other factors. With movement, exercise, weight gain, and other changes, bones grow stronger in some sections, while thinning in others.

Think of this process like a bank account. Cells called osteoblasts make deposits (leading to new bone formation and increased mineral density), while osteoclasts make withdrawals (leading to bone resorption and loss of mineral density).

In healthy adult bones, this process is kept in balance. But as we age, the withdrawals start to outweigh the deposits, which reduces bone-mineral density and increases osteoporosis and fracture risks.

Sex hormones like testosterone and estrogen are critical for maintaining this balance because they inhibit osteoclast activity (bone breakdown), and promote osteoblast activity (new bone formation).

The problem is that sex hormones decrease starting in midlife, and this decline accelerates at menopause and andropause—which means they’re not able to preserve and maintain bone strength and quality as well as they should. The result is an overdraft in the bone mineralization “bank account,” ultimately leading to thinner bones and a higher risk of fractures.

These hormonal changes are a critical and too often overlooked factor in the rising osteoporosis risk we face as we age.

But beware, many common drugs can also contribute to osteoporosis risk. Take a look:

- **Cancer-fighting drugs** that inhibit sex hormones, such as anti-androgen therapy (which reduces levels of testosterone) and aromatase inhibitors (which reduce estrogen activity), cause or contribute to bone loss, osteoporosis, and fracture risk.

- **Corticosteroids** (prednisone, hydrocortisone, dexamethasone, and many others) have a clear and important association with bone loss and increased fracture risk.

- **Warfarin** (Coumadin®) inhibits calcium from being incorporated into bone protein. At the same time, it also increases the risk of mineral deposits precisely where we don’t want them: in arterial walls.

- **Proton-pump inhibitors** (e.g., Nexium®, Prilosec®, Prevacid®) can slow calcium absorption from the stomach, depriving the bone matrix of the minerals it needs to support a positive bone mineral balance.

People taking any of these drugs may want to monitor their bone mineral status, as may people concerned about the impact of aging on their bones.

The most common bone mineral density test is DEXA. A problem with DEXA is that it can pick up calcification of blood vessels and arthritic regions and report this as bone density that does not exist. Life Extension® has long advocated for QCT (quantitative computerized tomography) bone mineral density testing. The challenge with QCT is it is not widely available like DEXA is.
Osteoporosis is a threat to all aging adults—including up to one-quarter of men.

Ample calcium and vitamin D intake are essential for supporting good bone health as we age, but we also need sufficient amounts of other nutrients in order to optimize both skeletal and whole-body wellbeing.

Studies show that magnesium, zinc, manganese, silicon, and boron contribute to increased new bone formation and reduced bone resorption (or both), while also promoting calcium and vitamin D effectiveness.

The best bone-maintenance, osteoporosis-prevention program includes the full profile of bone nutrients.

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

References


Lifestyle Tips for Better Bone Health

While a certain amount of bone loss may occur with aging, developing osteoporosis is not inevitable. Regardless of genetic risks, most of us can maintain strong, fracture-resistant bones by exercising regularly, receiving preventive health check-ups, and nourishing our bone-building cells with bioavailable calcium and other supportive nutrients.

- Both men and women should follow a program of regular weight-bearing exercise to strengthen their bones. Join a gym or consult with a physical trainer.
- Avoid smoking and excessive alcohol.
- Request a bone density test from your physician. QCT is superior to DEXA when measuring bone mineral density, but DEXA is often the only test available in many regions.
- Eat foods that are rich in calcium, other minerals, vitamins, and that are relatively low in phosphorus. Pay special attention to dark leafy vegetables, legumes, whole grains and, in moderation, milk products.
- Regardless of your gender, consider natural hormone replacement from midlife onward with appropriate hormones, under medical guidance.

It’s not easy to get in five servings of vegetables a day—and even if you do, cooking can destroy many of the protective compounds found in broccoli, Brussels sprouts, cauliflower, and celery.

**Triple Action Cruciferous Vegetable Extract** combines vital plant extracts that have been shown to protect cellular DNA.

The formula provides optimal potencies of cruciferous extracts like I3C (Indole-3-carbinol) and DIM (di-indolyl-methane) to favorably modulate estrogen metabolism,\(^1\)-\(^4\), along with apigenin.

For full product description and to order **Triple Action Cruciferous Vegetable Extract**, call 1-800-544-4440 or visit www.LifeExtension.com

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**Triple Action Cruciferous Vegetable Extract**
Item #01468 • 60 vegetarian capsules

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Bone Restore contains 7 essential bone-building nutrients in a delicious, sugar-free, chewable chocolate tablet.

Scientifically formulated Bone Restore helps build healthy bones and connective tissue for a stronger skeletal system.

Just two chewable chocolate tablets daily provide an array of bone supporting nutrients.

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Chew tablets before swallowing. Keep out of reach of children. Do not exceed recommended dose.

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Maintaining good oral hygiene is important for overall health. Unfortunately, brushing and flossing may not be enough.

**FLORASSIST® Oral Hygiene** provides the beneficial *S. salivarius BLIS M18™* oral probiotic that colonizes the mouth and inhibits the growth of unwanted bacteria.¹ ² ³

Just one great-tasting mint cherry lozenge of **FLORASSIST® Oral Hygiene** a day maximizes oral hygiene by optimizing oral pH, easing inflammation, and supporting healthy bacterial colonization throughout the mouth.⁴ ⁵

**FLORASSIST® Oral Hygiene** is a Probiotic Blend for Healthy Teeth and Gums.

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**References**


Contains milk. Keep out of reach of children.

Do not exceed recommended dose.

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For full product description and to order **FLORASSIST® Oral Hygiene**, call 1-800-544-4440 or visit www.LifeExtension.com

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HEALTHY TEETH AND GUMS Naturally...

Unlike commercial toothpastes containing chemicals such as triclosan, propylene glycol, fluoride and saccharine, Life Extension® Toothpaste promotes healthy teeth and gums with innovative natural compounds specifically formulated for optimal oral health.

Unique Ingredients in Life Extension® Toothpaste:

- Coenzyme Q10
- Green tea extract
- Hydrogen peroxide
- Aloe vera
- Xylitol
- Folic acid
- Lactoferrin

Life Extension® Toothpaste
Item #01278 • 4-ounce tube

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Most people obtain alpha-tocopherol in their multivitamin, but miss out on critical gamma-tocopherol. Gamma E Mixed Tocopherols provides a full spectrum of natural vitamin E.

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

For full product description and to order Gamma E Mixed Tocopherol with Sesame Lignans, call 1-800-544-4440 or visit www.LifeExtension.com

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Suzanne Somers
Author of
Two’s Company

Actress and best-selling author Suzanne Somers has written an inspirational new book.

A highly personal memoir, Two’s Company reveals Suzanne’s personal career and health struggles as she found success as an actress, conquered cancer on her terms and took on the drug industry with regard to the dangers of conventional hormone replacement therapy for women.

The author of more than 25 books, Suzanne has focused on enlightening the public about life-enhancing alternatives to conventional medical practice.

Two’s Company provides intriguing insight into Suzanne’s personal life, including her early relationship challenges and the uniquely successful marriage she has with Alan Hamel.

In this new interview with Life Extension®, Suzanne Somers discusses how she turned her serious health problems into a road-map for millions of women to improve their health to get the most out of life.
LE: You revolutionized menopause for millions of women by educating them about bioidentical hormones so that they could avoid hormone drugs that were shown to increase disease risks.

SS: My books made a significant dent in the synthetic hormone business, a fact I’m sure the drug companies were not enjoying. Since the introduction of bioidentical hormones, the synthetic hormone business has dropped by a whopping 72%. If I were them, I’d probably want to shut me up.

LE: That is a huge accomplishment and a major change in how women age. How did you discover bioidentical hormones?

SS: I couldn’t sleep. From my research for the books I was writing, I knew sleep was vitally important for optimal health. What was wrong? When you don’t sleep for nights on end, you’re just not in the best mood. My leg itched fiercely and I was gaining weight again. My sex drive, which is normally off, was nonexistent.

LE: So this was the first sign that something was wrong. What did you decide to do?

SS: I went from doctor to doctor and was offered sleeping pills, antidepressants, cholesterol-lowering pills, and diuretics. All the doctors had to offer was drugs and more drugs. One doc said to me, “The drug companies know best, dear!” I finally said to one doctor, “Are you joking? Is this the best you can offer women?” I left his office determined to figure out how to turn the problem of menopause into an asset.

LE: That’s a huge realization. What happened next?

SS: I suddenly became aware of how many pills my friends were taking: pills to go to sleep, pills to wake up, pills to lose weight, pills to take away menopausal symptoms, pills to get erections. No one was doing or feeling well, but doctors were providing the “solutions” to mask their patients’ problems and symptoms with pills, pills and more pills until they became walking, talking, confused messes. Not for me—I didn’t want to be all drugged up.

LE: It’s very dispiriting when you know the doctors don’t have the answers that you need. It shouldn’t be this way. There are good doctors out there but you really have to search them out.

SS: Finally, I heard about the endocrinologist Dr. Diana Schwarzbein in Santa Barbara. I sent in my blood work, then drove like a maniac on my appointment day. As she looked at my lab results, she said, “You poor thing—you must feel awful.” She explained that I had virtually no progesterone (the feel good hormone) and almost no estrogen. I was like a car running without gas and oil. We humans rely on precise regulation of our biochemistry and a woman’s hormonal makeup is particularly complex.

LE: You were very fortunate to find exactly the right doctor who could help you. So many people go from doctor to doctor and still don’t get better.

SS: I didn’t know it then, but this day would be a life-changer for me, the beginning of a huge new reinvention. The day I began to learn about bioidentical hormone replacement was the day I got on track to get my life back. Using natural bioidentical hormone replacement week by week, I eventually got “me” back. I didn’t itch, I didn’t sweat, and my weight was normalized. I felt good all the time, I was upbeat, and I had great clarity. By changing my diet and my thoughts, fixing my sleep, and replacing missing hormones, I dodged a bullet.

LE: That is a remarkable turnaround. It’s unfortunate that all the other doctors you saw weren’t able to solve this problem for you.

SS: I had never realized the profound effect of hormones on human health and well-being. And I never realized so little was known about menopause. Researching natural hormone replacement, I learned the critical importance of hormonal balance. In my cancer scenario, I was what is called estrogen dominant. This means that while my estrogen production was low, I stopped producing sufficient progesterone. When your progesterone production slows or stops and you become estrogen dominant, with no progesterone to control abnormal cell proliferation, you are set up for certain cancers.

LE: Life Extension has been reporting on this for years. It’s time the medical community caught up. Glad you are spreading the word and living by example.

SS: So many women enter menopause and spend the rest of their lives white-knuckling, dealing with debilitating symptoms. As I learned everything I could about replacement, I quickly realized that the pharmaceutical hormone business is designed to keep women essentially bandaged. Synthetic hormones don’t fix the problem, because they don’t balance the missing hormones and aren’t human hormones. They’re not a solution, just a way to calm women
down. And women get fat on this protocol. Women not knowing or understanding how it works figure it's just a midlife trade-off. These synthetic hormones are responsible for putting a woman's body into a state of imbalance rather than balance. Imbalance is where cancer has its opportunities. With this information, why would these dangerous hormones still be prescribed? This knowledge made bioidentical hormone replacement even more exciting to me. If menopausal women could safely rebalance our hormones, then we could essentially trick the brain into believing we are still reproductive.

LE: You were on the cutting edge when you discovered bioidentical hormone replacement. The amazing thing is that you were able to share your knowledge with millions of women through your books.

SS: What I loved the most was the win/win aspect. I had taken my problem and turned it into a great asset for myself and for others. My interviews with cutting-edge, knowledgeable doctors allowed women to age in a new way, without drugs, while keeping their memories intact, their sex lives active, and their beauty restored.

The book outraged many doctors. I believe because it exposed their ignorance of how this natural passage, menopause, really works, and of the realities of real hormone replacement. The solution is not in a synthetic pill that matches nothing a woman makes in her own body—that only confuses the body and it's not good for the human body to be confused. The drug companies took shots at me and ridiculed me. The book was a phenomenal success. I was becoming the messenger for a new kind of health, one that changed the way women age. I went on every talk show, and the response from the public was overwhelmingly positive. The book sold over one million copies! Without looking for it, I found a new life mission, taking care of women in a way no one had.

LE: A million copies means you were changing a lot of minds!

SS: A movement was starting to take place and it was growing fast. Women were demanding better treatment and relief from their doctors. They were calling their doctors in droves saying they had read Suzanne Somers's book and "wanted what she had." It has been my experience that doctors are "down on what they are not up on," and BHRT (bioidentical hormone replacement therapy) was not and still is not taught at medical school. So frankly I felt and feel that in many cases I knew more than a lot of the doctors about this subject. I was a walking, talking example of BHRT's health-giving, life-enhancing power. Other doctors came to my lectures, and they saw and heard that my research was science-based and backed up by credible doctors. They were aware that the information in my books was given to me by knowing doctors and scientists who gave generously of their time.

LE: Can you specifically talk about what changes you created for women?

SS: Up until then, women went through their passages with a pill for every ailment, and here I was saying there is another way. My life without drugs was inspiring to many women. The concept of putting back what you lost in the aging process with natural remedies appealed to so many. Hormone replacement has to be individualized. There is no one pill that fits all. What I need is different from what the next woman needs. Without hormonal balance, lives were being ruined, and women were losing themselves. I called hormone balance the "Juice of youth," the answer to good health.

LE: Let's step back a bit. Before your discovery of bioidentical hormones, you were diagnosed with cancer. For many people, a cancer diagnosis may seem like a death sentence. What was your reaction when you were diagnosed with cancer? In what ways did your life change?

SS: I decided cancer was a gift from which I would learn. From that moment I would eat as though my life depended upon it, which it does. I would change my life in every way. I had been working too hard into the early mornings. I was staying up regularly until three and four a.m. I’d get into bed afterward and then have trouble sleeping.

Sleep is a game changer. If you don’t sleep seven to eight hours a night, the repair work the body depends upon for life and health can’t happen. I was going to eat, sleep, and think like an athlete. A great athlete thinks to win. I would win. I would be able to use this experience to help others.

LE: Through your books and lectures, you have influenced millions of women to not accept aging as a part of their lives. You are a pioneer and an explorer and bring back lifesaving information from your journeys. Tell us about one of your breakthrough experiences of surviving cancer.
SS: I would become the first American woman to legally regrow my breast using my own stem cells and my fat. I had heard about Dr. Kotaro Yoshimura of the University of Tokyo—he had successfully regrown the breasts of over four hundred Japanese women using their own stem cells. In 2011 I took a chance and called him. Lucky for me he had heard of me and my books. He graciously agreed to come to America and teach the procedure to my friend Dr. Joel Aronowitz, who was involved with stem cells and research. The goal was to obtain permission from the FDA to qualify for a clinical trial to regrow my breast. It took three years for the permission to be granted, and as soon as we received it, we went to work to make it happen.

LE: You certainly don’t give up easily and are brave to try these medical procedures on yourself.

SS: It was about more than my becoming whole again; it was about a breakthrough for all women. At present, women in my position are offered implants or a TRAM flap (which often has very disappointing results and is generally unattractive, with much scarring and a long painful recovery). To do the surgery, they removed fat from my stomach, spun out the stem cells, discarded the weak ones, and injected the strong cells back into my removed fat. That fat was then injected in my once-cancerous breast until it was the same size as the other one.

LE: What were your thoughts after the operation?

SS: I had adjusted to losing half of my breast, figuring that being alive was the better option. But to become whole again would be a great experience. The surgery was a fantastic success. I awoke and looked down and saw myself perfect back together. Once again, I had two beautiful breasts, and they were all me. Nothing plastic or foreign. It was a huge step forward for women. Since then over a thousand women have been able to take advantage of this incredible procedure.

LE: Your readers are fortunate that you were curious enough to seek out this type of procedure and to take the risk of having it done.

SS: Once again, a problem became an opportunity.

LE: Now that you have optimized your health, written more than two dozen books and changed women’s health forever, what’s next for you?

SS: For the last year, I’ve been back performing nightly off and on in Vegas as well as on occasional random stages around the country. I’m grateful every minute for having achieved superb health. It allows me the energy, strength, strong bones and fast-working brain needed to be out there night after night at 70. I thought age 70 was supposed to be old, but for me it’s not. The body is a magnificent machine. What craziness to abuse something so valuable. That has become my life’s work: getting people to value their bodies. I want to change the thinking. Age is a number only; living at any age is about vitality and energy. And that’s how I live my life. I’m as young as my energy.

LE: What words of wisdom would you like to impart to our readers?

SS: Health is all we have, yet our choices belie that fact. We seem to take a great working body for granted, and that is a dangerous mindset. It takes a long time to wise up. You can’t give up. Ever! Happiness takes work. A great relationship takes work. Every choice matters; every thought creates. We are all in control of our joy. Inevitably, it’s the dark times and negatives that are our best teachers. Life is the process of learning from all of it. The lucky ones do.
As skin ages, it loses suppleness and smoothness. A prime reason is loss of **ceramides** that are required for skin to retain its **moisture**.

**Skin Restoring Phytoceramides** contains wheat-derived ceramide oils in an **oral** capsule that **hydrate** the deepest dermal layers to nourish the entire body’s skin.

**Skin Restoring Phytoceramides with Lipowheat®** • Item #01596
30 liquid vegetarian capsules • Non-GMO

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For full product description and to order **Skin Restoring Phytoceramides with Lipowheat®**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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THE PROBIOTIC FOR WOMEN

Clinically Documented Probiotic Strains That Promote Healthy Vaginal Microflora and Urinary Tract Health*

Jarro-Dophilus® Women contains the four predominant Lactobacilli strains of the healthy vaginal tract.*

All four strains were isolated from the vaginal tracts of healthy pregnant women and have been clinically tested for efficacy in helping to maintain protective, healthy vaginal microflora and urinary tract health.*

When it comes to choosing effective probiotics, clinically documented strains matter.™

Choose science.
Choose Jarro-Dophilus® probiotics.

Jarro-Dophilus® Women 5 Billion Per Capsule 30 Veggie Caps
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For full product description or to order Jarro-Dophilus® Women call 1-800-544-4440 or visit www.LifeExtension.com

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Discover a European Secret for Beautiful Legs

Combat Unsightly Veins

European Leg Solution with certified Diosmin 95 helps your legs look and feel great by:1-4

- Supporting healthy blood flow.
- Maintaining healthy venous tone and elasticity.
- Safeguarding collagen suppleness.

European Leg Solution featuring Certified Diosmin 95
Item #01042 • 30 vegetarian tablets

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For full product description and to order European Leg Solution featuring Certified Diosmin 95, call 1-800-544-4440 or visit www.LifeExtension.com

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Pea Protein
A Dairy-Free Option
With age, people often unwittingly fail to ingest sufficient protein in their diets.

Protein is a major building block in our body. It is especially important to help preserve muscle mass.

If you are not already ingesting excess calories, an easy way to ensure against protein insufficiency is a concentrated powder made from high-quality organic peas.

Studies show that older adults may need anywhere from 11% to 250% more protein than adults in general.1-9

Old or young, protein is essential as a supply of amino acids. These proteins are transformed into functional proteins that take care of almost every physiologic need from cell structure to waste clearance.10

Sufficient amounts of protein are needed to inhibit sarcopenia—the age-related muscle loss that boosts the risk of frailty, falls, and disability.11-14

But whey, egg, and soy protein supplements may be off-limits for those who are allergic to dairy, egg, or soy or are lactose intolerant, vegetarian or vegan.

Researchers have been eager to find a plant-based protein supplement that is nutritious, hypoallergenic, and high in essential amino acids. A new pea protein powder provides low-fat protein with high digestibility—free of dairy, egg, soy, lactose, gluten, and sugar.

This plant-based protein contains muscle-promoting branched-chain amino acids and glutamine that can help avert age-related muscle loss and promote recovery from exercise.
Daily supplementation with 15 grams of essential amino acids—the building blocks of protein—was found to increase muscle synthesis and lean body mass in older women within three months, “possibly offsetting the debilitating effects of sarcopenia.”

Additionally, research has linked a diet low in calories, but rich in high-quality vegetable protein, to reduced cardiovascular-risk profiles in adults of all ages, including LDL-cholesterol and blood pressure.

And clinical research reveals that older individuals require a higher daily intake of protein than normally recommended for younger persons.

Aging adults—along with vegans, vegetarians, the lactose-intolerant, those with allergies to dairy, soy, or egg, and people concerned about the GMOs commonly found in soy—now have a high-quality alternative in high-quality protein derived from the pea plant.

Pea-Protein

Pea protein has been shown to exert numerous healthful effects when taken by aging humans.

In 2016, scientists showed that meals high in pea (and bean) protein favorably affected appetite regulation more so than meals high in animal protein, with similar energy and protein content. The legume protein-rich meals resulted in reduced appetite scores, hunger, and prospective consumption, and a greater sensation of postprandial (after-meal) fullness.

Supplemental pea protein is now available in a proprietary formula that contains no common allergens such as dairy or egg, while delivering:

- **Beta-glucan fiber**, which supports healthy cholesterol and postprandial blood sugar
- **Agave inulin** and FOS (fructooligosaccharides), prebiotics that support digestive and immune health
- **Branched-chain amino acids** (BCAAs), which promote muscle synthesis
- **Glutamine**, which is a key amino acid in a number of metabolic functions

While pea protein has BCAA values comparable to those in the “gold standard” protein supplements whey, egg, and casein, it provides significantly higher amounts of arginine, which is essential for nitric oxide synthesis.
Glutamine: Critical Muscle and Whole-Body Support

**Glutamine**—the most abundant amino acid in the body, is highly concentrated in the skeletal muscles.40,41 Research indicates that output levels of human growth hormone increase **four-fold** after supplementing with glutamine.42 Glutamine can also help replenish muscle stores of glycogen after exercise,43 providing a ready fuel source for muscles.

In addition to its effects on exercise, glutamine contributes to a number of key functions, including support for the immune system and prevention of infections and improved gut barrier function.37 During stressful states of illness or injury, glutamine becomes “conditionally essential,” meaning that the body cannot supply an adequate amount and it must be taken in from food or supplements.37,44 A wealth of evidence indicates that this amino acid can play a key role in treating serious and critical illnesses,45-48 injuries,49 infections,48,50 and postoperative wound-healing.37,51,52

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**What You Need to Know**

**Pea Protein**

- As we age, our protein requirements increase. Without adequate dietary or supplementary protein, older individuals are at increased risk for sarcopenia—the age-related loss of muscle tissue that increases the risk of disability.
- Experts recommend that older persons may need **11% - 250%** more protein than an average adult.
- A new pea protein supplement provides a low-fat protein option with high digestability—free of dairy, egg, soy, lactose, gluten, and sugar.
- It provides **branched-chain amino acids** and beneficial glutamine and arginine.

**Branched-Chain Amino Acids Inhibit Muscle Loss**

Abundant in pea protein are the three essential branched-chain amino acids—**leucine**, **isoleucine**, and **valine**—which play an important role in muscle protein synthesis and muscle recovery, damage, and fatigue during and after exercise.53-58 BCAAs have also been shown to reduce muscle damage, inflammation, and perceived exertion and fatigue during exercise.59 BCAAs are transported and metabolized differently than other amino acids. Instead of being broken down in the liver, they enter the bloodstream and are absorbed directly into the skeletal muscle. There, they pass into the mitochondria, which are the cells’ powerhouses.60
Human research examining this novel handling of BCAAs in the bloodstream and in skeletal muscle has suggested that BCAAs play a critical role in muscle recovery from fatigue or from intensive physical activity such as resistance training. They may also act as performance enhancers.

Amino acid mixtures that have been enriched with BCAAs have shown promise for improving the muscle-wasting of sarcopenia in elderly humans, who were demonstrated to gain muscle mass during treatment. This implies that BCAAs may be effective in other conditions characterized by debilitation and muscle loss.

Complementary Beneficial Nutrients

Agave-derived inulin and fructooligosaccharides (FOS)—both of which are powerful prebiotics—as well as gluten-free oat bran, which contains beneficial beta-glucans, offer added health benefits to pea protein alone.

The long-chain prebiotic inulin, extracted from agave plant fiber, arrives at the colon intact and remains longer, and supports the growth of the beneficial intestinal bacteria, including Lactobacilli and Bifidobacteria. Together, inulin and FOS favorably transform the composition of the gut microbiota to maintain digestive health and immunity.

Animal studies have shown that inulin-based prebiotics may improve ulcerative colitis, prevent the initiation of colon cancer, lower cholesterol and triglycerides, and support calcium absorption for better bone health.

Oat bran is a source of the soluble fiber beta-glucans, which has been shown to promote a healthy postprandial glycemic response and significantly reduce plasma cholesterol levels.

Pea protein delivers essential nutrients to help protect against muscle-wasting, it also protects against a wide array of diseases.

Pea Protein Validated in Human Studies

Published research shows that—well beyond protecting against sarcopenia—pea protein promotes beneficial effects including:

- **Weight Loss**: Pea protein was demonstrated in a clinical study to induce a feeling of fullness or satiety, and in an animal study to significantly lower the hunger hormone ghrelin. Both of these effects would reduce food intake. As a result, pea protein may help with weight-loss. Many people neglect protein when dieting. This is regrettable because of pea protein’s satiety and hormonal effects that can help the body burn fat faster.

- **Healthier Heart**: Pea protein decreases blood pressure. In addition, a group of researchers found that, compared to a low-carbohydrate diet based on animal sources, a vegetable-based low-carbohydrate diet is associated with lower all-cause and cardiovascular disease rates.

- **Lower Blood Sugar**: Blood glucose levels may be reduced after consumption of a combination of pea protein and fiber, which suggests the potential for enhanced glycemic control. A 2014 study found that adding pea protein and fiber to a meal results in a blood sugar level that is lower at 30 minutes, compared to a control meal. The study author concluded that, “This trial supports the use of pea components as value-added ingredients in foods designed to improve glycemic control.”

Sugar-free pea protein is the ideal alternative for those who are unable to take dairy-based, egg, or soy-protein supplements but wish to prevent sarcopenia and other age-related conditions.
Summary

Studies show that older individuals may need more protein than adults in general, especially if they want to prevent sarcopenia, the age-related loss of muscle tissue that increases the risk of frailty and disability.

The good news for vegans and those with food intolerances is that a new plant protein, featuring organic pea protein provides a nutrient-dense, low-fat protein that is high in essential amino acids, with excellent digestibility—free of dairy, egg, soy, lactose, gluten, and sugar.

Those already over-consuming protein calories should not take pea or other bulk protein supplements as they may accelerate certain aging processes.

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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VITAMIN D3
Systemic Support for Youthful Cell Function

Caution: Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Do not exceed 10,000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

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For those already taking resveratrol, we also offer NAD+ Regenerator™ that provides 250 mg of nicotinamide riboside.

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NAD+ Cell Regenerator™
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Rebuild Youthful Skin, Hair, and Nails from Within

Although aging impacts the whole body, the most visible effects occur in our skin, hair, and nails.

As we mature, our outer tissues lose their framework of structural proteins, namely keratin, collagen, and elastin.

Loss of structural proteins in the body is further compounded by external factors such as pollution and sun exposure.

To counter this visible deterioration, scientists have investigated nutrients that can be taken orally to rebuild the underlying architecture of the skin, hair, and nails.

Their work has resulted in targeted nutritional interventions—highly bioavailable forms of collagen peptides and solubilized keratin, combined with biotin and silicon.

These nutrients have been shown to support more youthful, vibrant skin, lustrous hair, and stronger nails from the inside out.1-15
Rebuilding Youthful Skin, Hair, and Nails

With age, our bodies produce less of the **structural proteins** that are essential to the integrity of the tissues that make up hair, skin, and nails. These proteins include:

- **Keratin**, a structural component of hair, nails, and the outer layer of skin,
- **Collagen fibers**, the principle source of the skin's strength, and
- **Elastin**, an elastic protein in connective tissue that allows many tissues in the body to resume their shape after stretching or contracting.

By the age of 21 we start losing about 1% of the **collagen** in our skin every year.9

The visible effects of a decrease in these proteins include thin, wrinkled, sagging, and dry skin; thinning, weak, dull hair; and dull, brittle nails.

But the age-related decline in these critical proteins goes far beyond the external, cosmetic effects. They reflect more serious problems on the **inside**, including adverse changes in blood vessel walls, bone, connective tissues, and other vital organs where these structural proteins predominate.

In addition, skin exposed over time to the sun’s radiation undergoes a breakdown and alteration of collagen fibers and accumulates disorganized elastin proteins throughout the **dermis**, the deeper layers of the skin.10

The good news is that a number of highly **bioactive compounds** have been found to **reverse** these age-revealing structural changes.

Rebuilding Your Skin’s Structure

Many keratin supplements on the market aren’t very effective because of how they’re processed. But in a critical advance, scientists developed a patented process that converts keratin into a form our bodies can use. As a result, this **solubilized keratin** provides highly bioavailable, protein-forming building blocks needed to replace the body’s **natural keratin** lost in the aging process. This allows the delivery of high-quality keratin proteins **directly** to the cells that make up the skin, hair, and nails. And their high bioavailability means they can **quickly** replenish depleted keratin levels.16-18

*In vitro* studies show that **soluble keratin** stimulates skin cells to proliferate at a rate up to 160% greater than they otherwise would, permitting cells to increase their own production of diminished structural proteins.17

Because of its improved delivery, this patented **solubilized keratin** has been documented to:**

- Reduce hair loss from washing, improve hair strength, and increase hair brightness and luster
- Provide nails with improved strength, elasticity, and moisture retention
- Reduce fine lines and wrinkles
- Promote skin firmness and elasticity
- Decrease inflammatory redness of skin
- Add brightness and radiance to the skin, and
- Reduce water loss from the skin.

Impressive clinical studies validate the benefits of this novel "solubilized" keratin.
Improvements in Hair and Nails

When it comes to improving the strength and appearance of hair and nails, several studies show that solubilized keratin is especially effective.

In one study, women with damaged, fragile, and stressed hair took two capsules of a special formulation daily, providing a total of 500 mg of solubilized keratin, along with biotin, zinc, copper, and vitamins B3, B5, and B6.

After 90 days, electron microscope photos showed that uneven hair surfaces had become smooth, interlocking, and watertight—which translates into smoother, shinier hair. Also, the number of hairs lost during washing was reduced by 30%, and hair strength was increased by 12%. The researchers concluded that the keratin supplement promoted hair growth, strength, and appearance.11

Another trial found that taking two capsules of the same formulation daily decreased hair loss and improved the strength and appearance of nails in adult women. By day 90, the women experienced:12

- 47.1% subjective improvement in hair appearance,
- 5.9% improvement in hair strength,
- 9.2% increase in hair follicles in the growth phase, and a
- 47% reduction in the number of hairs that could be removed in a hair-pull test.

Also, their nails demonstrated:12

- 87.5% improvement in the tendency to break (compared with 28.5% in the placebo group),
- 50% increased hardness,
- 54.2% greater resistance to breaking,
- 33.2% improved overall integrity,
- 37.5% increased smoothness, and
- 20.8% improved natural appearance.

An additional placebo-controlled study showed that keratin can also reduce the appearance of fine lines and wrinkles. Scientists again gave two capsules of the same keratin formulation daily to women between 40 and 71 who had obvious skin aging. By day 90, they documented:13

- 30.4% improvement in skin moisture, almost a 12% reduction in wrinkle depth,
- 58.3% of subjects showed visible improvement in wrinkle depth,
- 16.8% improved skin elasticity,
- 17.9% improved skin smoothness, and almost a 9% decreased skin roughness.

Targeted Support for Youthful Hair, Skin, and Nails

- The most obvious signs of aging can be seen in our skin, hair, and nails.
- This is affected both by intrinsic biological aging and extrinsic environmental factors such as ultraviolet radiation.
- The underlying architecture of these body areas is rapidly diminished by the resulting loss of structural proteins, notably keratin, collagen, and elastin.
- Fortunately, novel and bioavailable forms of collagen peptides and solubilized keratin have been developed to reverse this process in skin, hair, and nails.
- Biotin and silicon have been documented to enhance these rejuvenation effects.

What You Need to Know

DECEMBER 2017 | LIFE EXTENSION | 67
Stronger Skin from Within

Collagen is an important component of youthful skin. It makes up 70% of the weight of the dermis, the inner layer of the skin.\textsuperscript{19} It also supports levels of elastin, the protein that allows skin to stretch and return to its original shape—which makes collagen a critical element in maintaining supple, flexible skin.

As we get older, the number of collagen fibers in the dermis steadily decreases, and elastin fibers begin to fray and lose elasticity. This deterioration leads to wrinkled and sagging skin.\textsuperscript{20}

Scientific innovators have developed a patented composition of different bioactive collagen peptides, which are derived from type I collagen that has been partially broken down using water. This unique process makes these peptides highly bioavailable, which provides the building blocks for collagen synthesis and stimulates the production of new collagen and elastin in the extracellular matrix of the skin.\textsuperscript{15}

Another way these collagen peptides protect the skin is by reducing the activity of metalloproteinase 2, a “protein-melting” enzyme that breaks down collagen and hastens skin aging.\textsuperscript{21}

The effect in skin tissue is a remarkable reduction of skin wrinkles and improved dermal matrix synthesis.

Bioactive Collagen Peptides Improve Nail Brittleness and Growth Rate

A recent compelling study reported by the Journal of Cosmetic Dermatology demonstrated that oral supplementation with bioactive collagen peptides accelerated nail growth, improved nail brittleness, and powerfully decreased the frequency of nail breakage.\textsuperscript{23}

Brittle nail syndrome affects about 20% of the population, with women being affected twice as often as men. This challenging disorder is characterized by fragility of the nail plate, roughness, raggedness, and peeling. Patients often complain that their nails are too soft, weak, slow-growing, and easily broken. Usually underlying these symptoms is an impaired water-binding ability, which might reflect an abnormality in keratin or lipid content.

In this trial, 25 healthy women ages 18 to 50 were given 2.5 grams of bioactive collagen peptides once daily for 24 weeks and then were removed from treatment for another four weeks. Nail characteristics and growth rate were assessed during treatment and after the off-therapy period.

Bioactive collagen peptides were found to have resulted in an increase of 12% in nail growth rate and a decrease of 42% in the frequency of broken nails.\textsuperscript{23}

Additionally, treatment with bioactive collagen peptides clearly attenuated the symptoms of brittle nails. Clinical improvement in nail brittleness was observed in 64% of participants after the 24-week treatment period. This beneficial effect was even more pronounced after the four-week washout period, when 88% of study participants showed clinical improvement in nail brittleness. The study author concluded that this positive effect likely resulted from the direct effect of the peptides on the nail matrix.\textsuperscript{23}

The vast majority of participants, 80%, agreed that the use of the bioactive collagen peptides had improved their nails’ appearance, and they expressed their complete satisfaction with the treatment results.\textsuperscript{23}

Reduce Wrinkles in Eight Weeks

Scientists put bioactive collagen peptides to the same rigorous clinical testing as solubilized keratin, and the results were equally impressive.

In one study, supplementing with either 2.5 or 5 grams of this oral supplement for eight weeks led to a 7% improvement in skin elasticity. This higher elasticity persisted even four weeks after they stopped taking the supplement, showing the lasting benefits of replacing the body’s lost collagen.\textsuperscript{14}
Building Stronger Nails

Biotin is a water-soluble B vitamin. Animal and human studies indicate that biotin supplementation improves the hardness and integrity of the nail structure.

One study showed that taking 2.5 mg of biotin every day for an average of 5.5 months transformed aged and damaged fingernails into firmer, harder nails in an amazing 91% of treated subjects.

In another study, when women with brittle, splitting, or soft fingernails took biotin, they experienced a 25% increase in nail thickness and reduced nail splitting. Electron microscopy scanning revealed that the irregular arrangement of cells on the nail surface of brittle nails had become more regular.

Finally, a third study found that when people with brittle and splitting nails took 2.5 mg per day for at least one month, 63% of the subjects experienced a clinical improvement in nail integrity, brittleness, and splitting.

Additional Support

Silicon is an essential trace element involved in the metabolism of connective tissue in skin and hair. It activates “hydroxylation” enzymes that cross-link collagen, which improves strength and elasticity. Silicon is also associated with the synthesis of molecules known as glycosaminoglycans, which help create the substance that fills the space between collagen and...
elastin. Because of these important roles, silicon is an important component of healthy hair, nails, and skin.

It has been suggested that hair strands that have higher silicon content have a lower rate of falling out and greater brightness.

Silicon is also a predominant mineral in the composition of healthy nails. As a 2016 study indicated, "The presence of soft and brittle nails can indicate systemic deficiency of silicon."

Better collagen ultimately translates into better hair, skin, and nails.

Summary

The aging process is outwardly obvious in skin, hair, and nails.

To counter this visible deterioration, scientists have developed targeted oral interventions—highly bioavailable forms of collagen peptides, solubilized keratin, biotin, and silicon—that together rebuild the architecture behind youthful skin, lustrous hair, and stronger nails from within.

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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- **Biotin**—Supports nail strength and integrity
- **Silicon**—For the formation of collagen and keratin molecules

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**Hair, Skin & Nails Rejuvenation Formula with VERISOL®**
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Non-GMO

References

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

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New Research on Astaxanthin and Cancer

Researchers are excited about a series of studies showing that astaxanthin, a natural compound with oxidant-quenching and anti-inflammatory properties, may also play a role in cancer treatment.

Although these studies were conducted in vitro (in a test tube or other culture media) and lab animals, the initial findings are so promising that there is hope that human applications will soon be confirmed.

Let’s look at what this research is discovering.

What is Astaxanthin?

Astaxanthin is a xanthophyll carotenoid. It is the vibrant red pigment that gives color to things like salmon, krill, arctic shrimp, and flamingo feathers.

Numerous studies in animals have demonstrated the benefits of astaxanthin in eye health, skin health, heart health, liver health, and immune response, and several studies have assessed its safety, bioavailability, and effectiveness on oxidative stress in humans.
Research findings from around the world are uncovering the ability of astaxanthin to combat cancer. These studies show that astaxanthin has at least six different mechanisms of action that help combat cancer on multiple fronts.5

Six Ways Astaxanthin Defeats Cancer

1. Decreases Cancer Cell Proliferation.

Tumors develop when cancer cells rapidly proliferate, invade, migrate and adhere to healthy tissues and organs.5,6 Astaxanthin is capable of decreasing proliferation of malignant cells.

In one study, investigators noted a strong association between the presence of astaxanthin and the decreased proliferation of rat liver- and breast-cancer cells, and of mouse lung-cancer cells.

It’s interesting to note that a control group of normal human liver cells was barely affected by the presence of astaxanthin.7 This indicates the ability of astaxanthin to selectively target cancer cells.

In another study, when astaxanthin was compared to the three other carotenoids (beta-carotene, capsanthin, and bixin), astaxanthin was found to be the most active in preventing the reproduction of human leukemic cells.8

2. Promotes Cell Death.

Programmed cell death, also known as apoptosis, is a healthy process in which the body removes damaged or dysfunctional cells.9,10 A hallmark of cancer is its ability to evade apoptosis, which allows cancer cells to survive and reproduce.11 One potent way to combat cancer is to turn this programmed cell death back on in cancer cells, and astaxanthin appears to do just that.

Astaxanthin has been shown to promote apoptosis in several in vitro studies involving cell lines of both oral and liver cancer.7,12,13

3. Reduces Oxidative Stress.

Oxidative stress promotes by the growth and spread of certain types of cancers.14,15

Italian investigators found that astaxanthin stops the production of reactive oxygen species in a human lymphoma cell line.16 Similarly, Chinese investigators noted that astaxanthin stifled the growth of human leukemia cells.8

4. Reduces Inflammation.

It is well known that inflammation plays a prominent role in cancer proliferation and survival.17,19 Astaxanthin has been found to inhibit the occurrence of inflammatory mucosal ulcers and pockets. This led to the prevention of adenocarcinoma in the colons of mice.20

In other studies, astaxanthin suppressed the production of inflammation-inducing cytokines, including tumor necrosis factor alpha in human lymphoma cell lines.16,21

5. Prevents the Spread of Cancer.

The spread of cancer to other sites such as organs and bone (metastasis) occurs when cancer cells break away from the original tumor.

Enzymes known as matrix metalloproteinases (MMPs) facilitate a step in this complex process, allowing tumor cells to migrate to another organ where new growth takes place.5,22,23 In other words, MMPs may promote tumor growth and progression.

Scientists believe that astaxanthin works to prevent the spread of cancer by inhibiting MMPs and modulating pathways related to tumor blood supply, cell proliferation, and cancer formation, progression and invasion.24,25

These protective effects have been demonstrated in oral-cancer cell lines from hamsters and in colon- and liver-cancer cell lines from rats.24,26
6. Improves Communication Among Cells.

Individual cells within an organ communicate with each other using gap-junction channels, structures which allow the coordination of metabolism and other critical functions. When there are defects in communication, it opens the door for disorders such as inflammation, cellular damage—and ultimately, cancer.27-29

Astaxanthin appears to support and enhance this form of cell-to-cell communication, which means it may be beneficial against a variety of different types of cancer. For example, one investigator found that astaxanthin enhanced gap-junction communication, while noting that previous studies found that this enhanced communication has been shown to inhibit cancer formation and growth.30

Recent Studies on the Use of Astaxanthin in Cancer

Oral Cancer

Investigators in India recently examined the role of astaxanthin in stopping the growth and spread of oral cancer in hamsters. To test this, researchers gave the animals a chemical designed to induce oral cancer, and then gave them either astaxanthin or no treatment. The investigators noted that the signaling pathways involved in the proliferation and spread of oral cancer were significantly inhibited in the cancer group that received astaxanthin. This included reducing the ability of tumor cells to create new blood vessels to fuel its growth (known as angiogenesis). These mechanisms demonstrate a potential value of astaxanthin to help treat oral cancer.24

Liver Cancer

As of 2012, liver cancer is the fifth most common cancer and the third most fatal cancer worldwide.31,32 Despite modern treatments, liver cancer has a high recurrence rate,33,34 which makes finding a new, effective treatment even more critical. Astaxanthin could be a step in that direction.

Investigators in China recently studied the use of astaxanthin in vitro in two cell lines of human hepatocellular carcinoma. They used several different concentrations of astaxanthin along with a control drug, dimethyl sulfoxide (DMSO). What they found was that astaxanthin induced a high level of cell death in both cell lines at three of these concentrations, leading investigators to conclude that astaxanthin is potentially useful in combatting this difficult-to-treat tumor.35

Colorectal Cancer

As of 2012, colorectal cancer is the third most common cancer in men and the second most common cancer in women worldwide.36 Three important studies have shown astaxanthin’s ability to combat colorectal cancer.

In the first study, investigators found that when they gave astaxanthin to rats with colorectal cancer, it significantly decreased the expressions of proteins consistent with inflammation and colorectal cancer, and significantly increased apoptosis (programmed cell death).25

In the second study, mice fed dietary astaxanthin experienced a decrease in the growth of cancer cells, and an increase in cell death.30 And in a third study, astaxanthin inhibited cell growth of two colorectal cancer cell lines over a 72-hour period and caused cell-cycle arrest and cell death.37
After just 31 days, **tumor volume** in the high-dose astaxanthin group was over 40% smaller than in the control group, and tumor weight was reduced by nearly 40%.

High-dose astaxanthin-treated mice also experienced a decrease in a tumor marker and in a marker of cell proliferation, as well as increases in the expression of tumor-suppressor genes.  

The investigators concluded that the use of astaxanthin may prove beneficial in the treatment of prostate cancer.

**Summary**

Astaxanthin is being studied *in vitro* and in animals against a variety of animal- and human-cancer cell lines.

At least six possible mechanisms of action have been put forward to explain astaxanthin's anticancer effects.

In addition to its standalone anticancer properties, two studies demonstrated astaxanthin's role in increasing the effectiveness of cytotoxic chemotherapy.

These initial findings offer hope that astaxanthin could play a significant role in combatting some of the most common forms of cancer, including solid tumors and hematologic malignancies like leukemia.

**References**


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Journalist Rachel Kelly had suffered from anxiety and depression for years. She found medication helpful, but realized it caused side effects, such as weight gain. Eventually, Kelly’s doctor introduced her to the connection between mood and food, and some of the scientific evidence supporting that concept.

Kelly soon discovered that changing her diet made a significant difference in how she felt, and even friends and family remarked that she looked happier. Intrigued, the journalist wanted to explore the mood/food connection in greater depth, so she met with nutritionist Alice Mackintosh. The two formed a partnership that led to their book, *The Happiness Diet*.

Kelly says her book “is not intended as a substitute for medication or other strategies,” but she feels antidepressants and other mood-altering drugs are best for short-term use. *The Happiness Diet* is intended as a guide to meals that not only counter depression, but also foods that can have many other mood-related benefits. Accordingly, the book is divided into groups of recipes, each targeting specific topics, such as mental clarity, energy, and promotion of quality sleep.

On the next three pages are three sample recipes from *The Happiness Diet*. These meals can help make your kitchen, as Kelly puts it, “a place of creativity and adventure.”
FOR A BREAKFAST THAT PROMOTES RESTFULNESS AT THE END OF THE DAY:

Overnight Bircher Muesli

Serves 2

Stir together the oats, yogurt, chia seeds, almonds, cinnamon, and dairy milk or almond milk. Leave the mixture in the fridge in a covered jar or tub for 4 hours, or overnight. It should form a thick, creamy consistency. Add more milk if you prefer it a little thinner.

When you are ready to eat, add the fresh berries and pumpkin seeds. You can also sprinkle over some goji berries if you want extra color and sweetness.
**TO PROMOTE CALMNESS:**

**Jeweled Guacamole and Roasted Peppers on Rye Bread**

Serves 1, with leftover

Preheat the oven to 350°F.

Place the peppers on a baking sheet and drizzle with the olive oil and a little chopped parsley. Bake for 20 minutes, turning them halfway through. We like them slightly charred on the outside.

Scoop out the avocado flesh and mash it together with the garlic and a dash of olive oil. We prefer it a little lumpy, but if you want a smooth consistency, mash away to your heart’s content.

Add a squeeze of lemon (not too much) and mix in the pomegranate seeds.

Once the peppers are cooked, you are ready to serve. Drizzle olive or hempseed oil over the hot toast, and then spread on the guacamole. Place the roasted peppers on top and add a sprinkle of parsley. The guacamole can be stored in the fridge but may go a little brown as the avocado oxidizes, so it is better eaten the same day.

**Ingredients:**

- 2 red, yellow, or orange bell peppers, seeded and sliced
- 2 tablespoons olive oil
- Small handful of flat-leaf parsley, chopped
- 1 large ripe avocado
- ½ garlic clove, crushed
- Squeeze of lemon juice
- Handful of pomegranate seeds
- 2 slices of toasted rye bread, with added seeds if possible
FOR FIGHTING THE BLUES:

Mushroom and Mustard Soup

Serves 4

Pour ¾ cup boiling water over the porcini mushrooms in a bowl, cover, and let them soak for 20 minutes.

Heat the olive oil in a large saucepan and add the red onion. Cook it on medium heat for 3-4 minutes, then stir in the garlic and parsnips.

When the onions have softened, add the fresh mushrooms and cook for another minute, then pour in the white wine.

Drain the liquid from the porcini mushrooms into another bowl, then add them to the pan. Sieve the liquid a few times to remove any grit before pouring it into the pan along with the stock.

Turn down the heat, cover the pan with a lid, and let it simmer for 20-30 minutes, or until all the ingredients are soft.

Remove the pan from the heat and add the parsley and mustard, then blend the soup to your preferred consistency using an immersion blender. Don’t blend it for too long, or you will lose the texture of the mushrooms.

Stir in the mascarpone (I sometimes add a little extra mustard, too) before serving, or dollop it on top with a sprinkle of parsley once you have ladled the soup into bowls.
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Dan Cohn knows a thing or two about staying healthy on the road.

As the CEO of the Daniel Cohn Wine Company, a start-up brand that introduced its first wine in January 2016, Cohn maintains a punishing travel schedule. In 2016, he spent 308 days on the road promoting his first blockbuster vintage, Bellacosa Cabernet.

“The wine business is a very exciting industry, but it’s a 24-hour-a-day commitment,” Cohn says. “In order to stay on top of the quality and every single detail, the day cannot end at 5 p.m. or 6 p.m. Weekends off are rare.”

His challenge is compounded by where Cohn ends up spending a lot of time. Selling wine involves visiting fine restaurants, where butter and saturated fats rule the menu and alcohol is a central part of the experience.

To stay fit, Cohn has developed a routine and philosophy that makes it possible to hopscotch across the map—and of course he relies on Life Extension® supplements to make sure he’s receiving the nutrients he needs.
Wellness Profile

“Eighty percent of staying healthy on the road is about what you put in your face and keeping up your exercise routine,” he says. “Keeping up a healthy lifestyle on the road can be hard.”

Cohn aims for 20 minutes of exercise every day, even if that means exercising on the floor of his hotel room. It adds up to 200 push-ups and 200 sit-ups every day. “I also rely on Life Extension,” he says. “I’m fortunate to have Life Extension supplements that support me while I spread the joy of wine one bottle at a time.”

A Bottle of Joy

So far, there’s been a lot of joy to spread. When it comes to the wine business, Cohn draws on a generation of experience. His father, Bruce Cohn, was a legend in the music world who helped establish supergroups like Night Ranger and Bruce Hornsby. He also managed the rock band The Doobie Brothers for thirty years, traveling relentlessly to support the band.

In the early 1970s, Bruce Cohn purchased a tract of land in Sonoma County, California, to put down some roots. The California wine business was in its infancy at the time, so it was mostly by sheer luck that Bruce realized he had lucked into some of the best cabernet grape acreage in the country. The property was already planted with Spanish olive trees that dated to the late 19th century. Looking for a break from the hectic pace of the music business, Bruce Cohn started making wine. “I was raised in a vineyard,” Dan said. “Back then, it was very much about community and small but beautiful vineyards. The fields were covered with independent wine growers and artisanal winemakers who labored to create great wines. It was about what went into

Supplements for the Road

Dan Cohn spends a lot of time on the road, so it’s not always easy to eat a healthy diet. His supplement routine is designed to provide all the baseline nutrients he needs, as well as bolster his immune system. His supplement program was designed for him by Life Extension to match his personal goals. It includes:

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- Super Omega-3
- Vitamin D

The Road Warrior’s Routine

Cohn’s typical day begins in a hotel room and ends in an airport. On any given day, he might find himself traveling to a new city or two and meeting with potential distributors or clients, all while doing press and staying in touch with the company itself back in Sonoma County.

“The whole idea is to share the experience of the wine,” Cohn said. “Because a lot of people can’t go to Sonoma or Napa, these beautiful wine regions, I bring it to them.”

Along the way, he’s learned a few crucial tips to keep up his energy. “One of the keys is that if you ever have to eat in an airport, don’t do it,” he said. “The food in airports is terrible for you, so you’re better just to avoid it totally.”

When he does eat out, he tries to avoid butter in favor of simply grilled proteins that aren’t swimming in saturated fat.
Wellness Profile

“I’m still living in the early days of Sonoma and Napa Valley wine making,” he said. “The connection, the moments. I’m involved every step of the way from concept, creation and curating to the connection and sharing of Bellacosa. I see the industry moving back into more of a connected, intimate setting, with smaller productions and more consumer connection.”

In the future, Cohn plans to continue building his brand—which means he’ll likely be on the road for a long time, signing bottles and spreading the word.

“Because of Life Extension, I can keep up with my rigorous travel schedule,” he said. •

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The Whole Foods Diet

For John Mackey, the cofounder of the Whole Foods Market chain, which was recently sold to Amazon, healthy eating represents something more than just a business model focused on a specific consumer group. Mackey has translated that passion into a new book, *The Whole Foods Diet: The Lifesaving Plan for Health and Longevity*.

In his book, written in collaboration with physicians Dr. Alona Pulde and Dr. Matthew Lederman, Mackey simplifies the technical aspects of nutritional science in favor of giving readers practical, highly readable information regarding the benefits of a whole food, plant-based diet and helping them to make informed food choices. He also tackles subjects such as customizing diets for particular tastes and the ethical and environmental consequences of moving away from processed foods toward organic whole foods.

For this illuminating discussion with *Life Extension®*, Mackey explores diet in relation to disease and obesity, provides an explanation of what constitutes whole foods, and covers some of his recommendations for foods that should be included in a healthful diet.
LE: What’s your view of the current problem of obesity?

JM: There is an unavoidable connection between excess weight and a host of chronic conditions that all of us would rather avoid. Gaining weight is often the first warning sign that chronic disease is building up under the surface of your body. “Weight sits like a spider at the center of an intricate, tangled web of health and disease,” writes Harvard Medical School’s Dr. Walter Willett. Strands in that web include heart disease, strokes, several types of cancer, diabetes, arthritis, and many more unpleasant and sometimes life-threatening conditions. Maintaining a healthy body weight is therefore in our best interests if we want to remain vital, active, and glowing with the beauty that good health conveys, for decades to come.

This is not to say that a healthy weight is a guarantee of health. If you’re someone who maintains a lean body without much effort, you may think you’re better off, but it’s not necessarily true. You could still have heart disease, diabetes, or cancer developing in your body, even though you don’t have a visible warning sign telling you how sick you are. I’m sure you’ve heard stories of the seemingly “thin and healthy” people who are suddenly struck down by diseases they didn’t appear to be at risk for.

LE: What sorts of dietary tendencies are most associated with diseases?

JM: High consumption of red meat and processed meats has been connected with greater risk of death from all causes, including chronic diseases such as cardiovascular disease and type II diabetes. Eating large amounts of animal protein has been correlated with higher incidences of cancer and mortal-

ity. Over a thousand studies on bowel cancer risk have confirmed that red meat increases risk while high-fiber plant foods decrease it. Processed meats are particularly scary, with significant studies linking them to stomach cancer, breast cancer, and colon cancer, and the World Health Organization classifying them as a carcinogen. As a result, the World Cancer Research Fund International and the American Institute for Cancer Research came out with firm recommendations for people to “eat mostly foods of plant origin,” including whole grains, fruits vegetables, and beans.

These studies are not merely outliers. In fact, they are just a few among a multitude of compelling data points that make the case for a whole foods, plant-based diet. The research supporting the wisdom of this way of eating, even briefly summarized, is enough to fill several books. Rigorous laboratory experiments, carefully controlled clinical trials, and long-term observational studies following millions of people over several decades confirm the profound value of eating more real, plant-based foods and minimizing highly processed foods and animal products.

LE: How do you define “whole foods?”

JM: These are “real foods.” These foods are essentially intact, close to the form in which they grew. None of their essential nutritious parts have been removed, and no unhealthy substances have been added to them. This includes all types of whole fruits and vegetables, whole grains, beans and other legumes, and nuts and seeds, as well as unprocessed animal foods. You’ll often find unprocessed foods in the perimeter aisles of the grocery store, as well as at the farmer’s market. They usually don’t need much if any packaging, nor do they feature long ingredient lists. They won’t contain preservatives, and many of them will need to be kept in the refrigerator and consumed soon after purchase, unless they’ve been dried, like beans and whole grains, or purchased frozen.

LE: The main food group you encourage people to eat are plant foods. How prominent should they be in the average person’s diet?

JM: Some people, for ethical reasons, may choose not to eat any animal products, or only to eat dairy products and eggs. Putting
aside the ethical issues for now, from a health perspective, our recommendation is that plants should make up at least 90% of your overall calorie intake.

LE: What's your advice for those who want to include animal products in their diet?

JM: If you choose to eat animal foods, keep in mind the way in which the animals are raised. Modern industrial factory farming has made animal foods widely available and affordable, but it comes at significant cost—both to the wellbeing of the animals and to your health. From a health perspective, common practices that are cause for concern include treating livestock with antibiotics and growth hormones, and feeding them corn and other products that are far removed from their natural diet.

We recommend that you follow these guidelines if you choose to eat animal foods: Choose grass-fed, organic, antibiotic-free meat and dairy products, and pasture-raised chickens and eggs.

Choose wild-caught fish and seafood where possible, and avoid those more likely to contain toxins such as mercury. Species to avoid tend to be those that are longer-lived and higher up on the food chain, including tuna, swordfish, and king mackerel.

Avoid processed meats. The World Health Organization recently categorized processed meats as a Group 1 carcinogen, alongside cigarettes and asbestos. If you decide to eat meat, choose unprocessed forms and stay away from hot dogs, salami, bologna, bacon, ham, and the like.

LE: In your book you list what you call the “Essential Eight” food groups: whole grains and starchy vegetables, beans and other legumes, berries, other fruits, cruciferous vegetables, leafy greens, nonstarchy vegetables, and nuts and seeds. Comment, if you would, on a few of these—cruciferous vegetables, for instance.

JM: The cruciferous family of vegetables, also known as brassica vegetables, includes broccoli, radishes, cabbage, collard greens, Brussels sprouts, cauliflower, artichokes, arugula, and kale. Not only are these diverse foods all related, they also share some extraordinary health benefits, particularly when it comes to preventing cancer. In fact, Dr. Joel Fuhrman points out that cruciferous vegetables are the most micronutrient dense of all vegetables, and calls them “the most powerful anticancer foods in existence.”

This latter distinction may be due to a potent cancer fighter that is unique and particularly important to this group of foods, a family of substances known as glucosinolates. Glucosinolates are responsible for the pungent aroma and bitter flavor of many cruciferous vegetables. When these glucosinolates are broken down, either during food preparation or through chewing and digestion, they form compounds called isothiocyanates and indoles that have been shown in numerous studies to inhibit the development of cancer.

LE: Any serving suggestions, particularly for those who don't have a taste for these veggies?

JM: It turns out moms all over America are right when they tell kids, “Eat your broccoli!” The good news is, there are creative ways to eat broccoli and other cruciferous vegetables that your mom may not have known about. Raw or lightly steamed broccoli or cauliflower florets add a satisfying crunch to a salad or dipped in hummus. Kale can be blended raw into smoothies, “massaged” into a salad, or lightly steamed with some garlic and lemon juice. Zesty radishes, thinly sliced, add bite to salads, while the peppery flavor of arugula makes a nice change from lettuce.

You can also try tossing in a few handfuls of raw arugula into your warm pasta with veggies, letting it wilt just a little. Bok choy is a lovely addition to stir-fries, with its combination of crunchy stalks and tender leaves. Add it right at the end, as it needs only a couple of minutes to cook.

LE: How about leafy greens?

JM: Some fall into the cruciferous category, like kale, collards, arugula, and bok choy. Other particularly potent greens include watercress, Swiss chard, spinach, romaine, and other salad greens.

Researchers at Harvard University found greens to be the food most highly associated with protection from major chronic disease and cardiovascular disease. They have also been associated with reduced risk of diabetes. Greens are packed with fiber, protein, and antioxidants, as well as disease-fighting phytochemicals.

You can eat your greens raw as a salad, add handfuls to a smoothie, steam them lightly and serve them with lemon juice, toss them into a soup or stew at the end so they lightly wilt, blend them into flavorful pesto-style sauces, add steamed greens to mashed potatoes, or water-sauté them with garlic. Spinach makes a great addition to homemade hummus or other bean spreads. Greens are so extraordinarily healthy that we try to add them whenever possible to the dishes we cook. Try to eat greens every day!

LE: Nuts and seeds?
Listen to your body, especially in the early days of your transition. If you’re feeling hungry again only a couple of hours after eating, you probably didn’t have a big enough meal or include enough satiating whole grains or starchy vegetables. If you feel satisfied and content, stop eating, but if not, eat more. There is no right or wrong time to eat, only right and wrong foods. You can now trust your hunger signals without fear of overconsuming calories. You’re no longer in a battle with your body or your cravings—so long as the only food on your plate is real food (particularly of the whole food, plant-based variety).

**LE:** Could you elaborate on the differences between whole carbohydrates and processed carbohydrates?

**JM:** One of the things many people love about a whole foods, plant-based diet is that it includes the comforting starchy “carb” foods... sweet and earthy yams, hearty winter squashes, tender juicy corn, and even the much-loved potato, as well as all the varieties of tasty, satisfying whole grains, can find a regular place on the whole foodie plate. In this category we also include the grainlike seeds, such as quinoa, millet, amaranth, buckwheat, and teff, which are nutritionally similar to grains.

The important and often-missed distinction between whole carbohydrates, like whole grains and starchy vegetables, and highly processed, refined carbohydrates (is that) while the latter are to be avoided, the former play a key role in an optimum diet.

Carbohydrates are the best energy source human beings have available, and over the course of evolution, our bodies have adapted to be able to metabolize them efficiently. Whole grains provide fiber, protein, essential fatty acids, and numerous phytochemicals, as well as carbohydrates, in the perfect package to give us the energy we need. They have been linked to lower risk of heart disease, diabetes, obesity, certain cancers, and mortality from all causes. Eating whole grains also improves bowel health, helping to maintain regular bowel movements and promote growth of healthy gut bacteria.

Contrary to popular opinion, carbs in the form of whole grains can actually help you lose weight. Whole grains and starchy vegetables leave you feeling full and satisfied, and therefore combat snacking and overeating, actually preventing you from becoming or remaining overweight.

**LE:** Finally, what’s your advice to someone attempting to drop unhealthy, processed and sugary foods in favor of a healthy diet?

**JM:** Eat enough! One of the most common reasons people struggle in the transition to a whole foods, plant-based diet is that they don’t eat enough. That’s right. You’re much more likely to fail from eating too little than from eating too much. Many people start out by focusing on what they shouldn’t eat and don’t give enough attention to all the good things they should be eating. Because whole plant foods are less calorie dense than highly processed foods and animal foods, you may need to eat larger portions or more frequently than you are accustomed to. Try to include as many of the Essential Eight in your everyday diet as possible, and particularly focus on the starchy vegetables, whole grains, and legumes.
If a vegetable can be said to be trendy, kale fits that description.

In recent years, this green, leafy, cruciferous vegetable, a member of the cabbage family, has become very popular, and with good reason. Experts say that kale is one of the most nutrient-dense foods on earth. But that’s just the beginning of the story...

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Kale contains a number of compounds that have been found to be associated with anticancer effects. These include indole-3-carbinol as well as sulforaphane, which offer significant protection against the development of the disease.

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Oxidant reducers help fight diseases of aging, including cancer, that our bodies are susceptible to due to the destructive effects of free radicals. Kale contains these compounds. Flavonoids are also found in kale in the form of quercetin and kaempferol. These substances are associated with anti-inflammatory, anticancer, and antiviral properties.

**Eye Protection**

Studies show that supplementing with lutein and zeaxanthin significantly lowers your risk of age-related loss of eyesight due to cataracts and macular degeneration, and kale contains both of these carotenoids in small amounts.

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**FEMALE COMPREHENSIVE HORMONE PANEL (LC100011)**
CB/Chemistry Profile • DHEA-S, Estradiol • Total Estrogens  
Progesterone • Pregnenolone • Total and Free Testosterone • SHBG  
TSH • Free T3  
This panel now includes Free T4 and Cortisol with no increase in price!

**Your Price** $299

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

**Your Price** $75

**WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028)**  
CB/Chemistry Profile • DHEA-S • Free and Total Testosterone  
Estradiol • Progesterone • Cortisol, TSH • Free T3 • Free T4  
Reverse T3 • Insulin • Hemoglobin A1c • Vitamin D 25-hydroxy  
C-reactive protein (high sensitivity) • Ferritin

**Your Price** $275

**HEALTHY AGING PANEL-COMPREHENSIVE (LC100026)**  
CB/Chemistry Profile • C-reactive protein (high sensitivity)  
Vitamin B12 • Folate • Homocysteine • Vitamin D 25-hydroxy • Hemoglobin A1c  
TSH • Free T3 • Free T4 • Ferritin • Urinalysis • Fibrinogen • Insulin

**Your Price** $249

**DIABETES MANAGEMENT PROFILE – COMPREHENSIVE (LC100040)**
Hemoglobin A1C • Glucose • Insulin • Lipid Panel • Glycomark

**Your Price** $129

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**Blood tests available in the continental United States only. Restrictions apply in NY, NJ, RI, and MA. Not available in Maryland. Kits not available in Pennsylvania.**

*This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional $35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.

**This test is packaged as a kit.**

---

*With Your Healthy Rewards, you earn LE Dollars back on every purchase you make — including blood tests! See [www.LifeExtension.com/Rewards](http://www.LifeExtension.com/Rewards) for details.
Amino Acids
Arginine/L-Ornithine Capsules
Arginine Ornithine Powder
Branch Chain Amino Acids
D,L-Phenylalanine Capsules
L-Arginine Caps
L-Carnitine
L-Glutamine
L-Glutamine Powder
L-Lysine
L-Taurine Powder
L-Tyrosine Powder
Super Carnosine
Taurine

Blood Pressure & Vascular Support
Advanced Olive Leaf Vascular Support with Celery Seed Extract
Arterial Protect
Blood Pressure Monitor Arm Cuff
Dual Action Blood Pressure
Endothelial Defenso™ with Pomegranate Complete and Cordia™
Endothelial Defenso™ with Glisodin®
Natural BP Management
NitroVasc with Cordia™
Pomegranate Complete
Pomegranate Fruit Extract
Triple Action Blood Pressure AM/PM
Venoflow™

Bone Health
Bone Restore
Bone Restore-Sugar Free
Bone Restore with Vitamin K2
Bone Strength Formula with Koact®
Bone-Up™
Calcium Citrate with Vitamin D
Dr. Strum’s Intensive Bone Formula
Strontium Caps

Brain Health
Acetyl-L-Carnitine
Acetyl-L-Carnitine Arginate
Blast™
Brain Shield® Gastrodinin
CocoaMind™
Cognitex® Basics
Cognitex® with Brain Shield®
Cognitex® with Pregnenolone & Brain Shield®
Cognizin® CDP-Choline Caps
DMEA Bitartrate (dimethylaminolinoethanol)
Dopa-Mind™
Ginkgo Biloba Certified Extract™
Huperzine A
Lechitin Granules
Memory Protect
Migra-Eeze™
Neuro-Mag® Magnesium L-Threonate
Optimized Ashwagandha Extract
Optimized Carnitine with GlycoCarn®
Phosphatidylserine (Phosphatidylserine)
TruFiber™

Cholesterol Management
Advanced Lipid Control
Cho-Less™
CHOL-Support™
Red Yeast Rice
Theaflavins Standardized Extract
Vitamin B3 Nicacin Capsules

Digestion Support
Artichoke Leaf Extract
Digest RC™
Effervescent Vitamin C Magnesium Crystals
Enhanced Super Digestive Enzymes
Enhanced Super Digestive Enzymes w/ Probiotics
Esophaguard™
Extraordinary Enzymes
Gastro-Ease™
Ginger Force®
Pancreatin
Regimend
Tranquil Tract™
Trufiber™
WellBet PGX plus Mulberry

Energy Management
Adrenal Energy Formula
Asian Energy Boost
D-Riboce Powder
D-Riboce Tablets
Forskolin
Mitochondrial Basics with BioPQQ®
Mitochondrial Energy Optimizer with BioPQQ®
NAD+ Cell Regenerator™
Optimized NAD+ Cell Regenerator™
with Resveratrol
PQQQ Caps
Rhodiola Extract
RiboGen™ French Oak Wood Extract
Triple Action Thyroid

Eye Health
Astaanthin with Phospholipids
Brite Eyes III
Certified European Bilberry Extract
Eye Pressure Support with Mirtogenol®
MacuGuard® Ocular Support
MacuGuard® Ocular Support with Astaxanthin
Tear Support with Maguifact®

Fish Oil & Omegas
OMEGA FOUNDATIONS® Clearly EPA/DHA
OMEGA FOUNDATIONS® Mega EPA/DHA
OMEGA FOUNDATIONS® Mega GLA
with Sesame Lignans
OMEGA FOUNDATIONS® Super Omega-3 EPA/DHA with Sesame Lignans
& Olive Extract
OMEGA FOUNDATIONS® Super Omega-3 Plus EPA/DHA with Sesame Lignans,
Olive Extract, Krill & Astaxanthin
OMEGA FOUNDATIONS® Proval®
OMEGA FOUNDATIONS® Vegetarian DHA
Organic Golden Flax Seed

Food
California Estate Extra Virgin Olive Oil
Rich Rewards® Breakfast Blend
Rich Rewards® Breakfast Blend Natural Mocha Flavor
Rich Rewards® Breakfast Blend Natural Vanilla Flavor
Rich Rewards® Breakfast Blend Whole Bean Coffee
Rich Rewards® Decaf Roast
Stevia Sweetener

Glucose Management
CinSulin® with InSea2® and Cromium® 3+
Glycemic Guard™
Tri Sugar Shield®

Heart Health
Aspirin (Enteric Coated)
BioActive Folate & Vitamin B12 Caps
Cardio Peak™ with Standardized Hawthorn and Arjuna
Homocysteine Resist
Optimized Carnitine with GlycoCarn®
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with BioPQQ®
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™
Super-Absorbable CoQ10 Ubiquinone
with d-Limonene
TMG Powder
TMG Liquid Capsules

Hormone Balance
DHEA (Dehydroepiandrosterone)
Inner Power
Pregnenolone
Triple Action Cruciferous Vegetable Extract
with Resveratrol
Triple Action Cruciferous Vegetable Extract

Immune Support
AHCC®
Enhanced Zinc Lozenges
Immune Modulator with Timofend®
Immune Protect with PARACTIN®
Immune Senescence Protection Formula™
Kinoko® Gold AHCC
Kinoko® Platinum AHCC
Kyolic® Garlic Formula 102
Kyolic® Reserve
Lactotoferrin (apolactotoferrin) Caps
NK Cell Activator™
Optimized Garlic
Optimized Quercetin
ProBoost Thymic Protein A
Reishi Extract Mushroom Complex
Standardized Cistanche
Ten Mushroom Formula®
Zinc Lozenges

Inflammation Management
5-LOX Inhibitor with AprèsFlex®
Advanced Bio-Curcumin® with Ginger & Tumericones
Black Cumin Seed Oil
Black Cumin Seed Oil with Bio-Curcumin®
Boswella
Comfort Max™
Cytokine Suppress™ with EGCG
Serrafalaze
Specially-Coated Bromelain
Super Bio-Curcumin®
Zytamend® Whole Body

Joint Support
Arthro-Immune Joint Support
ArthroMax® Advanced with UC-II® & AprèsFlex®
ArthroMax® with Theaflavins & AprèsFlex®
ArthroMax® Herbal Joint Formula
Bio-Collagen with Patented UC-II®
Fast-Acting Joint formula
Glucosamine/Chondroitin Capsules
Krill Healthy Joint Formula
MSM (Methylsulfonylmethane)

Kidney & Bladder Support
Cran-Max® Cranberry Whole Fruit Concentrate
Optimized Cran-Max® with Ellirose™
Uric Acid Control
Water-Soluble Pumpkin Seed Extract

Liver Health & Detoxification
Anti-Alcohol with HepatoProtection Complex
Calcium D-Glucarate
Chlorella
Chlorophyll
European Milk Thistle
Glutathione, Cysteine & C
HepatoPro
Liver Efficiency Formula
N-Acetyl-L-Cysteine
PectaSol®
Silymarin
SDZyme® with Glisodin® & Wolfberry

Longevity & Wellness
Alpha-Lipoic Acid
AppleWise Polyphenol Extract
Berry Complete
Blueberry Extract
Blueberry Extract with Pomegranate
DNA Protection Formula
Enhanced Berry Complete with Acai
Essential Daily Nutrients
GEROPROTECT™ Ageless Cell™
GEROPROTECT™ Longevity A.I.™
Grapeseed Extract with Resveratrol & Pterostilbene
Mediterranean Whole Food Blend
Mega Green Tea Extract (decaffeinated)
Mega Green Tea Extract (lightly caffeinated)
Optimized Fucoidan with Maritech® 926
Optimized Resveratrol
pTeroPure®
Pycnogenol® French Maritime
Pine Bark Extract
Resveratrol with Pterostilbene
RNA (Ribonucleic Acid)
Super R-Lipoic Acid
X-R Shield

Men’s Health
Mega Lycopene Extract
PalmettoGuard® Saw Palmetto with Beta-Sitosterol
PalmettoGuard® Saw Palmetto/Nettle Root
Formula with Beta-Sitosterol
Pomi-T™
Premax® Natural Sex for Men®
Super MiraForte with Standardized Lignans
Triple Strength ProstaPollen™
Ultra Natural Prostate

Minerals
Boron
Extend-Release Magnesium
Ionic Selenium
Iron Protein Plus
Magnesium (Citrate)
Magnesium Caps
Only Trace Minerals
Optimized Chromium with Crominex® 3+
Sea-Iodine™
Se-Methyl L-Selenocysteine
Vanadyl Sulfate
Zinc Caps

Miscellaneous
Potassium Iodide
Solarsheild® Sunglasses

Mood & Stress Management
5-HTP
L-Theanine
Natural Cortisol Balance
Natural Stress Relief
SAMe (S-Adenosyl-Methionine)

Multivitamins
Children’s Formula Life Extension Mix™
Comprehensive Nutrient Packs ADVANCED
Life Extension Mix™ Capsules without Copper
Life Extension Mix™ Capsules
Life Extension Mix™ Powder without Copper
Life Extension Mix™ Powder
Life Extension Mix™ Tablets with Extra Niacin
Life Extension Mix™ Tablets without Copper
Life Extension Mix™ Tablets
Once-Daily Health Booster
One-Per-Day Tablets
Two-Per-Day Capsules
Two-Per-Day Tablets

Personal Care
Anti-Aging Rejuvenating Scalp Serum
Biosil
Dr. Proctor’s Advanced Hair Formula
Dr. Proctor’s Shampoo
European Leg Solution Featuring Certified Diosmin 95
Face Master Platinum Facial Toning System
Hair, Skin & Nail Rejuvenation Formula w/VERISOL®
Hair Suppression Formula
Life Extension Toothpaste
Sinus Cleanser
Venotone
Xylitol White Mouthwash

Pet Care
Cat Mix
Dog Mix

Probiotics
Bifido GI Balance
FLORASSIST® GI
FLORASSIST® GI with Phage Technology
FLORASSIST® Heart Health
FLORASSIST® Immune Health
FLORASSIST® Mood
FLORASSIST® Oral Hygiene
FLORASSIST® Prebiotic
FLORASSIST® Throat Health
Jarro-Dophilus® for Women
TheraFlora® Probiotics
TruFlora® Probiotics

Skin Care
Advanced Anti-Glycation Peptide Serum
Advanced Growth Factor Serum
Advanced Lightening Cream
Advanced Peptide Hand Therapy
Advanced Triple Peptide Serum
Advanced Under Eye Serum with Stem Cells
Amber Seltz MicroDermAbrasion
Anti-Aging Face Oil
Anti-Aging Mask
Anti-Aging Rejuvenating Face Cream
Anti-Glycation Serum with Blueberry & Pomegranate Extracts
Antioxidant Facial Mist
Anti-Redness & Adult Blemish Lotion
Collagen Boosting Peptide Serum
DNA Repair Cream
Environmental Support Serum
Essential Plant Lipids Reparative Serum
Eye Lift Cream
Face Rejuvenating Anti-Oxidant Cream
Healing Formula
Healing Vitamin K Cream
Hyaluronic Facial Moisturizer
Hyaluronic Oil-Free Facial Moisturizer
Hydrating Anti-Oxidant Facial Mist
Hydroderm
Lifting & Tightening Complex
Melatonin Cream
Mild Facial Cleanser
Multi Stem Cell Skin Rejuvenating Complex
Neck Rejuvenating Anti-Oxidant Cream
Rejuvenex® Body Lotion
Rejuvenex® Factor Firming Serum
Resveratrol Anti-Oxidant Serum
Shade Factor™
Shade Factor™ Sunscreen Lotion
Shade Factor™ Sunscreen Spray
Skin Care Collection Anti-Aging Serum
Skin Care Collection Body Lotion
Skin Care Collection Day Cream
Skin Care Collection Night Cream
Skin Firming Complex
Skin Lightening Serum
Skin Restoring Phytoceamides with Lipohexak®
Skin Stem Cell Serum
Skin Tone Equalizer
Stem Cell Cream with Alpine Rose
Tightening & Firming Neck Cream
Triple-Action Vitamin C Cream
Ultimate MicroDermabrasion
Ultra Eyelash Booster
Ultra Lip Plumper
Ultra Rejuvenex®
Ultra Rejuvenex Night®
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin E-ssential Cream
Youth Serum

Sleep
Bioactive Milk Peptides
Enhanced Natural Sleep® with Melatonin
Enhanced Natural Sleep® without Melatonin
Fast-Acting Liquid Melatonin
Glycine
L-Tryptophan
Melatonin
Optimized Tryptophan Plus

Sports Performance
Creatine Capsules
Creatine Whey Glutamine Powder (Vanilla Flavor)
New Zealand Whey Protein Concentrate (Natural Chocolate and Vanilla Flavor)
Tan Cherry with CherryPure®
Plant Protein Complete & Amino Acid Complex
Whey Protein Isolate (Chocolate and Vanilla Flavor)

Vitamins
Ascorbyl Palmitate
Benfotiamine with Thiamine
Beta-Carotene
BioActive Complete B-Complex
Biotin
Buffered Vitamin C Powder
Fast-C® with Dihydroquercetin
Gamma E Mixed Tocopherol Enhanced with Sesame Lignans
Gamma E Mixed Tocopherol/Tocotrienols
High Potency Optimized Folate
Inositol Caps
Liquid Emulsified Vitamin D3
Liquid Vitamin D3
Low-Dose Vitamin K2
Methylcobalamin MK-7
Natural Vitamin E
No Flush Niacin
Optimized Folate (L-Methylfolate)
Pantothenic Acid (Vitamin B-5)
Pycnogenol® French Maritime
Super Absorbable Tocotrienols
Super K with Advanced K2 Complex
Vitamin B12
Vitamin B6
Vitamin C with Dihydroquercetin
Vitamin D3 with Sea-Iodine™
Vitamin D3
Vitamins D and K with Sea-Iodine™

Weight Management
7-Keto® DHEA Metabolite
Advanced Anti-Adipocyte Formula
Advanced Natural Appetite Suppress
AMPK Metabolic Activator
CalReduce Selective Fat Binder
DHEA Complete
Garcinia HCA
HCAActive™ Garcinia Cambogia Extract
Integra-Lean®
Mediterranean Trim with Sinetrol™-XPur
Optimized Irvingia with Phase 3rd Calorie Control Complex
Optimized Saffron with Satireal®
Super Citramax®
Super CLA Blend with Sesame Lignans
Waist-Line Control™

Women’s Health
Advanced Natural Sex for Women® 50+
Breast Health Formula
Femmenessence MacaPause®
Natural Estrogen
Progesta-Care®
Super-Absorbable Soy Isoflavones
Ultra Soy Extract

Youth Serum
TruFlora® Probiotics
Jarro-Dophilus® for Women
Blueberry & Pomegranate Extracts
Anti-Redness & Adult Blemish Lotion
Anti-UV & Adult Blemish Lotion
Anti-Glycation Serum with Anti-Aging Rejuvenating Face Cream
Anti-Aging Mask
Anti-Aging Rejuvenating Face Cream
Anti-Glycation Serum with Blueberry & Pomegranate Extracts
Antioxidant Facial Mist
Anti-Redness & Adult Blemish Lotion
Collagen Boosting Peptide Serum
DNA Repair Cream
Environmental Support Serum
Essential Plant Lipids Reparative Serum
Eye Lift Cream
Face Rejuvenating Anti-Oxidant Cream
Healing Formula
Healing Vitamin K Cream
Hyaluronic Facial Moisturizer
Hyaluronic Oil-Free Facial Moisturizer
Hydrating Anti-Oxidant Facial Mist
Hydroderm
Lifting & Tightening Complex
Melatonin Cream
Mild Facial Cleanser
Multi Stem Cell Skin Rejuvenating Complex
Neck Rejuvenating Anti-Oxidant Cream
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Rejuvenex® Factor Firming Serum
Resveratrol Anti-Oxidant Serum
Shade Factor™
Shade Factor™ Sunscreen Lotion
Shade Factor™ Sunscreen Spray
Skin Care Collection Anti-Aging Serum
Skin Care Collection Body Lotion
Skin Care Collection Day Cream
Skin Care Collection Night Cream
Skin Firming Complex
Skin Lightening Serum
Skin Restoring Phytoceamides with Lipohexak®
Skin Stem Cell Serum
Skin Tone Equalizer
Stem Cell Cream with Alpine Rose
Tightening & Firming Neck Cream
Triple-Action Vitamin C Cream
Ultimate MicroDermabrasion
Ultra Eyelash Booster
Ultra Lip Plumper
Ultra Rejuvenex®
Ultra Rejuvenex Night®
Ultra Wrinkle Relaxer
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin E-ssential Cream
Youth Serum

Sleep
Bioactive Milk Peptides
Enhanced Natural Sleep® with Melatonin
Enhanced Natural Sleep® without Melatonin
Fast-Acting Liquid Melatonin
Glycine
L-Tryptophan
Melatonin
Optimized Tryptophan Plus

Sports Performance
Creatine Capsules
Creatine Whey Glutamine Powder (Vanilla Flavor)
New Zealand Whey Protein Concentrate (Natural Chocolate and Vanilla Flavor)
Tan Cherry with CherryPure®
Plant Protein Complete & Amino Acid Complex
Whey Protein Isolate (Chocolate and Vanilla Flavor)

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Benfotiamine with Thiamine
Beta-Carotene
BioActive Complete B-Complex
Biotin
Buffered Vitamin C Powder
Fast-C® with Dihydroquercetin
Gamma E Mixed Tocopherol Enhanced with Sesame Lignans
Gamma E Mixed Tocopherol/Tocotrienols
High Potency Optimized Folate
Inositol Caps
Liquid Emulsified Vitamin D3
Liquid Vitamin D3
Low-Dose Vitamin K2
Methylcobalamin MK-7
Natural Vitamin E
No Flush Niacin
Optimized Folate (L-Methylfolate)
Pantothenic Acid (Vitamin B-5)
Pycnogenol® French Maritime
Super Absorbable Tocotrienols
Super K with Advanced K2 Complex
Vitamin B12
Vitamin B6
Vitamin C with Dihydroquercetin
Vitamin D3 with Sea-Iodine™
Vitamin D3
Vitamins D and K with Sea-Iodine™

Weight Management
7-Keto® DHEA Metabolite
Advanced Anti-Adipocyte Formula
Advanced Natural Appetite Suppress
AMPK Metabolic Activator
CalReduce Selective Fat Binder
DHEA Complete
Garcinia HCA
HCAActive™ Garcinia Cambogia Extract
Integra-Lean®
Mediterranean Trim with Sinetrol™-XPur
Optimized Irvingia with Phase 3rd Calorie Control Complex
Optimized Saffron with Satireal®
Super Citramax®
Super CLA Blend with Sesame Lignans
Waist-Line Control™

Women’s Health
Advanced Natural Sex for Women® 50+
Breast Health Formula
Femmenessence MacaPause®
Natural Estrogen
Progesta-Care®
Super-Absorbable Soy Isoflavones
Ultra Soy Extract
<table>
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<th>ITEM No.</th>
<th>PRODUCT</th>
<th>Retail Each</th>
<th>1 Unit Each</th>
<th>4 Unit Each</th>
<th>10 Unit Each</th>
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<td>600 grams of powder</td>
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**SUBTOTAL OF COLUMN 1**

**SUBTOTAL OF COLUMN 2**

**RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

**DECEMBER 2017**
### COSMESIS

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**SUBTOTAL OF COLUMN 3**

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**SUBTOTAL OF COLUMN 4**
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**SUBTOTAL OF COLUMN 5**

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<td>01669</td>
<td>GYLACINE • 1000 mg, 100 veg. caps</td>
<td>12.00</td>
<td>9.00</td>
<td>8.10</td>
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<tr>
<td>01411</td>
<td>GRAPE SEED EXTRACT / RESVERATROL &amp; PTEROSTILBENE • 400 mg, 60 veg. caps</td>
<td>36.00</td>
<td>27.00</td>
<td>25.00</td>
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<tr>
<td>01620</td>
<td>GREEN COFFEE EXTRACT COFFEEGENIC® • 400 mg, 90 veg. caps</td>
<td>32.00</td>
<td>24.00</td>
<td>21.00</td>
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<tr>
<td>00953</td>
<td>GREEN TEA EXTRACT (Mega)*lightly caffeinated, 100 veg. caps</td>
<td>30.00</td>
<td>22.50</td>
<td>18.00</td>
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<tr>
<td>00954</td>
<td>GREEN TEA EXTRACT (Mega)*decaffeinated, 100 veg. caps</td>
<td>30.00</td>
<td>22.50</td>
<td>18.00</td>
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**SUBTOTAL OF COLUMN 6**
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<thead>
<tr>
<th>ITEM No.</th>
<th>PRODUCT</th>
<th>Retail Each</th>
</tr>
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<tbody>
<tr>
<td>02255</td>
<td>LIFE EXTENSION MIX™ w/ 240 tablets</td>
<td>74.00</td>
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<tr>
<td>02257</td>
<td>LIFE EXTENSION MIX™ w/ EXTRA NIAIN™ w/ 240 tablets</td>
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<tr>
<td>02254</td>
<td>LIFE EXTENSION MIX™ w/ 360 caps</td>
<td>78.00</td>
</tr>
<tr>
<td>02256</td>
<td>LIFE EXTENSION MIX™ POWDER w/ 12 oz</td>
<td>72.00</td>
</tr>
<tr>
<td>02265</td>
<td>LIFE EXTENSION MIX™ w/ 240 tablets w/o copper</td>
<td>74.00</td>
</tr>
<tr>
<td>02264</td>
<td>LIFE EXTENSION MIX™ w/ 360 caps w/o copper</td>
<td>78.00</td>
</tr>
<tr>
<td>01608</td>
<td>LIVER EFFICIENCY FORMULA w/ 30 veg. caps</td>
<td>18.00</td>
</tr>
<tr>
<td>01638</td>
<td>S-LOX INHIBITOR W/APRÉSFLX® w/ 100 mg, 60 veg. caps</td>
<td>22.00</td>
</tr>
<tr>
<td>01678</td>
<td>L-LYSINE w/ 620 mg, 100 veg. caps</td>
<td>9.00</td>
</tr>
<tr>
<td>00455</td>
<td>LYCOPENE (Mega) w/ 15 mg, 90 softgels</td>
<td>35.00</td>
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<tr>
<td>01992</td>
<td>MACUGUARD® OCULAR SUPPORT w/ Saffron w/ 60 softgels</td>
<td>25.00</td>
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<tr>
<td>01993</td>
<td>MACUGUARD® OCULAR SUPPORT w/ Saffron &amp; Astaxanthin® w/ 60 softgels</td>
<td>44.00</td>
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<tr>
<td>01459</td>
<td>MAGNesium CAPS w/ 500 mg, 100 veg. caps</td>
<td>12.00</td>
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<tr>
<td>01682</td>
<td>MAGNesium CITRATE w/ 160 mg, 100 veg. caps</td>
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<td>02107</td>
<td>(EXTEND-RELEASE) MAGNesium w/ 60 veg. caps</td>
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<td>01908</td>
<td>MEDITERRANEAN TRIM WITH SINETROL®-XPUR w/ 60 veg. caps</td>
<td>18.00</td>
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<tr>
<td>02109</td>
<td>MEDITERRANEAN WHOLE FOOD BLEND w/ 90 veg. caps</td>
<td>44.00</td>
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<tr>
<td>01668</td>
<td>MELATONIN w/ 300 mcg, 100 veg. caps</td>
<td>5.75</td>
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<td>01083</td>
<td>MELATONIN w/ 500 mcg, 200 veg. caps</td>
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<tr>
<td>00329</td>
<td>MELATONIN w/ 1 mg, 60 caps</td>
<td>5.00</td>
</tr>
<tr>
<td>00330</td>
<td>MELATONIN w/ 3 mg, 60 veg. caps</td>
<td>8.00</td>
</tr>
<tr>
<td>00331</td>
<td>MELATONIN w/ 10 mg, 60 veg. caps</td>
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<tr>
<td>00332</td>
<td>MELATONIN w/ 3 mg, 60 veg. lozenges</td>
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<tr>
<td>01734</td>
<td>MELATONIN (Fast-Acting Liquid) w/ 2 fl. oz (Citrus-Orange)</td>
<td>12.00</td>
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<tr>
<td>01787</td>
<td>MELATONIN TIMED RELEASE w/ 300 mcg, 100 veg. caps</td>
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<tr>
<td>01788</td>
<td>MELATONIN TIMED RELEASE w/ 750 mg, 60 veg. tablets</td>
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<tr>
<td>01786</td>
<td>MELATONIN TIMED RELEASE w/ 60 mg, 60 veg. caps</td>
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<td>02101</td>
<td>MEMORY PROTECT w/ 36 day supply</td>
<td>24.00</td>
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<tr>
<td>01536</td>
<td>METHYLCOBALAMIN w/ 1 mg, 60 veg. lozenges (vanilla)</td>
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<tr>
<td>01537</td>
<td>METHYLCOBALAMIN w/ 5 mg, 60 veg. lozenges (vanilla)</td>
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<tr>
<td>00709</td>
<td>MIGRA-EZZ™ (Butterbur) w/ 60 softgels</td>
<td>33.00</td>
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<tr>
<td>01522</td>
<td>MILK THISTLE w/ 60 veg. caps</td>
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</tr>
<tr>
<td>01922</td>
<td>MILK THISTLE w/ 60 softgels</td>
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</tr>
<tr>
<td>01925</td>
<td>MILK THISTLE w/ 120 softgels</td>
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</tr>
<tr>
<td>01940</td>
<td>MIRTAMUX w/ STANDARIZED LIGNANS (Super) w/ 120 veg caps</td>
<td>62.00</td>
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<tr>
<td>00169</td>
<td>MITOCHONDRIAL BASICS w/ BIOPOQ® w/ 30 caps</td>
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<tr>
<td>00168</td>
<td>MITOCHONDRIAL ENERGY OPTIMIZER w/ BIOPOQ® w/ 120 caps</td>
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<tr>
<td>00005</td>
<td>MK-7 w/ 90 mcg, 60 softgels</td>
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<tr>
<td>00451</td>
<td>MSM w/ 1,200 mg, 100 caps</td>
<td>14.00</td>
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**SUBTOTAL OF COLUMN 7**

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<thead>
<tr>
<th>ITEM No.</th>
<th>PRODUCT</th>
<th>Retail Each</th>
</tr>
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<tbody>
<tr>
<td>01354</td>
<td>N-ACETYL-L-CYSTEINE w/ 600 mg, 60 veg. caps</td>
<td>14.00</td>
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<tr>
<td>01914</td>
<td>NAD+ CELL REGENERA™ w/ 100 mg, 30 veg. caps</td>
<td>22.00</td>
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<tr>
<td>02144</td>
<td>NAD+ CELL REGENERA™ NICOTINAMIDE RIBOSIDE w/ 250 mg, 30 veg. caps</td>
<td>42.00</td>
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**SUBTOTAL OF COLUMN 8**

<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>PRODUCT</th>
<th>Retail Each</th>
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<tbody>
<tr>
<td>02145</td>
<td>NAD+ CELL REGENERA™ w/ RESVATROILTM (Optimized) w/ 30 veg. caps</td>
<td>50.00</td>
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<tr>
<td>01807</td>
<td>NATURAL APPETITE SUPPRESS w/ 60 veg. caps</td>
<td>38.00</td>
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<tr>
<td>00162</td>
<td>NATURAL ESTROGEN w/ 60 veg. tabs</td>
<td>38.00</td>
</tr>
<tr>
<td>01162</td>
<td>NATURAL SEX FOR WOMEN® w/ 90 veg. caps</td>
<td>59.00</td>
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<tr>
<td>01444</td>
<td>NATURAL SLEEP® w/ 60 veg. caps</td>
<td>13.00</td>
</tr>
<tr>
<td>01511</td>
<td>NATURAL SLEEP® w/ MELATONIN w/ 30 caps</td>
<td>22.00</td>
</tr>
<tr>
<td>00987</td>
<td>NATURAL STRESS RELIEF w/ 30 veg. caps</td>
<td>28.00</td>
</tr>
<tr>
<td>01603</td>
<td>NEURO-MAG© MAGNESIUM L-THREONATE w/ 60 veg. caps</td>
<td>40.00</td>
</tr>
<tr>
<td>02032</td>
<td>NEURO-MAG© MAGNESIUM L-THREONATE® w/ 90 veg. caps</td>
<td>38.00</td>
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<tr>
<td>01990</td>
<td>NITROVASC® w/CORDIART® w/ 30 veg. caps</td>
<td>18.00</td>
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<tr>
<td>01903</td>
<td>NK CELL ACTIVATOR® w/ 30 veg. tablets</td>
<td>45.00</td>
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<tr>
<td>00333</td>
<td>NO FLUSH NIAIN w/ 600 mg, 100 caps</td>
<td>19.00</td>
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<tr>
<td>01824</td>
<td>OLIVE LEAF VASCULAR SUPPORT w/ CELERY SEED EXTRACT w/ 60 veg. caps</td>
<td>36.00</td>
</tr>
<tr>
<td>01988</td>
<td>OMEGA-3 PLUS EPA/DHA w/ SESAME LIGNANS, OLIVE EXTRACT w/ 120 softgels</td>
<td>45.00</td>
</tr>
<tr>
<td>01983</td>
<td>OMEGA-3 EPA/DHA w/ SESAME LIGNANS &amp; OLIVE EXTRACT (Super) w/ 60 softgels</td>
<td>18.00</td>
</tr>
<tr>
<td>01982</td>
<td>OMEGA-3 EPA/DHA w/ SESAME LIGNANS &amp; OLIVE EXTRACT (Super) w/ 120 softgels</td>
<td>32.00</td>
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<tr>
<td>01984</td>
<td>OMEGA 3 EPA/DHA w/ SESAME LIGNANS &amp; OLIVE EXTRACT (Super) w/ 120 enteric coated softgels</td>
<td>34.00</td>
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<tr>
<td>01985</td>
<td>OMEGA 3 EPA/DHA w/ SESAME LIGNANS &amp; OLIVE EXTRACT (Super) w/ 120 enteric coated softgels</td>
<td>20.00</td>
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<tr>
<td>01986</td>
<td>OMEGA 3 EPA/DHA w/ SESAME LIGNANS &amp; OLIVE EXTRACT (Super) w/ 240 small softgels</td>
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<tr>
<td>02091</td>
<td>ONCCE-DAILY HEALTH BOOSTER w/ 60 softgels</td>
<td>54.00</td>
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<tr>
<td>02213</td>
<td>ONE-PER-DAY w/ 60 tablets</td>
<td>23.00</td>
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<tr>
<td>01328</td>
<td>ONLY TRACE MINERALS w/ 90 veg. caps</td>
<td>15.00</td>
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<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>PRODUCT</th>
<th>Retail Each</th>
</tr>
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<tbody>
<tr>
<td>01789</td>
<td>PALMETTOGUARD® SAW PALMETO w/ BETA-SITOSTEROL w/ 30 softgels</td>
<td>15.00</td>
</tr>
<tr>
<td>01790</td>
<td>PALMETTOGUARD® SAW PALMETO w/ BETA-SITOSTEROL w/ 60 softgels</td>
<td>28.00</td>
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<tr>
<td>00342</td>
<td>PECTA SOL-C® MODIFIED CITRUS PECTIN w/ 654 grams powder</td>
<td>113.95</td>
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<tr>
<td>01080</td>
<td>PECTA SOL-C® MODIFIED CITRUS PECTIN w/ 270 veg caps</td>
<td>82.95</td>
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<tr>
<td>01111</td>
<td>PEONY IMMUNE w/ 60 softgels</td>
<td>36.00</td>
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<tr>
<td>00673</td>
<td>PLEX® PLUS MULBERRY w/ 180 veg. caps</td>
<td>34.95</td>
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<tr>
<td>01953</td>
<td>POMEGRANATE COMPLETE w/ 30 softgels</td>
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<tr>
<td>00956</td>
<td>POMEGRANATE FRUIT EXTRACT w/ 30 softgels</td>
<td>19.00</td>
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<tr>
<td>01837</td>
<td>POMI-T® w/ 60 veg. caps</td>
<td>35.00</td>
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<tr>
<td>00577</td>
<td>POTASSIUM IODIDE w/ 130 mg, 14 tablets</td>
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<tr>
<td>01500</td>
<td>PQO CAPS w/ 10 mg, 30 veg. caps</td>
<td>18.00</td>
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</tbody>
</table>
### Q. R

<table>
<thead>
<tr>
<th>ITEM No.</th>
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<th>YOUR PRICE</th>
<th>QTY Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>01309</td>
<td>QUERCETIN (Optimized) • 250 mg, 60 veg. caps</td>
<td>22.00</td>
<td>18.50</td>
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<tr>
<td>01330</td>
<td>RED YEAST RICE (Bluebonnet) • 600 mg, 60 veg. caps</td>
<td>18.08</td>
<td>13.56</td>
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<tr>
<td>00605</td>
<td>REGIMINT • 60 enteric-coated caps</td>
<td>19.95</td>
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<tr>
<td>01708</td>
<td>REISHI EXTRACT MUSHROOM COMPLEX • 60 veg. caps</td>
<td>30.00</td>
<td>22.50</td>
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<tr>
<td>01448</td>
<td>REJUVENEX® BODY LOTION • 6 oz</td>
<td>24.00</td>
<td>18.00</td>
</tr>
<tr>
<td>01621</td>
<td>REJUVENEX® FACTOR FIRMING SERUM • 1.7 oz</td>
<td>65.00</td>
<td>48.75</td>
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<tr>
<td>01220</td>
<td>REJUVENEX® (ULTRA) • 2 oz</td>
<td>52.00</td>
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<tr>
<td>00676</td>
<td>REJUVENIGHT® (ULTRA) • 2 oz</td>
<td>39.95</td>
<td>29.96</td>
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<tr>
<td>01410</td>
<td>RESVERATROL W/pterostilbene • 100 mg, 60 veg. caps</td>
<td>36.00</td>
<td>27.00</td>
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<tr>
<td>02030</td>
<td>RESVERATROL (Optimized) • 60 veg. caps</td>
<td>46.00</td>
<td>34.50</td>
</tr>
<tr>
<td>00889</td>
<td>RHODIOLA EXTRACT • 250 mg, 60 veg. caps</td>
<td>14.00</td>
<td>10.50</td>
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<tr>
<td>01900</td>
<td>RIBOGEN® FRENCH OAK WOOD EXTRACT 200 mg, 30 veg. caps</td>
<td>36.00</td>
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<tr>
<td>00972</td>
<td>(D) RIBOSE POWDER • 150 grams</td>
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<tr>
<td>01473</td>
<td>(D) RIBOSE TABLETS • 100 veg. tabs</td>
<td>32.00</td>
<td>24.00</td>
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<tr>
<td>01609</td>
<td>RICH REWARDS® BREAKFAST GROUND COFFEE • 12 oz. bag</td>
<td>13.00</td>
<td>9.75</td>
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<tr>
<td>01730</td>
<td>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE Natural Mocha • 12 oz. bag</td>
<td>15.00</td>
<td>11.25</td>
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<tr>
<td>01729</td>
<td>RICH REWARDS® BREAKFAST BLEND GROUND COFFEE Natural Vanilla • 12 oz. bag</td>
<td>15.00</td>
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<tr>
<td>01612</td>
<td>RICH REWARDS® BREAKFAST BLEND WHOLE BEAN COFFEE 12 oz. bag</td>
<td>13.00</td>
<td>9.75</td>
</tr>
<tr>
<td>01610</td>
<td>RICH REWARDS® DECaffeinated ROAST GROUND COFFEE 12 oz. bag</td>
<td>14.00</td>
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</tr>
<tr>
<td>01208</td>
<td>R-LIPIDIC ACID (Super) • 240 mg, 60 veg. caps</td>
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<tr>
<td>00070</td>
<td>RNA CAPSULES • 500 mg, 100 caps</td>
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#### SUBTOTAL OF COLUMN 9

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<table>
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<th>PRODUCT</th>
<th>YOUR PRICE</th>
<th>QTY Total</th>
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</thead>
<tbody>
<tr>
<td>01432</td>
<td>SAFFRON W/SATIERAL® (Optimized) • 60 veg. caps</td>
<td>36.00</td>
<td>27.00</td>
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<tr>
<td>01935</td>
<td>SAMe (S-ADENOSYL-METHIONINE) 200 mg, 30 enteric coated tablets</td>
<td>25.00</td>
<td>18.75</td>
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<tr>
<td>01933</td>
<td>SAMe (S-ADENOSYL-METHIONINE) 400 mg, 30 enteric coated tablets</td>
<td>36.00</td>
<td>27.00</td>
</tr>
<tr>
<td>01934</td>
<td>SAMe (S-ADENOSYL-METHIONINE) 400 mg, 60 enteric coated tablets</td>
<td>66.00</td>
<td>49.50</td>
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<tr>
<td>01740</td>
<td>SEA-IDIONE™ • 1,000 mcg, 60 veg. caps</td>
<td>8.00</td>
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<tr>
<td>01879</td>
<td>SE-METHYL L-SELENOCYSTEINE • 200 mcg, 90 veg. caps</td>
<td>11.00</td>
<td>8.25</td>
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<td>00318</td>
<td>SERRAFLAVYE™ • 100 tablets</td>
<td>18.00</td>
<td>13.50</td>
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<tr>
<td>01938</td>
<td>SHADE FACTOR® • 120 veg. caps</td>
<td>44.00</td>
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<tr>
<td>02110</td>
<td>SHADE FACTOR® SUNSCREEN LOTION • 4 fl. oz</td>
<td>20.00</td>
<td>15.00</td>
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<tr>
<td>02118</td>
<td>SHADE FACTOR® SUNSCREEN SPRAY • 6 fl. oz</td>
<td>22.00</td>
<td>16.50</td>
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<tr>
<td>01884</td>
<td>SILYMARIN • 100 mg, 90 veg. caps</td>
<td>14.00</td>
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<tr>
<td>01249</td>
<td>SINUS CLEANSER • 4 oz. bottle</td>
<td>25.00</td>
<td>18.75</td>
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<tr>
<td>02129</td>
<td>SKIN CARE COLLECTION ANTI-AGING SERUM • 1.75 fl. oz</td>
<td>60.00</td>
<td>45.00</td>
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<tr>
<td>02132</td>
<td>SKIN CARE COLLECTION BODY LOTION • 6 oz</td>
<td>28.00</td>
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<tr>
<td>02130</td>
<td>SKIN CARE COLLECTION DAY CREAM • 1.65 fl. oz</td>
<td>50.00</td>
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<tr>
<td>02131</td>
<td>SKIN CARE COLLECTION NIGHT CREAM • 1.65 fl. oz</td>
<td>39.00</td>
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</tr>
<tr>
<td>01596</td>
<td>SKIN RESTORING PHYTOCERAMIDES w/ Lipowheat® • 30 liquid veg. caps</td>
<td>25.00</td>
<td>18.75</td>
</tr>
<tr>
<td>00961</td>
<td>SODIMIZE® w/OLISODIN® &amp; WOLFBERRY • 90 veg. caps</td>
<td>28.00</td>
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</tr>
<tr>
<td>00657</td>
<td>SOLARSHIELD® SUNGLASSES • Smoke color</td>
<td>12.99</td>
<td>9.74</td>
</tr>
<tr>
<td>01997</td>
<td>SOY EXTRACT (ULTRA) • 150 veg. caps</td>
<td>76.00</td>
<td>57.00</td>
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<tr>
<td>01649</td>
<td>SOY ISOFLAVONES (SUPER ABSORBABLE) • 60 veg. caps</td>
<td>28.00</td>
<td>21.00</td>
</tr>
<tr>
<td>00432</td>
<td>STEVIA® (Better) • 100 packets, 1 gram each</td>
<td>9.95</td>
<td>7.46</td>
</tr>
<tr>
<td>00438</td>
<td>STEVIA® ORGANIC LIQUID SWEETENER (Better) • 2 oz</td>
<td>11.00</td>
<td>8.25</td>
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<tr>
<td>01476</td>
<td>STRONTIUM • 750 mg, 90 veg. caps</td>
<td>20.00</td>
<td>15.00</td>
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<tr>
<td>01778</td>
<td>SUPER SELENIUM COMPLEX • 200 mcg, 100 veg. caps</td>
<td>14.00</td>
<td>10.50</td>
</tr>
</tbody>
</table>

#### SUBTOTAL OF COLUMN 10

### TO ORDER CALL: 1.954.766.8433 or 1.800.544.4440 ■ TO ORDER ONLINE VISIT: www.LifeExtension.com

**December 2017**

**Receive 25% off the retail price of all products.**
**RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>01803</td>
<td>TRI SUGAR SHIELD* 60 veg. caps</td>
</tr>
<tr>
<td>01804</td>
<td>TRI SUGAR SHIELD* 60 veg. caps</td>
</tr>
<tr>
<td>01386</td>
<td>TRUFIBER™ 180 grams</td>
</tr>
<tr>
<td>01387</td>
<td>TRUFLORA* PROBIOTICS 32 veg. caps</td>
</tr>
<tr>
<td>01721</td>
<td>TRYPTOPHAN PLUS (Optimized) 90 veg. caps</td>
</tr>
<tr>
<td>02216</td>
<td>TWO-PER-DAY 60 tablets</td>
</tr>
<tr>
<td>02216</td>
<td>TWO-PER-DAY 120 tablets</td>
</tr>
<tr>
<td>02214</td>
<td>TWO-PER-DAY 120 caps</td>
</tr>
<tr>
<td>00326</td>
<td>L-TYROSINE 500 mg, 100 tablets</td>
</tr>
<tr>
<td>01921</td>
<td>URC ACID CONTROL 60 veg. caps</td>
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<tr>
<td>02012</td>
<td>VENFLOW® 30 veg. caps</td>
</tr>
<tr>
<td>00408</td>
<td>VENOTONE 60 caps</td>
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<tr>
<td>00327</td>
<td>VINPOCETINE 10 mg, 100 veg. tablets</td>
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<tr>
<td>00372</td>
<td>VITAMIN B3 NICIN 500 mg, 100 caps</td>
</tr>
<tr>
<td>00286</td>
<td>VITAMIN B5 500 mg, 100 veg. caps (Pantothenic Acid)</td>
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<tr>
<td>01535</td>
<td>VITAMIN B6 250 mg, 100 veg. caps</td>
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<tr>
<td>00381</td>
<td>VITAMIN B12 500 mcg, 100 lozenges</td>
</tr>
<tr>
<td>01634</td>
<td>VITAMIN C w/DIHYDROQUERCETIN 1,000 mg, 60 veg. tablets</td>
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<tr>
<td>00927</td>
<td>VITAMIN C w/DIHYDROQUERCETIN 1,000 mg, 250 veg. tablets</td>
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<tr>
<td>00084</td>
<td>VITAMIN C POWDER (BUFFERED) 454 grams</td>
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<tr>
<td>01736</td>
<td>VITAMIN C-MAGNESIUM CRYSTALS (EFFERVESCENT) 180 grams</td>
</tr>
<tr>
<td>01732</td>
<td>VITAMIN D3 2,000 IU, 1 fl. oz, Mint flavor</td>
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<tr>
<td>01753</td>
<td>VITAMIN D3 1,000 IU, 90 softgels</td>
</tr>
<tr>
<td>01751</td>
<td>VITAMIN D3 1,000 IU, 250 softgels</td>
</tr>
<tr>
<td>01713</td>
<td>VITAMIN D3 5,000 IU, 60 softgels</td>
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<tr>
<td>01718</td>
<td>VITAMIN D3 7,000 IU, 60 softgels</td>
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<tr>
<td>01758</td>
<td>VITAMIN D3 w/SEA-IODINETM 5,000 IU, 60 caps</td>
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<tr>
<td>00864</td>
<td>VITAMIN D3 LIQUID 2,000 IU, 1 fl. oz</td>
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<td>02940</td>
<td>VITAMIN D AND K w/SEA-IODINETM 60 caps</td>
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<tr>
<td>01863</td>
<td>VITAMIN E (Natural) 400 IU, 90 softgels</td>
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<tr>
<td>01936</td>
<td>VITAMIN K2 (Low dose) 45 mcg, 90 softgels</td>
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<tr>
<td>01902</td>
<td>WAIST-LINE CONTROL™ 120 veg. caps</td>
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<tr>
<td>00499</td>
<td>XYLWHT® MOUTHWASH 16 oz</td>
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<tr>
<td>00619</td>
<td>X-R SHIELD® 90 veg. caps</td>
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**SUBTOTAL OF COLUMN 11**

<table>
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<th>ITEM No.</th>
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<tbody>
<tr>
<td>01813</td>
<td>ZINC HIGH POTENCY 50 mg, 90 veg. caps</td>
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<tr>
<td>01561</td>
<td>ZINC LOZENGES 60 veg. lozenges</td>
</tr>
<tr>
<td>01961</td>
<td>ZINC LOZENGES (Enhanced) 30 veg. lozenges</td>
</tr>
<tr>
<td>00051</td>
<td>ZYFLAMEND® WHOLE BODY 120 liquid veg. caps</td>
</tr>
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**BOOKS**

<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>33998</td>
<td>THE RIGHT TO TRY by Darcy Olsen • 2016</td>
</tr>
<tr>
<td>33885</td>
<td>THE BLUE ZONES SOLUTION by Dan Buettner • 2015</td>
</tr>
<tr>
<td>33877</td>
<td>THE TRUTH ABOUT MEN AND SEX by Abraham Morgentaler, MD, FACS • 2015</td>
</tr>
<tr>
<td>33875</td>
<td>DOCTORED: THE DISILLUSIONMENT OF AN AMERICAN PHYSICIAN by Sandeep Jhaur • 2015</td>
</tr>
<tr>
<td>33874</td>
<td>MISSING MICROBES by Martin J. Blaser, MD • 2014</td>
</tr>
<tr>
<td>33813</td>
<td>EATING ON THE WILD SIDE by Jo Robinson • 2014</td>
</tr>
<tr>
<td>33805</td>
<td>DISEASE PREVENTION AND TREATMENT, EXPANDED FIFTH EDITION (HARDCOVER) • 2014</td>
</tr>
<tr>
<td>33865</td>
<td>THE RESTORATION OF THE HUMAN BODY [IN 7 PARTS] by Sergey A. Dzugan, MD, PhD • 2014</td>
</tr>
<tr>
<td>33862</td>
<td>I'M TOO YOUNG FOR THIS by Suzanne Somers • 2013</td>
</tr>
<tr>
<td>33835</td>
<td>PHARMOCRACY by William Faloon • 2011</td>
</tr>
<tr>
<td>33838</td>
<td>YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY by Gary Goldftaden, MD • 2012</td>
</tr>
<tr>
<td>33815</td>
<td>KNOCKOUT by Suzanne Somers • 2009</td>
</tr>
</tbody>
</table>

**SUBTOTAL OF COLUMN 12**

---

**Not sure exactly which supplements you need?**

Talk to a Wellness Specialist
toll-free at 1-800-226-2370

**DECEMBER 2017**
### ORDER SUBTOTALS

<table>
<thead>
<tr>
<th>Subtotal Column 1</th>
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<tbody>
<tr>
<td>Subtotal Column 2</td>
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<td>Subtotal Column 3</td>
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<td>Subtotal Column 4</td>
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<tr>
<td>Subtotal Column 11</td>
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<tr>
<td><strong>Subtotal Column 12</strong></td>
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</table>

### ORDER TOTALS

<table>
<thead>
<tr>
<th>Subtotal of Columns 1 - 12</th>
<th>$5.50††</th>
</tr>
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</table>

**POSTAGE & HANDLING**
(Any size order, in the U.S., includes Alaska & Hawaii)

$5.50

**C.O.D.s**
(ADD $7 FOR C.O.D. ORDERS)

UPS OVERNIGHT add $16, UPS 2nd Day Air add $7. For Puerto Rico, US Virgin Islands, add $7. CANADA UPS EXPRESS Post rate $17.50, UK flat rate $25 USD. ALL OTHER INTERNATIONAL AIR WILL BE ADDED.

### GRAND TOTAL
(MUST BE IN U.S. DOLLARS)

**PLEASE MAIL TO:** Life Extension
P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198
Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050

---

**BIL...
Compare TWO-PER-DAY to the Leading Brand

CENTRUM®

The Two-Per-Day multinutrient formula is superior to commercial multivitamins because it provides vastly higher potencies of vitamins, minerals and plant extracts.

Two-Per-Day Capsules
Item #02214 • 120 capsules • Non-GMO

<table>
<thead>
<tr>
<th>Retail Price</th>
<th>Your Price</th>
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<tbody>
<tr>
<td>1 bottle</td>
<td>$24</td>
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<tr>
<td>4 bottles</td>
<td>$18 each</td>
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</table>

Two-Per-Day Tablets
Item #02215 • 120 tablets • Non-GMO

<table>
<thead>
<tr>
<th>Retail Price</th>
<th>Your Price</th>
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<tbody>
<tr>
<td>1 bottle</td>
<td>$21</td>
</tr>
<tr>
<td>4 bottles</td>
<td>$15.75 each</td>
</tr>
</tbody>
</table>

Each bottle provides a two-month supply.

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


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

Visit us at www.LifeExtension.com

7 HOW BONE LOSS ACCELERATES AGING
Osteoporosis causes the release of growth factors that contribute to degenerative illnesses. Maintaining strong bones reduces these risks while protecting against fractures.

26 RHODIOLA QUICKLY COMBATS FATIGUE
A new study shows that rhodiola extract improves symptoms of fatigue in less than a week.

54 PEA PROTEIN: A DAIRY-FREE OPTION
Organic pea protein powder provides a nutrient-dense protein, high in essential amino acids, with excellent digestibility.

34 CONVENIENT WAY TO MAINTAIN BONE HEALTH
A tasty chocolate chewable tablet simplifies osteoporosis prevention by providing optimal potencies of bone-building nutrients.

47 SUZANNE SOMERS INTERVIEW
Suzanne Somers reveals how she took on Big Pharma to protect women against conventional hormone replacement drugs.

64 REBUILD SKIN, HAIR, AND NAILS FROM WITHIN
Oral ingestion of collagen peptides, solubilized keratin, biotin, and silicon can help restore youthful skin, hair, and nails.