New Blood Pressure Guidelines

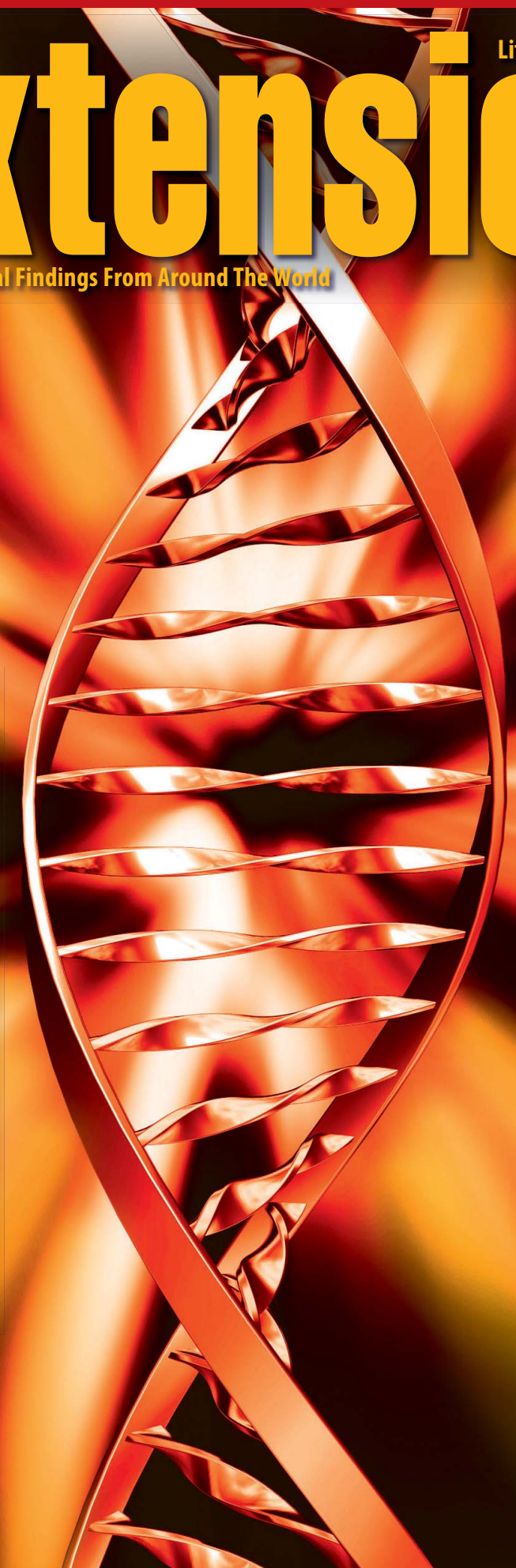
LifeExtension®

LifeExtension.com

The ULTIMATE Source For New Health And Medical Findings From Around The World

March 2018

Protect Your DNA



Shield Against Artery Stiffness

Damaging Effect Of Excess Insulin

Hero Who Exposed Head-Trauma Risks

Fight Aging Now Conference 2018

$4.99
03
0 09281 01139 2

FORTIFY YOUR INTESTINAL FLORA

Probiotic Blend with Phage Technology

Dual Encapsulation for Optimal Delivery

FLORASSIST® GI WITH Phage Technology combines six strains of probiotics, along with four types of phages that work within hours, not days.

The addition of **phages** is designed to remove unwanted **bacteria** in the **intestines** to make room for the beneficial **probiotics**.

FLORASSIST® GI with Phage Technology • Item #02125
30 liquid vegetarian capsules

	Retail Price	Your Price
1 bottle	$33	**$24.75**
4 bottles		**$22.50 each**

The suggested daily serving of one liquid vegetarian capsule of **FLORASSIST® GI with Phage Technology** provides:

Probiotic Blend • 15 Billion CFU†**

- *L. acidophilus* La-14
- *B. lactis* Bl-04
- *L. paracasei* Lpc-37
- *L. rhamnosus* Lr-32
- *B. bifidum/lactis* Bb-02
- *B. longum* BB536®

TetraPhage Blend • 15 mg **

- *LH01 - Myoviridae*
- *LL5 - Siphorviridae*
- *T4D - Myoviridae*
- *LL12 - Myoviridae*

For full product description and to order **FLORASSIST® GI with Phage Technology**, call **1-800-544-4440** or visit **www.LifeExtension.com**

† Colony Forming Units at time of manufacture. ** Daily Value not established.

NON GMO LE CERTIFIED

LifeExtension® Magazine

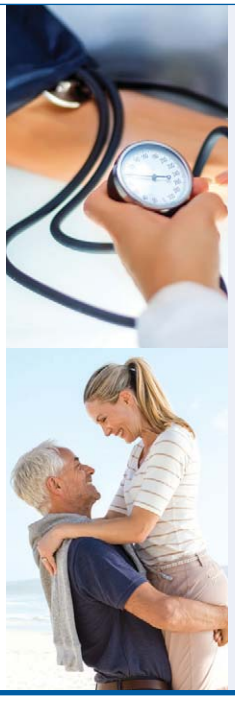
Table of Contents

Volume Twenty Four / Number Three • March 2018

REPORTS

PROTECT YOUR HEALTHY DNA
DNA damage correlates closely with how long we will live. Clinical studies uncover new **plant extracts** that *reduce* cellular DNA damage and may lower cancer risk.

DEPARTMENTS



LifeExtension® Magazine

March 2018

Volume Twenty Four / Number Three

Ratings based on results of the 2017 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com/survey2017.

NSF
GMP Registered Dietary Supplements

LIFE EXTENSION (ISSN 1524-198X) Vol. 24, No. 3 ©2018 is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33309-3338. Published 13 times a year. Subscription rate: $40 per year in the United States. US $47 in Canada. US $60 in other countries. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscriptions: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. POSTMASTER: Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. Printed in USA.

SUPPORT YOUR AGING IMMUNE SYSTEM

Three natural plant extracts—
Cistanche, ***Pu-erh Tea***,
and ***Reishi Mushroom***—
have been shown to support
more youthful immune function.

Cistanche

- Supports longer lifespan in animals.[1]
- Optimizes the ratio of CD4 to CD8 cells, indicative of a more youthful immune system.[1]

Pu-erh tea

- Boosts natural killer and naïve T cells while decreasing interleukin-6 (IL-6).[2]

Reishi

- Helps reduce biomarkers of immune senescence.[3]

For full product description and
to order **Immune Senescence
Protection Formula™**,
call **1-800-544-4440** or
visit **www.LifeExtension.com**

	Retail Price	Your Price
1 bottle	$40	**$30**
4 bottles		**$27 each**

Item #02005 • 60 vegetarian tablets

NON GMO PROJECT VERIFIED

References

1. *Anti-Aging Med.* 2011;8(2):7-14.
2. *Food Chem.* 2012 Dec 15;135(4):2222-8.
3. *Am J Chin Med.* 2011;39(1):15-27.

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. Bezzek, MD, FACP, FAARM, FAAEM, is board-certified in internal medicine, emergency medicine, and anti-aging/regenerative medicine. He is the director of Med-Link Consulting, which specializes in bioidentical hormone replacement therapy, natural alternatives, anti-aging, and degenerative diseases. He holds 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 hemapoetic 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 Milano, 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.

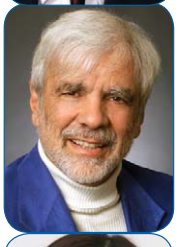
Steven B. Harris, MD, is president and director of research at Critical Care Research, a company that grew out of 21st Century Medicine in Rancho Cucamonga, CA. Dr. Harris participates in groundbreaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction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

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

Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPath., FACP
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.

Low-Cost Biologically Active B-COMPLEX

Enzymatically Active Vitamins

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

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

BioActive Complete B-Complex
Item #01945 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	$12	**$9**
4 bottles		**$8 each**

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

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

NON GMO LE CERTIFIED

New Hypertension Guidelines

BY WILLIAM FALOON

Life Extension® has waged a long battle over what defines ***optimal*** blood pressure.

Back in the early **1980**s, doctors delayed treatment until systolic **blood pressure** exceeded **150 mmHg**.

We argued ***against*** allowing patients to have blood pressure this high. Our readers were urged to target their blood pressure below **120/80 mmHg**.

Against us was a medical establishment that viewed ***systolic*** blood pressure of **140-150 mmHg** as "normal." They viewed it as "normal" because most elderly people were in these high ranges.

Our rebuttal was that it is also "normal" for older people to succumb to **heart attack**, **stroke** and **kidney failure** related to ***higher***-than-***optimal*** blood pressure.

On **November 13, 2017,** at the **American Heart Association's** annual conference, revised hypertension guidelines were issued. The new guideline specifies that normal **systolic** pressure is under **120 mmHg**.

We applaud this turnabout, but regret it took over **30 years** for this common-sense approach to be recognized. The cost in shortened lifetimes caused by the establishment's delay in recognizing **optimal** blood pressure is enormous.

This editorial clarifies these new hypertension guidelines and suggests how to better lower your blood pressure.

As you can see by the chart at the bottom of this page, the majority of Americans aged 65 and older have **high blood pressure** that is medically defined as **hypertension**.

With the new hypertension guidelines from the **American Heart Association** and the **American College of Cardiology**, an even greater number of Americans are now clinically hypertensive. This will enable more people to take assertive actions to achieve lower blood pressure and reduce their risks of losing their eyesight, suffering kidney failure, and developing coronary-cerebral artery occlusion.

It's important to note that the study the **American Heart Association** and the **American College of Cardiology** most relied on to revise blood pressure guidelines downward involved people **at risk** for cardiovascular disease.[1] Some argue these findings may not apply to individuals at low risk.

I continue to urge that healthy individuals of all ages strive for low-normal blood pressure readings. I say this based on a volume of observational studies, including data showing that people who have **mid-life** hypertension are at higher risk of vascular events even when they lower their blood pressure in later life.[2-5]

Arterial damage is most severe when blood pressure peaks. You don't get credit for the hours when blood pressure is in low normal ranges. This is why ***at-home*** monitoring of blood pressure at different times of the day is so important.

The charts you see on these pages are from the many Power Point presentations I have given suggesting most people target their **blood pressure** around **Life Extension**'s ***optimal*** range of **115/75 mmHg**.

Another purpose of this editorial is to provide guidance to help ensure that elderly readers do not lower their blood pressure too quickly, as this can create adverse consequences.

Early Data Showed Benefits of Lower Blood Pressure

In year **2013**, a published analysis of **18** prior studies showed that people whose systolic blood pressure was in the range of **120-139 mmHg** were at a **50%** increased risk of **coronary heart disease** and **71%** increased risk of **stroke**.[7]

The studies analyzed in this **2013** report are among those that **Life Extension** used long ago to recommend that ***optimal*** systolic blood pressure for most individuals is around **115 mmHg**.

Mainstream medicine during this pre-2017 era did not classify people with systolic readings of **120-139 mmHg** as **hypertensive**. The tragic results, based on observational studies, are many preventable heart attacks, strokes, and other degenerative conditions that can occur when systolic pressure exceeds **119 mmHg**.[8-10]

The **systolic** number is most important as this reflects the

Severity of the Epidemic

Persons defined as hypertensive by CDC:[6]

Men	65-74 years	**63.4%**
	75 years and over	**72.3%**
Women	65-74 years	**64.3%**
	75 years and over	**79.9%**

These data published by the **Centers for Disease Control and Prevention** in **2016** reflect the percent of **hypertensive** Americans based on antiquated reference ranges that diagnosed hypertension when blood pressure reached **140/90 mmHg**.

The new guidelines stating ***optimal*** systolic pressure is under **120 mmHg** will cause the percent of Americans classified as hypertensive to skyrocket, which should enable a marked reduction of vascular disease risk.

Deadly Impact of Systolic Blood Pressure 120-139 mmHg[7]

A year 2013 analysis of 18 studies showed correlation in those with systolic blood pressure between 120-139 mmHg and an associated:

- **50% increased risk of coronary heart disease**
- **71% increased risk of stroke**

Decades of published data reveal that low-normal blood pressure slashes heart attack and stroke risk. This **2013** analysis shows the lethal impact of systolic blood pressure ranges of **120-139 mmHg**, a level previously termed "prehypertension."

On November 13, 2017, the **American Heart Association** and the **American College of Cardiology** abolished the term "prehypertension." Anyone with systolic pressure above **119 mmHg** is classified as having "elevated" blood pressure.

pressure applied to the **arterial system** with each heartbeat. Higher **arterial pressure** causes greater **damage** to the endothelium, renal tubules, and delicate structures in the eye.

The Study That Woke Up the Medical Establishment!

The studies compiled for publication in **2013** were not enough for establishment cardiology to pay attention. They wanted to see hard data from a carefully controlled clinical trial.

The sought-after trial was initiated in **2010** with a large group of people. The purpose was to assess whether targeting a reduction of **systolic** blood pressure below **120 mmHg** was superior to the then-current standard of reducing it to below **140 mmHg**.

The doctors focused on the systolic (top) number because it is a better predictor of **heart attack** and **stroke**.

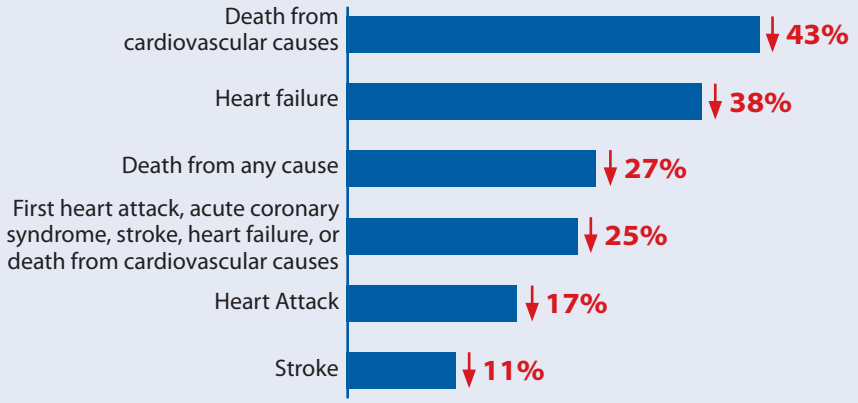
The name of this study is **Systolic Blood Pressure Intervention Trial**, also known as **SPRINT**.[11] It was published in the ***New England Journal of Medicine*** in **2015** and garnered huge media coverage.

The **SPRINT** study was supposed to last **five years**, but was stopped after **3.26 years** because it was abundantly clear that the group whose blood pressure was reduced to a target systolic range under **120 mmHg** were dying **27%** less frequently.

What impressed the study's researchers the most was a striking **43%** lower relative risk of **cardiovascular death** in those whose blood pressure was aggressively reduced.[11]

Risk Reduction of Intensive Treatment (Below 120 mmHg) Compared to Standard Treatment (Below 140 mmHg)

This chart shows reductions in death and disease when systolic blood pressure target is below **120 mmHg** compared to below **140 mmHg**.



Benefits of Lower Blood Pressure Confirmed in 2015[11]

Compared to people with a target systolic blood pressure below 140 mmHg, subjects with target blood pressure below 120 mmHg had:

- **38%** lower risk of heart failure
- **43%** lower risk of cardiovascular death
- **27%** lower overall mortality

The SPRINT study published in **2015** confirmed that targeting systolic blood pressure below **120 mmHg** results in substantial reductions in heart disease and lower overall death rates.

The SPRINT study also found that **heart failure** rates plummeted by **38%** in patients whose target blood pressure aimed below **120 mmHg**. Heart failure occurs when the heart cannot pump enough blood and oxygen to support other organs in one's body. It is a leading cause of hospitalizations and costs this nation an estimated **$32 billion** each year.[12]

Heart disease remains the number-one cause of death in the United States, killing about **610,000** Americans each year.[13]

The dramatic (**43%**) drop in **cardiovascular deaths** shown in the SPRINT study motivated mainstream cardiologists to question their long-standing practice of largely ignoring their patient's blood pressure until readings exceeded **139/89 mmHg**.

Based on widespread media coverage and physician concurrence, it appears the medical establishment has finally woken up to what readers of this publication were told to do in the **1980s**.

Safety Concerns When Blood Pressure is Lowered too Much

Older individuals face a dilemma when it comes to rapid blood-pressure reduction.

Decades of systolic blood pressure above **115 mmHg**, along with risk factors in the blood such as **C-reactive protein**, **homocysteine** and **triglycerides** can damage the delicate endothelium that lines the inner arterial wall.

As a result of prior arterial injury, some older people need to maintain ***higher***-than-optimal blood pressure to ensure their **kidneys** are sufficiently removing waste products, and that their **brain** is receiving sufficient oxygen flow.

In the **SPRINT** study that convinced the **American Heart Association** and the **American College of Cardiology** to adopt lower systolic guidelines (below **120 mmHg**), there was an increase in the risk of kidney problems.

Practical Steps to Blood-Pressure Control

I continue to be shocked by antiquated recommendations made by organizations like the **American Heart Association**.

In revising their definition of optimal systolic pressure to below **120 mmHg**, the American Heart Association suggests people have their blood pressure tested once every two years at their doctor's office.[18]

This suggestion makes no sense considering that low-cost **at-home** monitors are widely available and are **proven** to enable superior **24-hour** blood-pressure control.

There is extensive individual variability in patient responses to blood-pressure lowering therapies. Some people need twice-a-day drug dosing, or only need to take their medications in situations when their blood pressure elevates (such as when drinking caffeine or under stressful events or during particular times of the day/night).

I have vociferously argued for decades that systolic blood pressure should be below **120 mmHg**. I am equally confident that most readers of this magazine can better control their blood pressure using an **at-home monitor**. This enables precise control of drug dosing and offers the ability to measure the effects of lifestyle changes like losing weight, healthier diets and getting more physical activity.

Blood Tests Measure Kidney Function

For those who now seek to aggressively drop their **systolic** reading to below **120 mmHg**, we urge this be done slowly, using an **at-home** monitor to carefully control the rate of blood-pressure reduction.

As blood-pressure readings drop, check your blood markers of **kidney function** using low-cost **blood tests** that measure **creatinine**, **blood urea nitrogen** (BUN), **glomerular filtration rate** and lots more. Blood test panels that include these measures of renal function cost very little.

If blood-test results indicate a kidney problem, cut back on your blood pressure reduction program, consult your physician and retest within two weeks.

An Important Overlooked Fact

An underappreciated problem that has been ignored by **SPRINT** study advocates has been the manner in which blood pressure was measured in SPRINT.

Specifically, the study used an **automated** measurement device, the Omron 907XL.

"In SPRINT, study staffs were trained to program an Omron 907XL, to wait five minutes and then record three readings at one-minute intervals. After the device was activated, research staff left the examining room, with the patient then being alone during the five-minute rest period while the three readings were recorded automatically."[14]

This protocol is very different from the method used in the vast majority of physician's offices where a single measure of blood pressure is taken with medical staff present in the room.

Automated blood-pressure measurements generally deliver readings significantly LOWER than readings in a physician's office.

This suggests that the SPRINT systolic values obtained were on average **7** to **10 mmHg** lower than blood pressure measured in routine clinical practice.

Taken as a whole, this also suggests that systolic blood pressure as measured in recent randomized trials, including SPRINT, is up to 10 systolic points LOWER than that measured with traditional office measurement methodology.

The consequence is that targeting systolic blood pressure below **120 mmHg** without using similar measurement automated methods (as in SPRINT) may increase the risk of adverse events. This might occur by overshooting the SPRINT trial-based systolic blood-pressure targets and potentially leading to hypotensive complications.

Stated another way, a systolic blood pressure of **120 mmHg** in conventional practice would be roughly the equivalent of a systolic blood pressure of **110 mmHg** in SPRINT. Conversely, a blood pressure of **130 mmHg** systolic in conventional practice is roughly the equivalent systolic blood pressure of **120 mmHg** in SPRINT.

This suggests that blood-pressure readings over **120 mmHg** using conventional testing are not as dangerous as what the SPRINT findings showed.

These data suggest that more precise blood pressure monitoring may enable aging individuals to benefit from superior hypertension control.[15-17] We believe many people can better achieve this using an at-home blood pressure monitor.

The most accurate measure of renal health is the **cystatin-c** blood test. This costs more than standard **CBC/Chemistry** blood tests, but for those at risk for renal complications, we have long advocated its use.

These blood tests can be ordered 24 hours/day by calling **1-800-208-3444** or logging on to LifeExtension.com/labtesting

Protecting the Brain against Reduced Oxygen Flow

Aggressive blood pressure reduction can create problems for certain elderly, frail people.

Older patients with significant pre-existing vascular disease and other medical problems often require ***higher*** blood pressure to perfuse critical organs like the **brain**.

These patients require a higher ***perfusion pressure*** to allow blood to reach critical organs and tissues throughout the body.[19]

We described the phenomenon in previous issues of ***Life Extension Magazine®***,[20] whereby some older patients do not tolerate aggressive blood pressure reduction to a predefined value (such as under **120 mmHg**).

These individuals require careful monitoring using blood tests as well as assessments of cognitive function.

These tests are necessary to facilitate appropriate dosing of antihypertensive medications to a blood pressure that can be tolerated by these patients.

When lowering one's blood pressure, one should be cognizant of dizzy spells, memory lapses, and perceived loss of motor coordination (frailty).

Ideally, one would have clinical measures performed using a standardized **frailty index** score, but this is not available from most physicians.

Nutrients most readers of this magazine take, along with healthy diets containing plant-based **polyphenols,** can protect and help restore cerebral circulation.[21-23]

Those embarking on an aggressive blood-pressure reduction program may also consider a periwinkle-derived alkaloid called **vinpocetine** that has been used for decades in **Europe** by those with chronic cerebral hypoperfusion.[24-26]

Blood-Flow-Restoring Effects of Vinpocetine

Cerebral ischemia (loss of blood flow) can lead to irreversible brain damage. It is therefore important to rescue **hypoperfused** areas of the brain whenever possible.

A review was conducted on the effects of **vinpocetine** on chronic cerebrovascular patients.[25] Studies included **cerebral perfusion imaging** and **clinical assessments** of cognitive function after single dose and long-term vinpocetine use.

The results from these clinical trials showed that vinpocetine increased **cerebral perfusion**,[26] elevated brain-cell consumption of glucose-oxygen,[26,27] and improved other measures of neurological function.[28]

This analysis showed that **vinpocetine** improves blood flow to hypoperfused areas of the brain and enhanced quality-of-life scores.[25]

Those seeking to avoid depriving their brain of blood flow when lowering their blood pressure may consider supplementing with **20-30 mg** daily of low-cost **vinpocetine**.

Nutrients Versus Drugs

There are a wide variety of **nutrients** that produce modest blood pressure-lowering effects.

If your systolic pressure is around **125 mmHg** and you seek to bring it down to the **115 mmHg** range, you might be able to accomplish this by losing a little weight, improving your diet, exercising more, and supplementing with quercetin and melatonin.

View Our Updated Hypertension Protocol Online

An enormous volume of data has been published in recent years that relate to what groups of aging people most benefit from with blood-pressure reductions, along with better ways of achieving optimal control.

We've analyzed and compiled this data, which you can view at no charge by logging on to **LifeExtension.com/hypertension-protocol**

An example of what you'll read relates to what diabetics should do when their blood pressure is too high. Current evidence suggests that there may be adverse effects when diabetics are overly aggressive in reducing only moderately elevated blood pressure.

My personal rebuttal to these studies is that diabetics should do more to reverse their **glucose/insulin** imbalances, along with other known vascular risks.

For many people, however, they will need the appropriate prescription **medication** to achieve optimal blood-pressure goals. The long history of use with these drugs and their low cost causes us to recommend certain drugs that not only safely lower blood pressure, but confer other benefits such as improving *endothelial function*.

In the **March 2015** issue of ***Life Extension Magazine***, we published a report on a generic drug called **telmisartan** that we felt was the best antihypertensive drug for most individuals to consider.[29]

With the availability of low-cost **at-home** blood-pressure monitors, there is no longer a need to speculate as to what approach one should take.

If lifestyle changes and/or nutrients enable one to achieve optimal readings (**115/75 mmHg**), then prescription drugs are obviously not needed for blood-pressure control.

If **systolic** pressure remains persistently above **119 mmHg**, then **40 mg** a day of **telmisartan** (and/or other medications your physician prescribes) should be attempted. Telmisartan doses can be increased to **80 mg**/day if needed.

Unlike many drugs the **FDA** approves that are side-effect prone and don't work particularly well, certain **antihypertensive medications** have lifesaving properties that cannot be overlooked if one's blood-pressure readings remain higher than optimal.

Importance of At-Home Blood-Pressure Monitoring

Monitoring blood pressure outside of the doctor's office is emerging as a standard of care for high blood pressure, as it helps to more accurately diagnose and track treatment efficacy.[32]

Everyone who has been diagnosed with high blood pressure should have an **at-home monitor** in order to ensure that any intervention they are undertaking is working to help keep their blood-pressure readings around **115/75 mmHg** throughout the day.

The importance of regular **at-home blood-pressure monitoring** cannot be overstated.

In fact, monitoring your blood pressure at home may help you better control it, possibly obviating the need to increase medication dosage.

In a randomized controlled trial, 136 participants with uncontrolled high blood pressure were assigned to **at-home** blood-pressure monitoring or usual care; their medication regimen was not modified.[33]

Those who regularly monitored their blood pressure **at home** saw significant reductions in systolic and diastolic blood pressure compared with those who did not self-monitor.

At the end of the two-month trial, **32.4%** of the self-monitoring (at-home) group had blood pressure of less than **130/80 mmHg**, while only ***half*** as many participants—**16.2%**—who did not self-monitor saw their blood pressure fall below this level.[33]

Several other studies have found similar benefits associated with at-home blood-pressure monitoring.[34-37]

The Turning Tide of Medical Opinion

Fascinating reviews about the history of hypertension can easily by obtained via **Google** searches.

As recently as **1949**, an esteemed physician published that systolic blood pressure over **200 mmHg** need not be treated.[30]

In the **1980s**, many doctors accepted **systolic** readings of **160 mmHg** as normal and did not treat it.[31]

The revised **2017** guidelines that normal **systolic** pressure is under **120 mmHg** will spare many humans from disability and death.

An abundance of published findings confirms that keeping one's blood pressure on the low end of the reference range confers significant protection against a host of degenerative conditions.

The easiest way to accomplish this is with an **at-home** blood-pressure monitor. This enables you to assess your blood pressure at several different times of the day to ensure there are no significant elevations above **119 mmHg**.

The box on this page is a description of a recent study showing vastly superior results when people check their blood pressure **at home**, rather than waiting for their next doctor's visit.

For longer life,

William Faloon, Co-Founder
Life Extension Buyers Club

References

1. Available at: http://www.ajmc.com/conferences/aha-2017/80-new-guidelines-say. Accessed December 13, 2017.
2. Gottesman RF, Albert MS, Alonso A, et al. Associations Between Midlife Vascular Risk Factors and 25-Year Incident Dementia in the Atherosclerosis Risk in Communities (ARIC) Cohort. *JAMA Neurol.* 2017;74(10):1246-54.
3. Gilsanz P, Mayeda ER, Glymour MM, et al. Female sex, early-onset hypertension, and risk of dementia. *Neurology.* 2017;89(18):1886-93.
4. Kennelly SP, Lawlor BA, Kenny RA. Blood pressure and dementia - a comprehensive review. *Ther Adv Neurol Disord.* 2009;2(4):241-60.
5. Allen N, Berry JD, Ning H, et al. Impact of blood pressure and blood pressure change during middle age on the remaining lifetime risk for cardiovascular disease: the cardiovascular lifetime risk pooling project. *Circulation.* 2012;125(1):37-44.
6. Available at: https://www.cdc.gov/nchs/fastats/older-american-health.htm. Accessed December 15, 2017.
7. Huang Y, Wang S, Cai X, et al. Prehypertension and incidence of cardiovascular disease: a meta-analysis. *BMC Med.* 2013;11:177.
8. Kshirsagar AV, Carpenter M, Bang H, et al. Blood pressure usually considered normal is associated with an elevated risk of cardiovascular disease. *Am J Med.* 2006;119(2):133-41.
9. Chobanian AV, Bakris GL, Black HR, et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension.* 2003;42(6):1206-52.
10. Taylor BC, Wilt TJ, Welch HG. Impact of diastolic and systolic blood pressure on mortality: implications for the definition of "normal". *J Gen Intern Med.* 2011;26(7):685-90.
11. Sprint Research Group, Wright JT, Jr., Williamson JD, et al. A Randomized Trial of Intensive versus Standard Blood-Pressure Control. *N Engl J Med.* 2015;373(22):2103-16.
12. Huynh-Hohnbaum AL, Marshall L, Villa VM, et al. Self-Management of Heart Disease in Older Adults. *Home Health Care Serv Q.* 2015;34(3-4):159-72.
13. Available at: http://www.cdc.gov/heartdisease/facts.htm. Accessed August 22, 2016.
14. Myers MG, Cloutier L, Gelfer M, et al. Blood Pressure Measurement in the Post-SPRINT Era. *A Canadian Perspective.* 2016;68(1):e1-e3.
15. Niiranen TJ, Kantola IM, Vesalainen R, et al. A comparison of home measurement and ambulatory monitoring of blood pressure in the adjustment of antihypertensive treatment. Am J Hypertens. 2006;19(5):468-74.
16. Fagard RH, Van Den Broeke C, De Cort P. Prognostic significance of blood pressure measured in the office, at home and during ambulatory monitoring in older patients in general practice. J Hum Hypertens. 2005;19(10):801-7.
17. Agarwal R, Andersen MJ. Blood pressure recordings within and outside the clinic and cardiovascular events in chronic kidney disease. Am J Nephrol. 2006;26(5):503-10.
18. Available at: http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/GettheFactsAboutHighBloodPressure/How-High-Blood-Pressure-is-Diagnosed_UCM_301873_Article.jsp. Accessed December 18, 2017.
19. Stocchetti N, Chieregato A, De Marchi M, et al. High cerebral perfusion pressure improves low values of local brain tissue O2 tension (PtiO2) in focal lesions. *Acta Neurochir Suppl.* 1998;71:162-5.
20. Available at: http://www.lifeextension.com/Magazine/2016/11/Why-24-Hour-Blood-Pressure-Control-Matters/Page-01. Accessed December 18, 2017.
21. Vauzour D. Dietary polyphenols as modulators of brain functions: biological actions and molecular mechanisms underpinning their beneficial effects. *Oxid Med Cell Longev.* 2012;2012:914273.
22. Kennedy DO. Polyphenols and the human brain: plant "secondary metabolite" ecologic roles and endogenous signaling functions drive benefits. *Adv Nutr.* 2014;5(5):515-33.
23. Bowtell JL, Aboo-Bakkar Z, Conway ME, et al. Enhanced task-related brain activation and resting perfusion in healthy older adults after chronic blueberry supplementation. *Appl Physiol Nutr Metab.* 2017;42(7):773-9.
24. Horvath S. [The use of vinpocetine in chronic disorders caused by cerebral hypoperfusion]. *Orv Hetil.* 2001;142(8):383-9.
25. Bagoly E, Feher G, Szapary L. [The role of vinpocetine in the treatment of cerebrovascular diseases based in human studies]. *Orv Hetil.* 2007;148(29):1353-8.
26. Bonoczk P, Panczel G, Nagy Z. Vinpocetine increases cerebral blood flow and oxygenation in stroke patients: a near infrared spectroscopy and transcranial Doppler study. *Eur J Ultrasound.* 2002;15(1-2):85-91.
27. Szilagyi G, Nagy Z, Balkay L, et al. Effects of vinpocetine on the redistribution of cerebral blood flow and glucose metabolism in chronic ischemic stroke patients: a PET study. *J Neurol Sci.* 2005;229-230:275-84.
28. Balestreri R, Fontana L, Astengo F. A double-blind placebo controlled evaluation of the safety and efficacy of vinpocetine in the treatment of patients with chronic vascular senile cerebral dysfunction. *J Am Geriatr Soc.* 1987;35(5):425-30.
29. Available at: http://www.lifeextension.com/Magazine/2015/3/Best-Drug-To-Treat-Hypertension/Page-01. Accessed December 18, 2017.
30. Moser M. Historical perspectives on the management of hypertension. *J Clin Hypertens (Greenwich).* 2006;8(8 Suppl 2):15-20; quiz 39.
31. The 1980 report of the joint national committee on detection, evaluation, and treatment of high blood pressure. *Archives of Internal Medicine.* 1980;140(10):1280-5.
32. Krakoff LR. Blood Pressure Out of the Office: Its Time Has Finally Come. *Am J Hypertens.* 2016;29(3):289-95.
33. Fuchs SC, Ferreira-da-Silva AL, Moreira LB, et al. Efficacy of isolated home blood pressure monitoring for blood pressure control: randomized controlled trial with ambulatory blood pressure monitoring - MONITOR study. *J Hypertens.* 2012;30(1):75-80.
34. Breaux-Shropshire TL, Judd E, Vucovich LA, et al. Does home blood pressure monitoring improve patient outcomes? A systematic review comparing home and ambulatory blood pressure monitoring on blood pressure control and patient outcomes. *Integr Blood Press Control.* 2015;8:43-9.
35. Agena F, Prado Edos S, Souza PS, et al. Home blood pressure (BP) monitoring in kidney transplant recipients is more adequate to monitor BP than office BP. *Nephrol Dial Transplant.* 2011;26(11):3745-9.
36. Imai Y, Obara T, Asamaya K, et al. The reason why home blood pressure measurements are preferred over clinic or ambulatory blood pressure in Japan. *Hypertens Res.* 2013;36(8):661-72.
37. Fuchs SC, Mello RG, Fuchs FC. Home blood pressure monitoring is better predictor of cardiovascular disease and target organ damage than office blood pressure: a systematic review and meta-analysis. *Curr Cardiol Rep.* 2013;15(11):413.

KICK YOUR HEALTH INTO HIGH GEAR WITH...

POMEGRANATE COMPLETE

THE NEXT-GENERATION POMEGRANATE FORMULA

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

It *augments* these **polyphenols** with other pomegranate plant compounds to help ease inflammation and combat age-related metabolic changes.

Pomegranate Complete
Item #01953 • 30 softgels

	Retail Price	Your Price
1 bottle	$24	**$18**
4 bottles		**$15.75 each**

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

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

NON GMO LE CERTIFIED

BOOST MENTAL and PHYSICAL ENERGY with RHODIOLA EXTRACT

Helps restore vital cellular energy.

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
Item #00889 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	$14	**$10.50**
4 bottles		**$9 each**

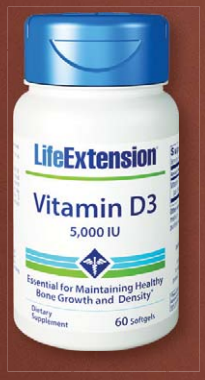
For full product description and to order **Rhodiola Extract**, call **1-800-544-4440** or visit **www.LifeExtension.com**

NON GMO LE CERTIFIED

"D"-fend Your Health

VITAMIN D3

Systemic Support for Youthful Cell Function



	Retail Price	Your Price
1 bottle	$10	**$7.50**
4 bottles		**$6.50 each**

Item # 01713 • 5,000 IU • 60 softgels

For full product description and to order **Vitamin D3**, call **1-800-544-4440** or visit **www.LifeExtension.com**

NON GMO LE CERTIFIED

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.

FREE Unlimited Shipping

4% Back On Purchases

ALL YEAR LONG

☑ **$50 Bonus Credit**
Use now or save for later.

☑ **Worry Free**
No auto-enrollment. Cancel anytime.

Join Premier Today! Only $49.95 per year

Visit **LifeExtension.com/YourPremier** • Call **1-866-542-9357** toll-free

Use code YRX801A

LifeExtension®

Premier service is good for a full 12 months from the date of purchase or renewal, and can only be renewed after 6 months from the date of your last Premier purchase or renewal. Redeem LE Dollars to purchase virtually anything we sell, including products, blood tests, sale items, and even shipping fees! At the rate of 1 LE dollar equal to $1 U.S. Dollar at checkout. FREEunlimited standard delivery (3 to 5 business days) to any mailing address within the 50 U.S. states, excluding U.S. territories. Also includes discounts on non-standard shipping and shipping outside of the U.S. International customers can join Premier for $59.95 Enjoy all the rewards of Premier.

Grilled Meat Linked With Higher Mortality for Breast Cancer Survivors

A new study shows a link between higher consumption of barbecued, grilled, and smoked meat and increased risk of mortality for survivors of **breast cancer**.*

It was previously known that meats cooked in various ways at high temperatures are high in cancer-related substances and linked to breast cancer. The new study, led by Humberto Parada, Jr., MPH, scrutinized the effect of these foods specifically on 1,508 women who had already survived the disease.

The subjects were questioned concerning their consumption in each decade of their lives of four types of barbecued, grilled and smoked meat, and were asked to specify in which seasons these foods were most frequently eaten. In a follow-up five years later, the subjects were asked to provide the same information regarding their meat-eating habits since the previous interviews had been conducted.

Researchers found that, compared to subjects with low consumption of the meats in question, both pre- and postdiagnosis, high consumption was associated with a **31%** increased risk of all-cause mortality.

Additionally, high consumption before diagnosis was associated with a **23%** higher risk of all-cause mortality, and high smoked-meat consumption specifically was linked with a **17%** increased risk of all-cause mortality and a **23%** increased risk of breast-cancer mortality.

This study corroborates warnings to the public from **Life Extension®** concerning these risks from as far back as 2003.

Editor's Note: All-cause mortality risk in this study was found to be at similar levels for women who reported high prediagnosis barbecued, grilled, and smoked meat consumption but low postdiagnosis consumption.

* *J Natl Cancer Inst.* 2017 Jan 5;109(6).

Testosterone Replacement Therapy Improves Sexual Function

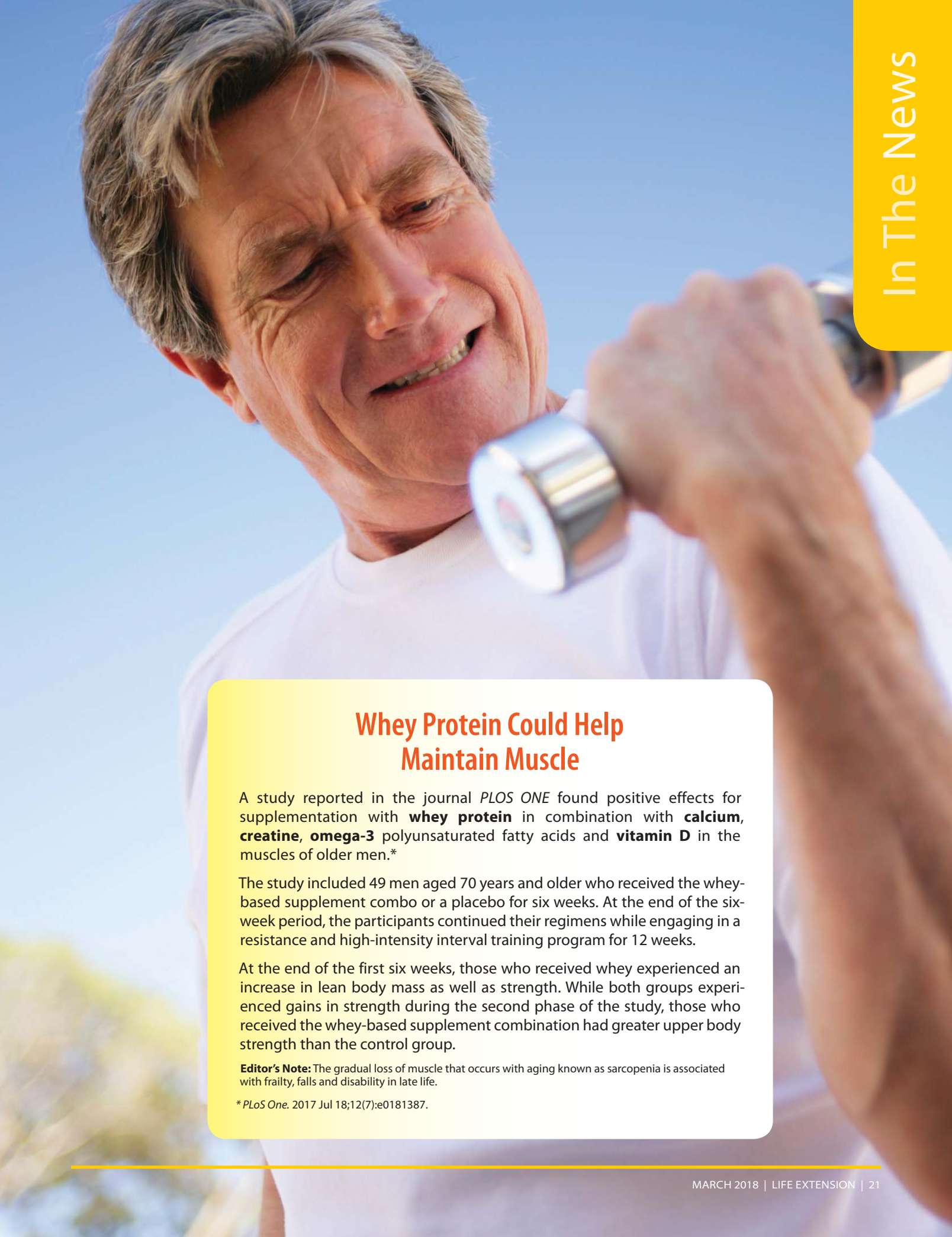
Recent research documents improvements in sexual function, urinary function and quality of life among men who received **testosterone replacement therapy**.*

The prospective study involved 656 men (average age of 60.7 years) with low testosterone levels and symptoms of testosterone deficiency, among whom 360 were regularly treated with testosterone for up to 10 years. The remainder of the subjects, who chose not to be treated with testosterone, underwent biannual routine clinic visits.

The researchers found that men who received testosterone therapy experienced significant decreases in their International Prostate Symptom Score, post-voiding bladder volume and Aging Males Symptoms scale, which assesses health-related quality of life. The percentage of patients without erectile dysfunction significantly improved in the testosterone treated group, from **17.1%** at the beginning of the study, to **74.4%** of the study at the last visit.

Editor's Note: In contrast, subjects who did not receive the hormone experienced deterioration in erectile function as well as in voiding functions.

* *J Urol.* 2017 Jul 18.



Whey Protein Could Help Maintain Muscle

A study reported in the journal *PLOS ONE* found positive effects for supplementation with **whey protein** in combination with **calcium**, **creatine**, **omega-3** polyunsaturated fatty acids and **vitamin D** in the muscles of older men.*

The study included 49 men aged 70 years and older who received the whey-based supplement combo or a placebo for six weeks. At the end of the six-week period, the participants continued their regimens while engaging in a resistance and high-intensity interval training program for 12 weeks.

At the end of the first six weeks, those who received whey experienced an increase in lean body mass as well as strength. While both groups experienced gains in strength during the second phase of the study, those who received the whey-based supplement combination had greater upper body strength than the control group.

Editor's Note: The gradual loss of muscle that occurs with aging known as sarcopenia is associated with frailty, falls and disability in late life.

* *PLoS One.* 2017 Jul 18;12(7):e0181387.

Green Tea Protects Against Cognitive Dysfunction

An article published in *The FASEB Journal* reported that supplementation with a polyphenol found in green tea, **epigallocatechin-3-gallate** (EGCG), helped alleviate adverse effects of a high-fat and high-fructose diet in mice.*

The finding could be of significance to millions of individuals who consume a Western diet, which is high in fat and added sugars.

Three-month-old mice were fed a standard diet or a high-fat, high-fructose diet with or without the addition of **EGCG**.

After 16 weeks, water maze testing revealed a protective effect for **EGCG** supplementation against memory impairment in mice that received the high-fat and fructose diet.

This green tea polyphenol (EGCG) was also associated with protection against diet-induced neuronal damage.

Neuroinflammation was lowered by EGCG via inhibition of MAPK and NF-kB pathways, in addition to decreased expression of the inflammatory mediator tumor necrosis factor-alpha.

Editor's Note: In neuronal cell cultures, elevated glucose and insulin resistance were reduced by EGCG via improvements in oxidized cellular status and mitochondrial function.

* *FASEB J.* 2017 Nov;31(11):4998-5011.

Maintain Healthy Lean Muscle Mass

NEW ZEALAND Whey Protein CONCENTRATE

New Zealand Whey Protein Concentrate derived from grass-fed, free-range cows living in New Zealand not treated with growth hormone.

Naturally high content of branched-chain amino acids, lactoferrin, and immunoglobulins for those who wish to:[1-5]

- Help maintain lean muscle mass,
- Support healthy immune function,
- Promote anabolic metabolism.

Natural chocolate and **natural vanilla** flavors.

References

1. *Altern Med Rev*. 2004 Jun;9(2):136-156.
2. *J Nutr Biochem*. 2003 May;14(5):251-8.
3. *Toxicol In Vitro*. 2003 Feb;17(1):27-33.
4. *Br J Nutr*. 2011 May;105(10):1465-70.
5. *Int J Sport Nutr Exerc Metab*. 2006 Oct;16(5):494-509.

Contains milk.

New Zealand Whey Protein Concentrate (Vanilla)

Item #01770 • 500 grams

	Retail Price	Your Price
1 bottle	$30	**$22.50**
4 bottles		**$19.95 each**

New Zealand Whey Protein Concentrate (Chocolate)

Item #01771 • 640 grams

	Retail Price	Your Price
1 bottle	$30	**$22.50**
4 bottles		**$19.95 each**

NON GMO LE CERTIFIED

For full product description and to order **New Zealand Whey Protein Concentrate**, call **1-800-544-4440** or visit **www.LifeExtension.com**

Multiple Benefits of Daily, Low-Dose Aspirin

Supports Healthy Blood Circulation

Taking one **81 mg** (low-dose), enteric-coated **aspirin** daily helps to maintain normal platelet aggregation in blood vessels via *several* mechanisms, while also temporarily relieving minor aches and pains.

For full product description and to order **Aspirin 81 mg**, call **1-800-544-4440** or visit **www.LifeExtension.com**

Aspirin 81 mg

Item # 01066 • 300 enteric coated tablets

	Retail Price	Your Price
1 bottle	$6	**$4.50**
4 bottles		**$4 each**

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.

Sweet Dreams

Abundant research supports the health benefits of a good night's sleep—it's one of the best ways to feel revitalized and maintain optimal health.

Melatonin is one of the most popular supplements for supporting sleep.

Fast-Acting Liquid Melatonin has a great-tasting citrus vanilla flavor and is quickly absorbed.

	Retail Price	Your Price
1 bottle	$12	**$9**
4 bottles		**$8.25 each**

Item #01734 • 3 mg, 2 fl. oz

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

For full product description and to order any of these premium-grade **Melatonin** supplements, call **1-800-544-4440** or visit **www.LifeExtension.com**

Caution: Consult your healthcare provider before taking this product if you are being treated for a medical condition (especially autoimmune or depressive disorders). Use caution if combining with alcohol. This product is not intended for children, pregnant or lactating women, or women trying to become pregnant. Do not attempt to drive or operate heavy machinery after taking this product.

BY STEVE COTTER

Protect Against DNA DAMAGE

On a daily basis, our DNA is under attack from numerous sources, including radiation, oxidative stress, environmental hazards, and dietary carcinogens.

The extent to which DNA damage occurs—or can be prevented—correlates closely with how long we will live.[1]

One course of action is to protect ourselves with compounds that can prevent DNA damage *before* it leads to cancer.

Based on extensive research, scientists have discovered a natural hops-derived flavonoid compound, **xanthohumol**, that has been shown in clinical (human) studies to *reduce* DNA damage in cells[2-4]—which may reduce the risk of cancer.

Two additional compounds—**chlorophyllin** and **watercress extract**—have been recognized for their multitargeted capacity to reduce DNA damage.

The combination of these targeted compounds may offer the best possible natural protection against age-accelerating, cancer-inducing damage to our DNA.

This is especially important for those who occasionally or routinely ingest overcooked foods and other dietary constituents that inflict considerable harm to our cellular DNA.

DNA Damage and Cancer

Genetic mutations that occur as a result of DNA damage increase the risk of developing cancer.[5-7]

Cancer is the second leading cause of death in Americans.[8] Abundant citations in the scientific literature focus on **DNA damage** and its prevention as a way to protect against malignancies.

Scientists are excited about research on the DNA protective benefits of a flavonoid present in hops, ***xanthohumol***.

Research data show that **xanthohumol** has a cancer-prevention profile and acts by a variety of mechanisms to prevent cancer initiation. The compound's ability to prevent **DNA damage** has scientists most intrigued.[2-4,9-12]

Two recent human studies highlight the impact of **xanthohumol** on reducing DNA damage.

Impressive Protection Against DNA Damage

In a randomized, placebo-controlled clinical trial, 22 healthy individuals drank a **malted beverage** containing **12 mg** of xanthohumol or a placebo for 14 days.[10]

Subjects had their blood and urine collected before, during, and after the supplementation period.[10]

The researchers were specifically looking for changes in DNA stability in white blood cells, as well as the urinary excretion of damaged fragments of DNA and of *reactive oxygen species*.

This phase of the study showed that subjects drinking the **xanthohumol** beverage experienced a remarkable reduction in DNA damage compared with those drinking the placebo.[10]

By the end of the 14-day study, the effect reached a reduction of **33%** in **DNA damage**.

DNA Protection Under Pressure

Next, the researchers wanted to find out how well xanthohumol would equip cells with resistance to DNA breaks under conditions of chemical stress. To test this, they exposed subjects' cells to *hydrogen peroxide*, a potent generator of the *reactive oxygen species* that impose DNA-damaging chemical stress.

Xanthohumol did not disappoint.

Once again, cells from **xanthohumol**-supplemented subjects proved markedly resistant to chemically-induced **DNA damage** compared with those from placebo recipients. This time a significant effect was evident by **Day 7**, and climbed to a maximum **53%** reduction in DNA damage at the end of the study period.

In order to be certain that it was the xanthohumol that was responsible for this protection and not some other component of the test beverage, the researchers carried out a second phase of the study using a **capsule** of purified xanthohumol at the same **12-mg** dose.[10]

This second phase demonstrated similar results: The pure xanthohumol produced a **39%** reduction in **DNA damage**, and a **28%** improvement in the resistance to DNA damage induced by hydrogen peroxide.[10]

Protection Against Dietary Carcinogens

The same group of scientists then carried out a follow-up study, pushing xanthohumol's protective effects even harder. This time, they evaluated how well the supplement works against the everyday challenge of dietary carcinogens.

To test this, 22 participants consumed a drink containing **12 mg** of xanthohumol. The researchers then stressed the subjects' DNA by exposing blood cells to representatives of three major classes of DNA-damaging dietary carcinogens:[2]

- N-Nitrosodimethylamine (NDMA)
- Benzopyrene
- 2-amino-3-methylimidazo[4,5-f]quinolone (IQ) (a type of heterocyclic amine)

The xanthohumol led to reductions in DNA damage caused by NDMA, benzopyrene, and the heterocyclic amine.

And when the researchers conducted a follow-up trial using xanthohumol **capsules** (instead of the drink), it once again showed similar reductions in DNA damage in the face of each compound.[2]

This study is of great importance because it elucidates some of the molecular mechanisms by which xanthohumol may protect human cells from the first step in carcinogenesis: the DNA damage that mutates the genetic code and provides the spark needed to trigger malignant transformation.

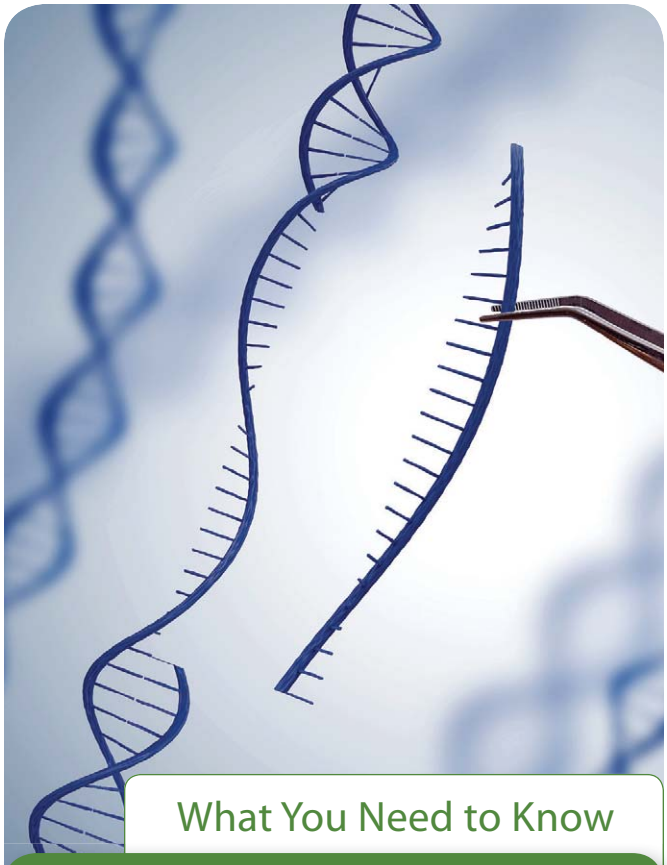
Xanthohumol Prevents Precancerous Lesions

Animal studies have gone the next step in demonstrating the chemoprotective effects of **xanthohumol**. They have shown that in addition to preventing DNA damage, xanthohumol also prevents the development of *precancerous* lesions.

To prove this effect, researchers exposed xanthohumol-supplemented healthy rats to a common family of dietary carcinogens (called ***heterocyclic amines***) that forms when meat is cooked at high temperatures.[4,13] Heterocyclic amines have been linked to breast, prostate, colorectal, gastric, and pancreatic cancers.[14-18]

In this study, the xanthohumol-supplemented animals experienced a significant **50%** reduction in the *number* of precancerous sites in their livers, and a **44%** decrease in the *size* of the lesions, demonstrating a robust effect.[4] Not surprisingly, the researchers found evidence that the supplement achieved these results by preventing DNA damage in liver cells.

These human and animal studies show that xanthohumol protects DNA from damage both directly from chemical stress and indirectly from dietary carcinogens.



What You Need to Know

Prevent Cancer by Protecting DNA

- **A critically important way to prevent aging and stave off cancer is to prevent DNA damage.**
- **New studies show that xanthohumol, a component of hops, prevents DNA damage and acts by multiple mechanisms to reduce the risk of cancer.**
- **Xanthohumol can protect DNA against both natural chemical stresses as well as those induced by dietary carcinogens, making it a lead compound in the fight against cancer.**
- **Chlorophyllin and watercress extract are also recognized for their multitargeted capacity to reduce DNA damage.**
- **Supplementation with nutrients that protect against DNA damage is an outstanding first step in helping to prevent cancer.**

Broadening the Spectrum of DNA Protection

Humans aren't alone in our need for DNA protection. All living things are challenged in protecting against DNA damage, including plants and animals.

Plants face even greater risks than animals do in this regard because they can't seek shade, water, or nourishment when DNA-threatening environmental stress sets in. This means that plants are *naturally* rich in biochemical DNA-protective compounds. That's good news for humans, because these plant compounds seem to work as well in *our* cells as they do in *theirs*.

Several plant species and extracts are especially known for their ability to defend DNA against the chemical, radiation, and other stresses that threaten its integrity.

Chlorophyllin

Chlorophyllin is a water-soluble derivative of *chlorophyll*,[19] a pigment that makes plants green and captures light and channels it safely into energy within plant cells.

Studies show that chlorophyllin exerts powerful protection against DNA damage.[19-22] Like most natural compounds, chlorophyllin acts by multiple mechanisms, one of which is by **blocking** carcinogens and making them less bioavailable.[19,20]

This benefit was vividly seen in two studies showing chlorophyllin's ability to protect against the damage caused by two known DNA-damaging carcinogens: **aflatoxins** and **heterocyclic amines**.

The first study examined people who had an elevated risk of liver cancer because of their consumption of aflatoxin-contaminated foods. In this study, taking chlorophyllin led to a **55%** reduction in median urinary levels of a marker of aflatoxin-induced DNA damage.[20]

The second study evaluated chlorophyllin's ability to protect against the damage caused by ***heterocyclic amines***. The results showed that chlorophyllin significantly reduced DNA damage in colorectal cells following a meal of meat cooked at high temperatures, a dangerous source of cancer-causing **heterocyclic amines**.[22]

Watercress

Watercress is a ***cruciferous vegetable***, a group of plants widely recognized for their multitargeted anticancer activities.[23] Watercress extracts are rich in antioxidants capable of fighting the oxidative stress that damages DNA.[24]

In human studies, supplementation with watercress significantly reduced DNA damage by up to **24%** in healthy volunteers. This benefit was seen both at rest and following vigorous exercise, which is known to briefly but powerfully induce DNA damage by oxidative stress.[23,24]

This indicates the potential of watercress to protect DNA in stressful situations that could otherwise lead to dangerous DNA damage.

Summary

DNA damage is ubiquitous and deadly. While it is best known for its role in cancer development, it is also implicated in a wide range of aging processes.

Xanthohumol, a compound found in hops, has now been shown in human and animal studies to significantly reduce **DNA damage** induced both by natural chemical stresses, as well as by some notorious dietary carcinogens.

In addition, chlorophyllin and watercress have been shown to reduce DNA damage via several mechanisms.

Fortunately, science has identified powerful nutrients that protect against DNA damage and its consequences. ●

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

1. Debrabant B, Soerensen M, Flachsbart F, et al. Human longevity and variation in DNA damage response and repair: study of the contribution of sub-processes using competitive gene-set analysis. *Eur J Hum Genet.* 2014;22(9):1131-6.
2. Pichler C, Ferk F, Al-Serori H, et al. Xanthohumol Prevents DNA Damage by Dietary Carcinogens: Results of a Human Intervention Trial. *Cancer Prev Res (Phila).* 2017;10(2):153-60.
3. Carvalho DO, Oliveira R, Johansson B, et al. Dose-Dependent Protective and Inductive Effectsof Xanthohumol on Oxidative DNA Damage inSaccharomyces cerevisiae. *Food Technol Biotechnol.* 2016;54(1):60-9.
4. Ferk F, Huber WW, Filipic M, et al. Xanthohumol, a prenylated flavonoid contained in beer, prevents the induction of preneoplastic lesions and DNA damage in liver and colon induced by the heterocyclic aromatic amine amino-3-methyl-imidazo[4,5-f]quinoline (IQ). *Mutat Res.* 2010;691(1-2):17-22.
5. Lee SC, Chan JC. Evidence for DNA damage as a biological link between diabetes and cancer. *Chin Med J (Engl).* 2015;128(11):1543-8.
6. Li L, Zhu T, Gao YF, et al. Targeting DNA Damage Response in the Radio(Chemo)therapy of Non-Small Cell Lung Cancer. *Int J Mol Sci.* 2016;17(6).
7. Roos WP, Thomas AD, Kaina B. DNA damage and the balance between survival and death in cancer biology. *Nat Rev Cancer.* 2016;16(1):20-33.
8. Available at: https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm. Accessed 13 Feb, 2017.
9. Dietz BM, Kang YH, Liu G, et al. Xanthohumol isolated from Humulus lupulus Inhibits menadione-induced DNA damage through induction of quinone reductase. *Chem Res Toxicol.* 2005;18(8):1296-305.
10. Ferk F, Misik M, Nersesyan A, et al. Impact of xanthohumol (a prenylated flavonoid from hops) on DNA stability and other health-related biochemical parameters: Results of human intervention trials. *Mol Nutr Food Res.* 2016;60(4):773-86.
11. Plazar J, Filipic M, Groothuis GM. Antigenotoxic effect of Xanthohumol in rat liver slices. *Toxicol In Vitro.* 2008;22(2):318-27.
12. Plazar J, Zegura B, Lah TT, et al. Protective effects of xanthohumol against the genotoxicity of benzo(a)pyrene (BaP), 2-amino-3-methylimidazo[4,5-f]quinoline (IQ) and tert-butyl hydroperoxide (t-BOOH) in HepG2 human hepatoma cells. *Mutat Res.* 2007;632(1-2):1-8.
13. Puangsombat K, Gadgil P, Houser TA, et al. Occurrence of heterocyclic amines in cooked meat products. *Meat Sci.* 2012;90(3):739-46.
14. Zheng W, Lee SA. Well-done meat intake, heterocyclic amine exposure, and cancer risk. *Nutr Cancer.* 2009;61(4):437-46.
15. Koutros S, Berndt SI, Sinha R, et al. Xenobiotic metabolizing gene variants, dietary heterocyclic amine intake, and risk of prostate cancer. *Cancer Res.* 2009;69(5):1877-84.
16. Cross AJ, Freedman ND, Ren J, et al. Meat consumption and risk of esophageal and gastric cancer in a large prospective study. *Am J Gastroenterol.* 2011;106(3):432-42.
17. Sinha R, Chow WH, Kulldorff M, et al. Well-done, grilled red meat increases the risk of colorectal adenomas. *Cancer Res.* 1999;59(17):4320-4.
18. Anderson KE, Mongin SJ, Sinha R, et al. Pancreatic cancer risk: associations with meat-derived carcinogen intake in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial (PLCO) cohort. *Mol Carcinog.* 2012;51(1):128-37.
19. Egner PA, Munoz A, Kensler TW. Chemoprevention with chlorophyllin in individuals exposed to dietary aflatoxin. *Mutat Res.* 2003;523-524:209-16.
20. Egner PA, Wang JB, Zhu YR, et al. Chlorophyllin intervention reduces aflatoxin-DNA adducts in individuals at high risk for liver cancer. *Proc Natl Acad Sci U S A.* 2001;98(25):14601-6.
21. Gao F, Hu XF. Analysis of the therapeutic effect of sodium copper chlorophyllin tablet in treating 60 cases of leukopenia. *Chin J Integr Med.* 2005;11(4):279-82.
22. Shaughnessy DT, Gangarosa LM, Schliebe B, et al. Inhibition of fried meat-induced colorectal DNA damage and altered systemic genotoxicity in humans by crucifera, chlorophyllin, and yogurt. *PLoS One.* 2011;6(4):e18707.
23. Gill CI, Haldar S, Boyd LA, et al. Watercress supplementation in diet reduces lymphocyte DNA damage and alters blood antioxidant status in healthy adults. *Am J Clin Nutr.* 2007;85(2):504-10.
24. Fogarty MC, Hughes CM, Burke G, et al. Acute and chronic watercress supplementation attenuates exercise-induced peripheral mononuclear cell DNA damage and lipid peroxidation. *Br J Nutr.* 2013;109(2):293-301.

FLORASSIST® Immune Health

Probiotic Blend for *Optimal* Immune Support

ITEM # 02124 • 30 vegetarian capsules • Retail price $26 • **Your price $19.50** • 4 bottles $18 each

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

NON GMO LE CERTIFIED

Healthy Aging: It's in Your DNA

Clinical evidence demonstrates that the nutrients in **DNA Protection Formula** help preserve healthy DNA by supporting the body's defenses against environmental toxins.

Ingredients in **DNA Protection Formula** include:

- **Xanthovital® hops extract**
- **Watercress extract**
- **Chlorophyllin**

DNA Protection Formula
Item #02270 • 30 vegetarian capsules

NON GMO LE CERTIFIED	Retail Price	Your Price
1 bottle	$20	**$15**
4 bottles		**$13.50 each**

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

XanthoVital™ is a trademark of Berg Imports, LLC.

THE WELLNESS CENTER AT POST HASTE
A Compounding Pharmacy

Providing Trusted Prescription Compounding for Over 45 Years!

Quality, Reliability, Integrity

RETAIL PHARMACY

- *Accepts most major insurance plans*
- *Durable Medical Equipment and Supplies*
- *Vitamins and Supplements*
- *Alkaline Water*
- *Custom Orthotics*
- *Health and Wellness Consultations*
- *Shipping available to most states*
- *¡Se habla español!*

COMPOUNDING

- *Bio-identical Hormone Replacement*
- *Specialized Erectile Dysfunction Medications*
- *Topical Anesthetics*
- *Gynecological Preparations*
- *Hemorrhoid Treatments*
- *Custom Veterinary Medications*

Dosage forms include: creams, ointments, lotions, troches, sublingual lozenges, nasal sprays, suppositories, oral suspensions, capsules, and more!

Proud Members of IACP & PCCA Professional Compounding Centers of America, Inc.

Transfer new Rx to RECEIVE $5 OFF
(Cash RX's only)
Limit one coupon per person

Limitations may apply

Renew Rx's online to RECEIVE $1 OFF EACH Rx
(Cash Rx's only)

(877) 877-9700
Phone: (954) 989-6524 | Fax: (866) 892-3432

4401 Sheridan St, Hollywood, FL 33021
www.PostHastePharmacy.com

DHEA
FOR ALL NEEDS

DHEA is one of the most important hormones in your body. It supports healthy body weight, immune function, mood, sex drive, and lean muscle mass.

DHEA levels markedly decline with age.

Because everyone's needs are different, **Life Extension**® offers DHEA in different encapsulated potencies, along with a dissolve-in-the mouth tablet.

DHEA 15 mg capsules

	Retail Price	Your Price
1 bottle	$14	**$10.50**
4 bottles		**$9 each**

Item #00454 • 100 capsules

DHEA 25 mg capsules

	Retail Price	Your Price
1 bottle	$16	**$12**
4 bottles		**$11 each**

Item #00335 • 100 capsules

DHEA 25 mg tablets

	Retail Price	Your Price
1 bottle	$14	**$10.50**
4 bottles		**$8.81 each**

Item #00607 • 100 dissolve-in-mouth tablets

DHEA 50 mg capsules

	Retail Price	Your Price
1 bottle	$19	**$14.25**
4 bottles		**$12.75 each**

Item #00882 • 60 capsules

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

Caution: Consult a physician or licensed, qualified healthcare professional before using these products if you have, or have a family history of, breast cancer, prostate cancer, or other hormone-sensitive diseases.

NON GMO LE CERTIFIED

BY MICHAEL DOWNEY

Overlooked Dangers of **Insulin** *and* **Glucose Spikes**

After a meal, blood-**glucose** levels *increase* and our pancreas responds by secreting **insulin**.

In youth, there is a delicate balance that drives glucose into cells mostly for energy production. Once blood-glucose levels drop to a fasting range, insulin production subsides.

With age, a sedentary lifestyle, and a diet featuring refined carbohydrates and simple sugars, our cells become **insulin resistant**, which allows blood-glucose levels to rise.

Rising glucose levels trigger the pancreas to release ***more insulin*** to counter the glucose—creating a vicious cycle.[1]

These factors promote weight gain and other metabolic disturbances.

As weight accumulates, fat cells pour out cytokines, which generate **inflammation** throughout the body.[2,3]

The medical term for this condition is **hyper-insulinemia**. It sets the stage for age-related diseases like atherosclerosis, hypertension, lipid abnormalities, type II diabetes, obesity, and cancer.[4-15]

Two **plant extracts** have been identified that block damaging insulin and glucose surges. In human trials, one of these extracts slashed after-meal **insulin** by **56%** and after-meal **glucose** by **15%**.

After-meal spikes in blood glucose are an important indicator of glycemic control. One of these plants extracts completely reversed the glucose surge within **two** hours.

Since **insulin** is required to sustain life, the public mistakenly sees this hormone in a favorable light.

As you will learn in this article, too much **insulin** not only contributes to weight gain, but to a multitude of diseases associated with **obesity**.

Excess blood levels of the hormone **insulin** occur in response to poor dietary choices, lack of physical activity and normal aging.

The medical term that defines the pancreas **over-secreting** insulin is **hyperinsulinemia**.

Excess insulin remaining in the blood after a meal has been identified as a major cause of nonalcoholic fatty **liver disease**.[16,17]

Hyperinsulinemia is an **independent** risk factor for **kidney disease** among metabolic syndrome patients.[18]

High insulin blood levels are predictive of **type II diabetes** and strongly associated with **obesity**.[19,20]

Link Between Elevated Insulin and Cancer

A number of published studies indicate that **high insulin** levels drive the development and progression of many types of malignancies.[2,21,22]

Human studies implicate high **insulin** levels in at least seven common **cancers**:

- Colorectal cancer: **17%** to **42%** greater risk of precancerous adenomas[23-25]
- Breast cancer: **2-** to **3-fold** higher risk[27]
- Stomach cancer: **69%** to **101%** higher risk[26]
- Endometrial cancer: **45-fold** greater risk for type I endometrial (uterine lining) cancer[28]
- Ovarian cancer[29]
- Prostate cancer: **2.55-fold** risk of malignancies[30] and a **5.62-fold** risk of locally advanced tumors[31]
- Liver cancer: **2.4-fold** risk among those with both hepatitis B and high insulin levels.[32]

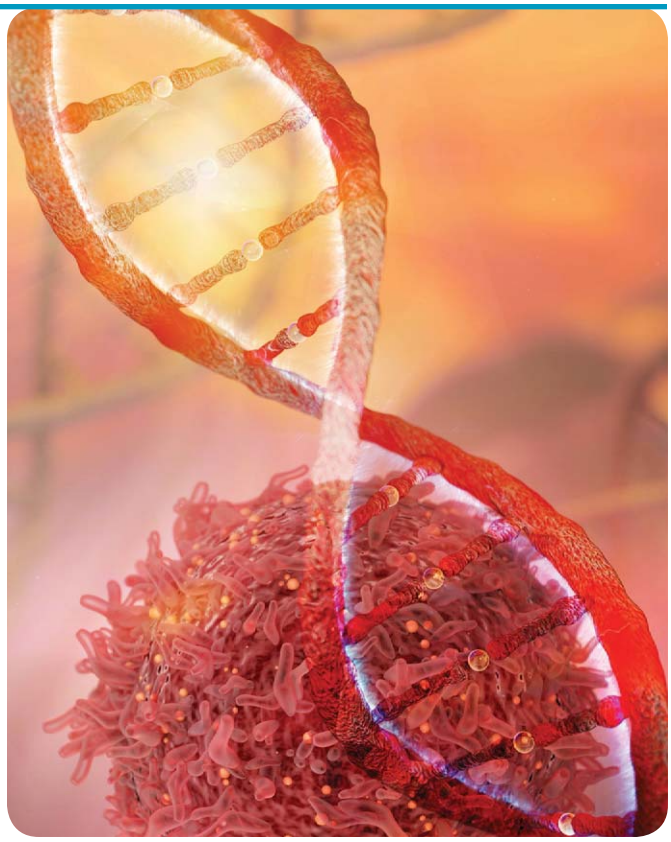
Elevated insulin levels are associated with the development of more aggressive and metastatic cancers that carry a grim prognosis.[33,34]

These alarming figures have inspired researchers to find out why there's such a close connection between high insulin levels and cancer. And in just the past few years, researchers have uncovered mechanisms behind this deadly insulin/cancer connection.

Why Insulin Promotes Cancer

High levels of insulin trigger rapid cell division, while at the same time elevated blood sugar and fat levels provide metabolic fuel for tumor expansion.[2,35]

In response to chronically elevated **insulin/glucose** some cells lose control of their DNA regulatory genes—which is the hallmark of malignancy. This sequence of



events is believed to promote cancer, at least in colon cells and possibly in those throughout the body.[2]

By its very nature, insulin is a *growth factor*, which means it naturally stimulates cell growth. The problem is that once a cancer cell has emerged, too much insulin results in *overstimulation*. This results in greater proliferation, migration, and invasiveness of cancer cells—all of the factors that make them so deadly.[33,36]

These cancer-promoting effects of insulin were shown vividly when scientists injected colon cancer cells into mice and then fed them either a normal or high-calorie diet. The high-calorie-diet mice had elevated levels of insulin and other growth-promoting molecules. As a result, their tumors grew to **twice** the size of tumors in the normal-diet group—***in just 17 days***.[37]

Another reason excess insulin promotes cancer is because it causes damaging *oxidative stress*.

When researchers applied a small amount of insulin to cell cultures, enough oxidative stress was generated from just a *single exposure* to damage DNA strands.[34,36] When they extended the exposure to six days, the amount of insulin required to induce similar damage was reduced by a **factor of 10**.[36] This demonstrates how *chronically elevated* insulin rapidly escalates DNA damage.

Studies have also revealed a close relationship among body size, type II diabetes, and many cancers.[2,21] A diet rich in readily digested sugars and carbohydrates,

for example, has been shown to increase the risk of developing a common form of **breast cancer** (estrogen receptor-negative) by **36%-41%**.[35]

The connection between high insulin levels and cancer adds a strong rationale to suppress *after-meal* insulin and glucose surges.

In a timely development, scientists have demonstrated two **plant extracts** that target *after-meal* insulin and glucose levels.

Maqui-Berry Extract Slashes After-Meal Insulin and Glucose

Maqui-berry extracts have been shown to decrease *after-meal* rises in both glucose and ***insulin***.

Research suggests that a proprietary extract of **maqui berries** contains potent compounds known as ***delphinidins***.

Delphinidins stimulate a peptide that lowers after-meal blood glucose and can help moderate insulin spikes. The peptide stimulated by maqui-derived ***delphinidins*** is *glucagon-like peptide-1* (GLP-1).[38]

GLP-1 slows and delays stomach-emptying, so glucose from a meal reaches the absorptive tissue in the small intestine later, and in lower quantities, than it would otherwise.[39,40]

In a human trial, ten volunteers were enlisted whose *fasting* glucose levels were normal (under **100 mg/dL**) but whose *after-meal* glucose levels, after a standard **white rice** meal, were between **100 mg/dL** and **125 mg/dL** (considered altered glucose tolerance).[41]

Participants took either a placebo or **200 mg** of maqui-berry extract 30 minutes before eating a small meal of **75 grams** (about **2.5 ounces**) of white rice, calculated to produce a rise in after-meal glucose levels.

The **placebo** group's *after-meal* glucose levels peaked after **one hour**, at about **115 mg/dL**.

By contrast, the *after-meal* glucose levels in the **maqui-berry** group had only risen to **98 mg/dL** after one hour, a **15%** difference. As an added benefit, their glucose levels did not peak for a full **two hours** after the meal. Even then, they reached a high of about **107 mg/dL**.[41]

The effect on **insulin** levels was more dramatic. After the meal, insulin concentrations in the placebo group rose steadily until they reached an average of **25.33 µIU/ml** after one hour. In sharp contrast, the maqui-extract group's insulin levels increased much more slowly, reaching an average of only **11.22 µIU/ml** after an hour—***a compelling 56% lower insulin level!***[41]

In fact, **insulin** levels in the **maqui-extract** group did not peak until **a full hour and a half** after the meal. Even then, it peaked at a much lower level than the placebo group.[41]

Maqui Berries

What You Need to Know

Block After-Meal Insulin and Glucose Surges

- **Modern medicine's reliance on *fasting* plasma-glucose tests for yearly examinations means that lethally high *after-meal* insulin and glucose levels are often missed for years.**
- **By the time glucose abnormalities are caught, excess insulin has likely already caused immense damage.**
- **Fortunately, maqui-berry extract has been verified in human studies to delay glucose absorption—crushing after-meal insulin by up to 56% and glucose by 15%—and to lower HbA1c readings by 0.3% (from 5.65% to 5.35%).**
- **Additionally, human research demonstrates that a natural clove extract inhibits hepatic glucose release, reversing after-meal glucose within two hours.**

Maqui-Berry Extract Reduces Long-Term Glucose Levels

A separate study showed that **maqui-berry extract** can impact *chronically elevated* glucose levels as well.[42]

For the study, a group of newly identified **prediabetic** individuals took **180 mg** of standardized maqui-berry extract every morning for 90 days. Follow-up tests occurred at 30, 60, and 90 days.[42]

On follow-up testing days, researchers measured the participants' **hemoglobin A1c** (HbA1c) blood levels. Unlike an *after-meal* glucose reading, which tells you what your glucose levels are at that moment in time, the HbA1c measures how high glucose has been over the past three to four months. The normal value for HbA1c is **5.6%** or lower.[43]

The researchers documented that maqui-berry extract reduced **HbA1c** levels by **0.3%** (from **5.65%** to **5.35%**).[42]

No serious adverse events were observed in either of these clinical trials.[41,42]

Clove Extract Prevents Glucose Spikes

Clove extract is an excellent complement to maqui berry because of its impressive ability to control after-meal blood glucose.

In an exciting study, investigators found that a water-soluble extract of the **clove** flower bud (*Syzygium aromaticum*) reduced *after-meal* blood sugar.[44]

Clove extract contains **polyphenols** that can regulate *glycogen phosphorylase*, the enzyme responsible for releasing glucose into the bloodstream that is stored in the liver and muscles in the form of glycogen.[45]

This typically happens under stress or low nutrient availability, But with aging, too much stored glucose is often chronically released from liver stores.

Inhibiting glycogen phosphorylase with clove can help **block** excess glucose release into the bloodstream.

These benefits were seen when **clove extract** was given to diabetic mice, where it suppressed both blood-glucose elevations and HbA1c readings.[45]

But would it reduce *after-meal* glucose spikes in humans as well?

To answer that question, scientists divided a group of healthy volunteers into two groups according to baseline glucose levels: one with normal glucose levels and one with high-glucose. All subjects received **250 mg** of clove extract daily for 30 days.[44]

Random blood-glucose levels were measured before supplementation, and again on days 12, 24, and 30. Additional blood draws were done two hours after a typical lunch.[44]

For both groups, glucose readings fell significantly at day 12—and they continued to drop throughout the study until the *after-meal* glucose values were about ***the same level as the before-meal values!***[44]

The high-glucose group showed greater improvement, indicating greater benefit for this at-risk population. No one experienced abnormally low blood-glucose, making clove extract safer than hypoglycemic drugs that can trigger dangerously low readings.[44]

Cloves

Summary

With aging, a sedentary life, and ingestion of sugars and starch, *after-meal* insulin and glucose spikes can escalate to a chronic state of **hyperinsulinemia**, a risk for multiple age-related diseases including cancer.

Most individuals rely on a *fasting* blood glucose test from annual physical exams, but high *after-meal* insulin levels can be missed for many years.

When glucose abnormalities are finally detected, severe **insulin-driven** damage has likely already occurred.

Human studies have validated two **plant** extracts that can *reverse* this trend.

Maqui-berry extract has been shown to slash after-meal insulin up to **56%**, glucose by **15%**, and HbA1c by **0.3%** (from **5.65%** to **5.35%**).

And **clove extract** reverses after-meal glucose surges within **two** hours.

Inasmuch as excess **insulin** and **glucose** levels promote disease and accelerate aging, these two **plant extracts** provide powerful support for a healthy longevity program. ●

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

References

1. Wolever TM. Dietary carbohydrates and insulin action in humans. *Br J Nutr.* 2000;83 Suppl 1:S97-102.
2. Gunter MJ, Leitzmann MF. Obesity and colorectal cancer: epidemiology, mechanisms and candidate genes. *J Nutr Biochem.* 2006;17(3):145-56.
3. Khan S, Shukla S, Sinha S, et al. Role of adipokines and cytokines in obesity-associated breast cancer: therapeutic targets. *Cytokine Growth Factor Rev.* 2013;24(6):503-13.
4. Burnol AF, Morzyglod L, Popineau L. [Cross-talk between insulin signaling and cell proliferation pathways]. *Ann Endocrinol (Paris).* 2013;74(2):74-8.
5. Balkau B, Kahn HS, Courbon D, et al. Hyperinsulinemia predicts fatal liver cancer but is inversely associated with fatal cancer at some other sites: the Paris Prospective Study. *Diabetes Care.* 2001;24(5):843-9.
6. Chu NF, Spiegelman D, Hotamisligil GS, et al. Plasma insulin, leptin, and soluble TNF receptors levels in relation to obesity-related atherogenic and thrombogenic cardiovascular disease risk factors among men. *Atherosclerosis.* 2001;157(2):495-503.
7. Godsland IF, Crook D, Walton C, et al. Influence of insulin resistance, secretion, and clearance on serum cholesterol, triglycerides, lipoprotein cholesterol, and blood pressure in healthy men. *Arterioscler Thromb.* 1992;12(9):1030-5.
8. Goldstein BJ. Insulin resistance as the core defect in type 2 diabetes mellitus. *Am J Cardiol.* 2002;90(5a):3g-10g.
9. Karhapaa P, Malkki M, Laakso M. Isolated low HDL cholesterol. An insulin-resistant state. *Diabetes.* 1994;43(3):411-7.
10. Ko GT, Cockram CS, Woo J, et al. Obesity, insulin resistance and isolated low high-density-lipoprotein cholesterol in Chinese subjects. *Diabet Med.* 2001;18(8):663-6.
11. Modan M, Halkin H, Almog S, et al. Hyperinsulinemia. A link between hypertension obesity and glucose intolerance. *J Clin Invest.* 1985;75(3):809-17.
12. Mykkanen L, Kuusisto J, Haffner SM, et al. Hyperinsulinemia predicts multiple atherogenic changes in lipoproteins in elderly subjects. *Arterioscler Thromb.* 1994;14(4):518-26.
13. Nilsen TI, Vatten LJ. Prospective study of colorectal cancer risk and physical activity, diabetes, blood glucose and BMI: exploring the hyperinsulinaemia hypothesis. *Br J Cancer.* 2001;84(3):417-22.

14. Salonen JT, Lakka TA, Lakka HM, et al. Hyperinsulinemia is associated with the incidence of hypertension and dyslipidemia in middle-aged men. *Diabetes.* 1998;47(2):270-5.
15. Wilcox G. Insulin and insulin resistance. *Clin Biochem Rev.* 2005;26(2):19-39.
16. Kawano Y, Cohen DE. Mechanisms of hepatic triglyceride accumulation in non-alcoholic fatty liver disease. *J Gastroenterol.* 2013;48(4):434-41.
17. Hurjui DM, Nita O, Graur LI, et al. The central role of the non alcoholic fatty liver disease in metabolic syndrome. *Rev Med Chir Soc Med Nat Iasi.* 2012;116(2):425-31.
18. Sarafidis PA, Ruilope LM. Insulin resistance, hyperinsulinemia, and renal injury: mechanisms and implications. *Am J Nephrol.* 2006;26(3):232-44.
19. Johnson MS, Figueroa-Colon R, Huang TT, et al. Longitudinal changes in body fat in African American and Caucasian children: influence of fasting insulin and insulin sensitivity. *J Clin Endocrinol Metab.* 2001;86(7):3182-7.
20. Erion KA, Corkey BE. Hyperinsulinemia: a Cause of Obesity? *Curr Obes Rep.* 2017;6(2):178-86.
21. Bao B, Wang Z, Li Y, et al. The complexities of obesity and diabetes with the development and progression of pancreatic cancer. *Biochim Biophys Acta.* 2011;1815(2):135-46.
22. Fierz Y, Novosyadlyy R, Vijayakumar A, et al. Insulin-sensitizing therapy attenuates type 2 diabetes-mediated mammary tumor progression. *Diabetes.* 2010;59(3):686-93.
23. Kim EH, Kim HK, Bae SJ, et al. Fasting serum insulin levels and insulin resistance are associated with colorectal adenoma in Koreans. *J Diabetes Investig.* 2014;5(3):297-304.
24. Jiang B, Zhang X, Du LL, et al. Possible roles of insulin, IGF-1 and IGFBPs in initiation and progression of colorectal cancer. *World J Gastroenterol.* 2014;20(6):1608-13.
25. Tsai CJ, Giovannucci EL. Hyperinsulinemia, insulin resistance, vitamin D, and colorectal cancer among whites and African Americans. *Dig Dis Sci.* 2012;57(10):2497-503.
26. Hidaka A, Sasazuki S, Goto A, et al. Plasma insulin, C-peptide and blood glucose and the risk of gastric cancer: the Japan Public Health Center-based prospective study. *Int J Cancer.* 2015;136(6):1402-10.
27. Kabat GC, Kim M, Caan BJ, et al. Repeated measures of serum glucose and insulin in relation to postmenopausal breast cancer. *Int J Cancer.* 2009;125(11):2704-10.
28. Shan W, Ning C, Luo X, et al. Hyperinsulinemia is associated with endometrial hyperplasia and disordered proliferative endometrium: a prospective cross-sectional study. *Gynecol Oncol.* 2014;132(3):606-10.
29. Otokozawa S, Tanaka R, Akasaka H, et al. Associations of Serum Isoflavone, Adiponectin and Insulin Levels with Risk for Epithelial Ovarian Cancer: Results of a Case-control Study. *Asian Pac J Cancer Prev.* 2015;16(12):4987-91.
30. Pandeya DR, Mittal A, Sathian B, et al. Role of hyperinsulinemia in increased risk of prostate cancer: a case control study from Kathmandu Valley. *Asian Pac J Cancer Prev.* 2014;15(2):1031-3.
31. Yun SJ, Min BD, Kang HW, et al. Elevated insulin and insulin resistance are associated with the advanced pathological stage of prostate cancer in Korean population. *J Korean Med Sci.* 2012;27(9):1079-84.
32. Chao LT, Wu CF, Sung FY, et al. Insulin, glucose and hepatocellular carcinoma risk in male hepatitis B carriers: results from 17-year follow-up of a population-based cohort. *Carcinogenesis.* 2011;32(6):876-81.
33. De Marco P, Romeo E, Vivacqua A, et al. GPER1 is regulated by insulin in cancer cells and cancer-associated fibroblasts. *Endocr Relat Cancer.* 2014;21(5):739-53.
34. Othman EM, Hintzsche H, Stopper H. Signaling steps in the induction of genomic damage by insulin in colon and kidney cells. *Free Radic Biol Med.* 2014;68:247-57.
35. Romieu I, Ferrari P, Rinaldi S, et al. Dietary glycemic index and glycemic load and breast cancer risk in the European Prospective Investigation into Cancer and Nutrition (EPIC). *Am J Clin Nutr.* 2012;96(2):345-55.
36. Othman EM, Leyh A, Stopper H. Insulin mediated DNA damage in mammalian colon cells and human lymphocytes in vitro. *Mutat Res.* 2013;745-746:34-9.
37. Algire C, Amrein L, Zakikhani M, et al. Metformin blocks the stimulative effect of a high-energy diet on colon carcinoma growth in vivo and is associated with reduced expression of fatty acid synthase. *Endocr Relat Cancer.* 2010;17(2):351-60.
38. Kato M, Tani T, Terahara N, et al. The Anthocyanin Delphinidin 3-Rutinoside Stimulates Glucagon-Like Peptide-1 Secretion in Murine GLUTag Cell Line via the Ca2+/Calmodulin-Dependent Kinase II Pathway. *PLoS One.* 2015;10(5):e0126157.
39. Imeryuz N, Yegen BC, Bozkurt A, et al. Glucagon-like peptide-1 inhibits gastric emptying via vagal afferent-mediated central mechanisms. *Am J Physiol.* 1997;273(4 Pt 1):G920-7.
40. Näslund E, Bogefors J, Skogar S, et al. GLP-1 slows solid gastric emptying and inhibits insulin, glucagon, and PYY release in humans. *Am J Physiol.* 1999;277(3 Pt 2):R910-6.
41. Hidalgo J, Flores C, Hidalgo MA, et al. Delphinol(R) standardized maqui berry extract reduces postprandial blood glucose increase in individuals with impaired glucose regulation by novel mechanism of sodium glucose cotransporter inhibition. *Panminerva Med.* 2014;56(2 Suppl 3):1-7.
42. Alvarado J, Schoenlau F, Leschot A, et al. Delphinol(R) standardized maqui berry extract significantly lowers blood glucose and improves blood lipid profile in prediabetic individuals in three-month clinical trial. *Panminerva Med.* 2016;58(3 Suppl 1):1-6.
43. Available at: http://www.mayoclinic.org/tests-procedures/a1c-test/details/results/rsc-20167939. Accessed 19 April, 2017.
44. Supplier Internal Study. Effect of Clovinol on Random Blood Sugar Levels - A Pilot Study. Data on File. 2017.
45. Sanae F, Kamiyama O, Ikeda-Obatake K, et al. Effects of eugenol-reduced clove extract on glycogen phosphorylase b and the development of diabetes in db/db mice. *Food & Function.* 2014;5(2):214-9.

GREEN *is* GOOD

Chlorophyllin is derived from chlorophyll and helps neutralize dietary toxins and protect DNA.

NON GMO PROJECT VERIFIED

	Retail Price	Your Price
1 bottle	$24	**$18**
4 bottles		**$15 each**

Item # 01571 • 100 vegetarian capsules

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

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

PROMOTE BRAIN HEALTH AND RELAXATION

L-Theanine helps control overstimulation of brain cells—promoting relaxation and feeling of well-being.[1]

The **L-Theanine** in this product:

- Inhibits excitatory stimuli at glutamate receptors in the brain[2,3]
- Stimulates production of relaxing neurotransmitter GABA[3]
- Beneficially influences gene expression in brain areas related to memory and mood[4]
- Supports blood pressure control under stress for those within normal levels[2]

L-Theanine

Item #01683 • 60 vegetarian capsules

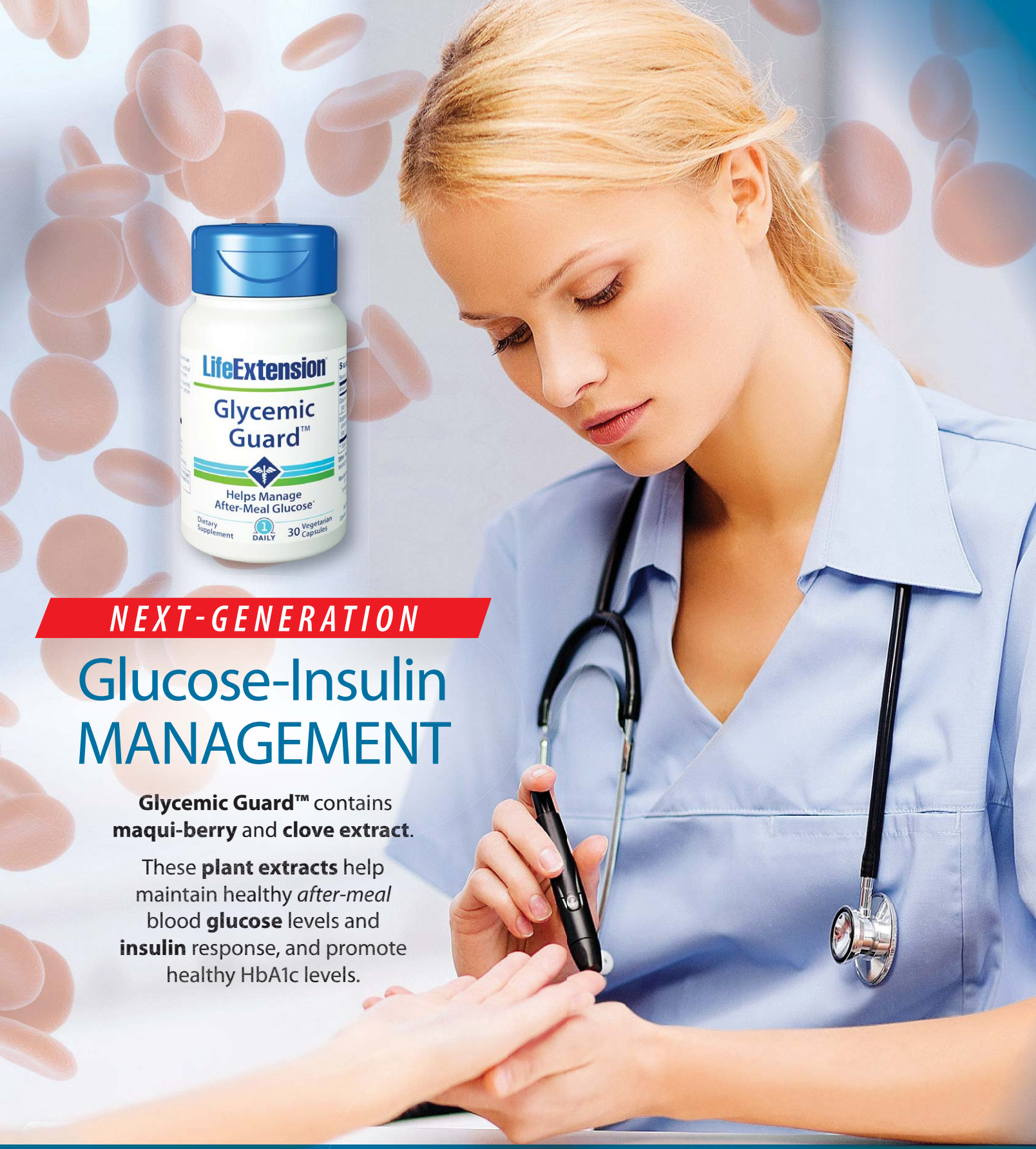
	Retail Price	Your Price
1 bottle	$24	**$18**
4 bottles		**$15.38 each**

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

References

1. *Pharmacol Biochem Behav.* 2012;103(2):245-52.
2. *J Physiol Anthropol.* 2012;31:28.
3. *J Herb Pharmacother.* 2006;6(2):21-30.
4. *ScientificWorldJournal.* 2014;2014:419032.

NON GMO LE CERTIFIED



NEXT-GENERATION

Glucose-Insulin MANAGEMENT

Glycemic Guard™ contains **maqui-berry** and **clove extract**.

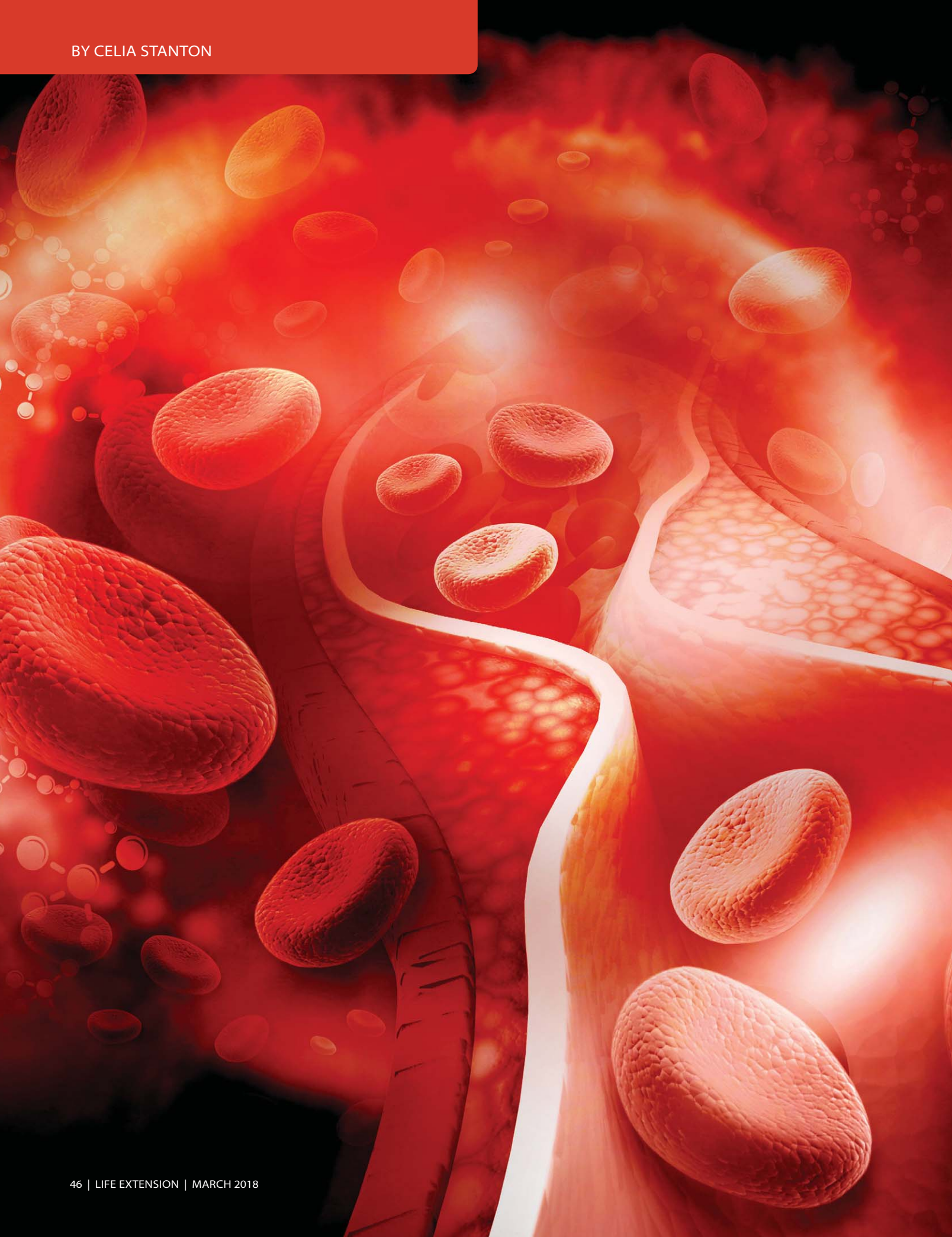
These **plant extracts** help maintain healthy *after-meal* blood **glucose** levels and **insulin** response, and promote healthy HbA1c levels.

ITEM # 02122 • 30 vegetarian capsules • Retail price $42 • **Your price $31.50** • 4 bottles $28 each

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

NON GMO LE CERTIFIED

BY CELIA STANTON



Reduce Your Risk of Arterial Stiffness

Atherosclerosis (or hardening of the arteries) can affect any artery in the body. It is a leading cause of heart disease and stroke.[1,2]

Scientists have identified an overlooked risk factor for atherosclerosis that rivals high cholesterol—***arterial stiffening***.[3,4]

Arterial stiffening is more than just **plaque** formation associated with occluded arteries.

Stiffening damages fragile capillaries that nourish our organs. This loss of youthful *suppleness* prevents our arteries from properly regulating blood flow and pressure.[3]

In addition to causing high blood pressure, arterial stiffening can lead to **organ damage**,[5] which we recognize as heart attacks, strokes, cognitive decline, dementia, kidney failure, and a host of other disorders.

Combatting loss of arterial flexibility can be as simple as incorporating two nutrients into your daily regimen.

Studies show that **vitamin D** and **vitamin K** play an essential role in slowing—and even preventing—**arterial stiffening**.[6-8]

In this article, we'll examine how these two nutrients work together to reduce **arterial stiffening**, and ultimately, the degenerative disorders associated with it.

The Dangers of Arterial Stiffness

Healthy arteries consist of multilayered walls capable of **constricting** (narrowing) or **dilating** (widening) in response to the needs of the tissues they supply.

For years, scientists have studied the artery's innermost layer, or **endothelium**, in an attempt to understand atherosclerosis and cardiovascular disease. They now know the damaging roles of blood sugar, inflammation, and an array of signaling molecules in disrupting blood flow.[9]

New data show that in addition to the endothelium, the middle, **muscular** layer of arteries is *also* closely involved in the blood-flow abnormalities that produce not only cardiovascular disease and hypertension, but a host of other age-related disorders.[8,10,11]

In fact, arterial stiffness has now been identified as a contributing factor to:[12-16]

- Hypertension
- Heart attack
- Stroke
- Kidney disorders (including end-stage renal disease)
- Liver disorders (especially non-alcoholic fatty liver disease, or NAFLD)
- Type II diabetes
- Cognitive decline
- Cerebral white matter disease (leukoaraiosis)
- Neurodegenerative disorders (e.g., Alzheimer's, Parkinson's)

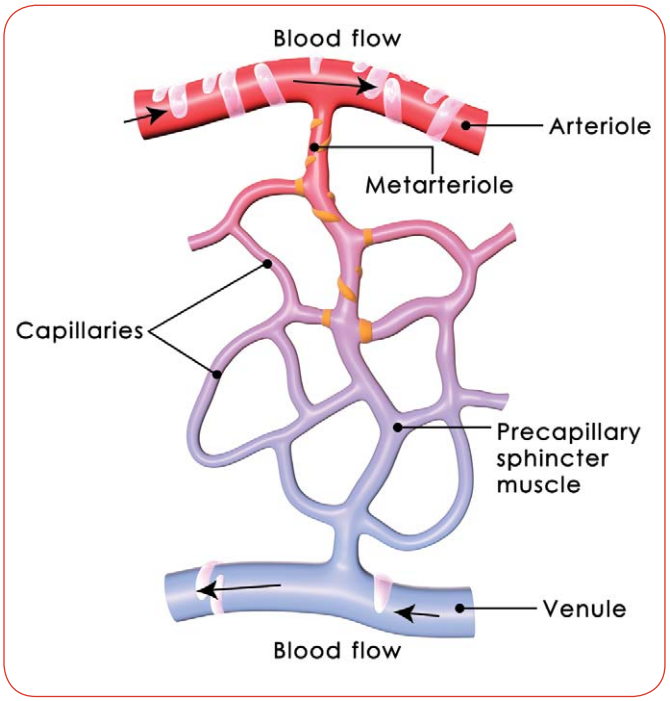
Arterial ***stiffness*** is also emerging as a powerful predictor of **death risk** in an increasing number of clinical age-related conditions.[17,18]

The main *immediate* consequence of arterial stiffening is a steady rise in **blood pressure**, which contributes to destructive changes that further stiffen arteries—creating a vicious cycle.[15,18,19]

Causes of Arterial Stiffening

Studies show that aging alone, as well as conditions such as type II diabetes, contribute to a steady rise in arterial stiffness. These conditions can result in high blood pressure and damage to organs throughout the body.[18,20-22]

One of the main contributors to arterial stiffening is ***calcification***. This occurs when calcium from the blood is deposited into the normally supple arterial walls, leading to literal hardening of the arteries.[10,23]



Increasingly, researchers are focusing on the lifestyle and nutritional factors that contribute to arterial stiffening—and, importantly, to its prevention.[14,24,25]

Two key nutrients—**vitamin D** and **vitamin K**—have shown compelling promise in this area. Both play critical roles in helping our bodies to manage **calcium**, which makes them essential for preventing dangerous arterial stiffening.

Putting Calcium in its Place

Nutritionists used to think of vitamin D as the calcium-and-bone vitamin, and vitamin K as the blood-clotting vitamin. More current scientific evidence suggests that *both* vitamins play important roles in helping our bodies properly manage calcium.

Both vitamin D and vitamin K play a crucial role in calcium metabolism. **Vitamin D** promotes calcium absorption from the diet while also promoting calcium deposition in bones. In this way, it helps with the continuous remodeling of bone that helps keep our skeletons strong and adaptable.

Vitamin K, on the other hand, is essential for keeping calcium **out** of your arteries. This is because vitamin K modifies specific proteins in arterial walls, making them resistant to binding to calcium. This process prevents arterial calcification and stiffening.[26]

In addition to keeping calcium out of your arteries, vitamin K promotes the proper deposition of calcium into bone, and vitamin K has been promoted recently as a way to prevent osteoporosis.[26]

It is becoming increasingly clear that we need ***both*** vitamins D and K to get our dietary calcium ***into*** bones, where it belongs, and to keep it ***out*** of arteries, where it doesn't.

Vitamins D and K can work individually and together to keep our arteries young and supple—and to prevent the myriad disorders associated with arterial stiffening.

Vitamin D: Contributor to Arterial Suppleness

Scientists have known for years that vitamin D is essential for proper calcium absorption from the diet. Now they are beginning to recognize its role in arterial health as well.

New evidence suggests that insufficient vitamin D accelerates cardiovascular diseases and may contribute to **arterial stiffening**.[27-29] Similarly, low vitamin D levels are associated with high blood pressure, a major manifestation of arterial stiffening.[30,31]

Unfortunately, vitamin D deficiency is all too common—a problem that may be behind arterial stiffening as well as other health problems.[32,33]

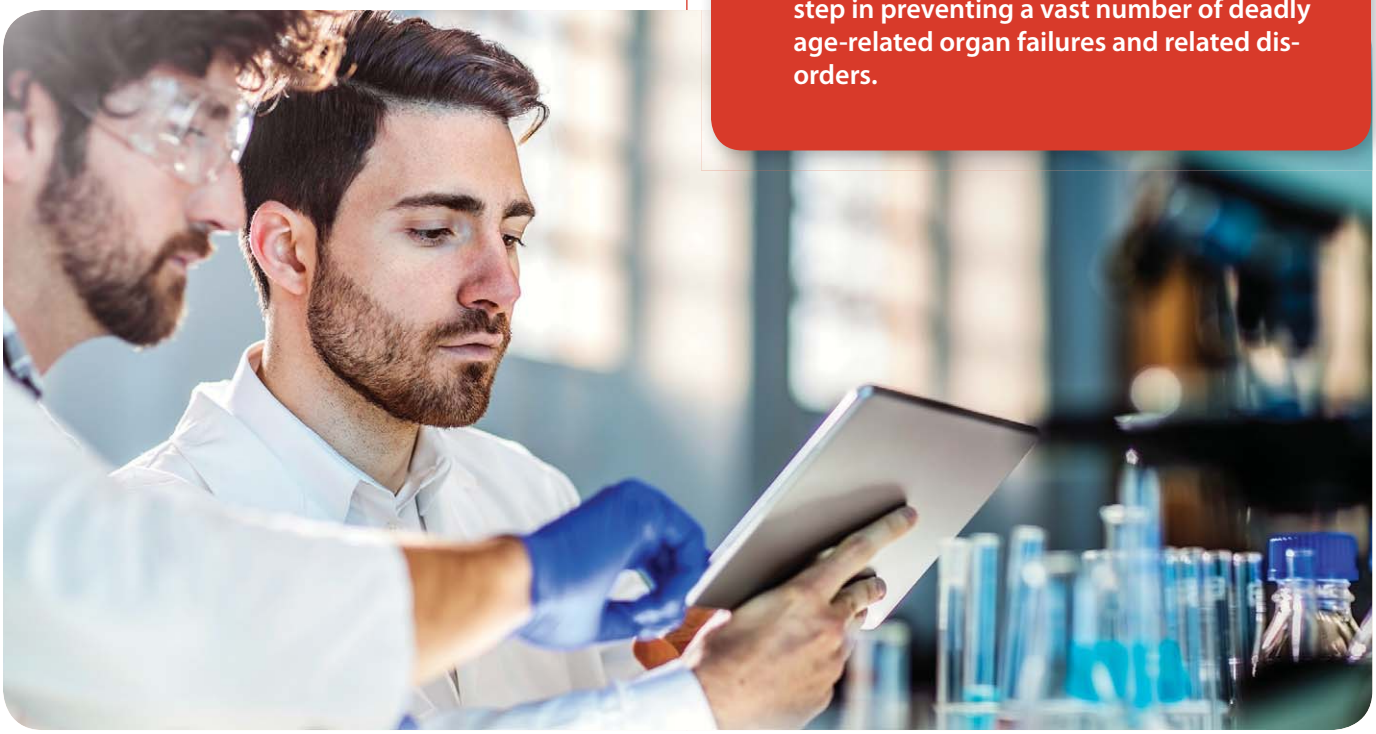
Two studies have demonstrated that vitamin D supplementation is an important approach to preventing or alleviating cardiovascular disease, particularly in certain high-risk groups such as diabetics, older adults, and people with deficiencies in dietary vitamin D intake or insufficient sunlight exposure.[33,34]

This approach has now been validated in multiple trials studying at-risk patients.

What You Need to Know

Preventing Arterial Stiffness

- **Arterial stiffness is a major contributor to cardiovascular risk that also raises our risks for other disorders including brain aging and organ dysfunction.**
- **Studies show that aging alone, as well as conditions such as type II diabetes, contribute to a steady rise in arterial stiffness, resulting in high blood pressure and damage to organs throughout the body.**
- **In addition, a key contributor to arterial stiffness is calcification, or excess deposits of calcium in the arteries.**
- **Vitamins D and K help keep calcium out of the arteries, which helps prevent or slow the arterial stiffening that otherwise imperils the aging circulatory system.**
- **Human studies show that ample vitamin D and K intake slows arterial calcification and maintains the youthful suppleness of our arteries.**
- **Preventing arterial stiffening is an essential step in preventing a vast number of deadly age-related organ failures and related disorders.**



Clinical Trials Show Dramatic Improvements

In a study of middle-aged **type II diabetics**, subjects received either a placebo or **1,000 IU** of vitamin D daily.[34] After one year, **supplemented patients** had a *decrease* in their measure of arterial stiffness known as the ***central aortic augmentation index***. There was no improvement in the placebo group.[34]

Another study examined adults with **elevated blood pressure** who were vitamin D deficient. After taking **4,000 IU** of oral vitamin D3 daily for 6 months, they experienced a **12.3%** *reduction* in arterial stiffness (as measured by augmentation index). No changes were shown in a control group receiving **400 IU**/day (the standard "recommended" dose).[31]

Understanding Vitamin K

Vitamin K1. Vitamin K1, also known as phylloquinone, is found in plants. Some of it converts to vitamin K2 in the body.[40] Published studies show disease risk reduction in response to ingestion of vitamin K1.[41-45]

Vitamin K2 (MK-4). MK-4 is found in meat, eggs, and dairy products.[46] It is the most studied form of vitamin K to preserve bone health. It is rapidly absorbed and rapidly metabolized by the body.[47-51]

Vitamin K2 (MK-7). MK-7 is found in fermented soybeans and fermented cheeses.[52,53] What makes this form so special is that it remains active in the body for more than 24 hours.[54] This is critical when protecting against calcification since matrix Gla-proteins quickly inactivate in the absence of vitamin K2.[55]

There may be benefits to taking all three forms of **vitamin K** in a single supplement.

Life Extension® Recommendations

For maximum coverage, **Life Extension** recommends a combination supplement that provides **1,500 mcg** of vitamin K1, **1,000 mcg** of vitamin K2 (MK-4), and **100 mcg** of vitamin K2 (**all-*trans*** MK-7). **All-*trans*** is a new form of **MK-7** that is **100%** bioactive.

For vitamin D, the typical dose range is **3,000 IU** to **8,000 IU** of vitamin D3 daily taken with a meal for better absorption.

Annual blood tests can enable one to know if they are taking the proper dose of vitamin D they need to achieve optimal levels of *25-hydroxyvitamin D*.

A Danish study conducted in winter months demonstrated that **3,000 IU** of vitamin D3 reduced both systolic (top number) and diastolic (bottom number) blood pressure in subjects who were vitamin D insufficient (<**32 ng/mL**).[30]

Numerous subsequent studies have confirmed vitamin D's arterial stiffness-reducing effects in both healthy and high-risk populations.[27,29,35]

The preponderance of evidence shows vitamin D to be a ***critical*** factor in preventing the many disorders associated with arterial stiffening—especially those involving standard risk factors such as hypertension.

Next, we turn our attention to vitamin K, the other crucial factor in maintaining healthy arterial function well into advanced years.

Teflon for your Arteries

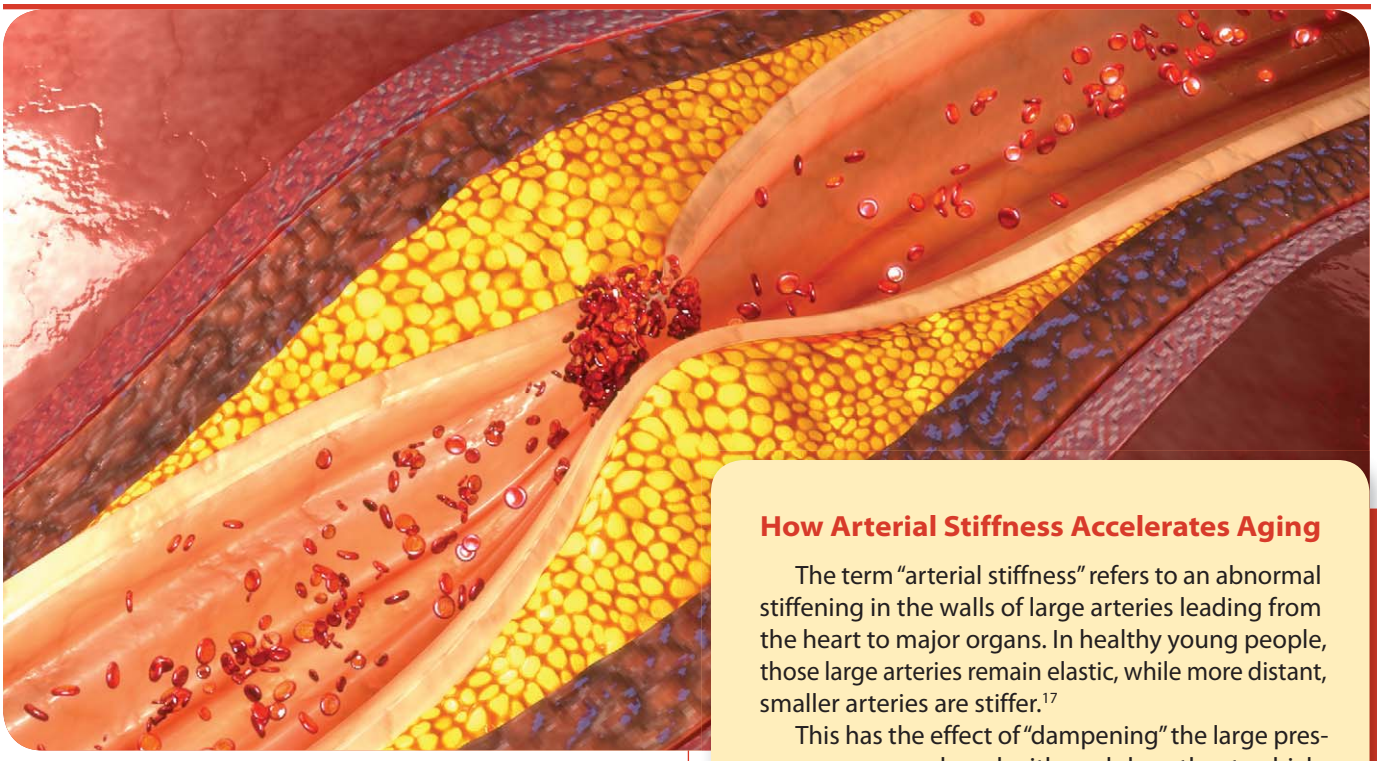
Vitamin K plays an important role in arterial health because of its role in managing calcium. Vitamin K is required for the activation of a biomolecule called ***matrix Gla-protein***, which inhibits calcium from being deposited in artery walls.[23,26,36,37] Think of it like Teflon for your arteries.

Without sufficient vitamin K, matrix Gla-protein fails to become activated, resulting in calcium deposition and increased arterial stiffness.[26,36,37]

Many of us don't get vitamin K in our diets, particularly if we consume processed foods, which are nearly devoid of the vitamin.[26] Not surprisingly, then, studies of people who have insufficient vitamin K intake reveal increased markers of arterial stiffness, *especially in older adults*.[38]

These factors put anyone without ample vitamin K intake at increased risk for arterial stiffening, particularly groups already at high cardiovascular risk, such as diabetics.

The good news is that studies in both animals and humans clearly show that supplementing with vitamin K helps prevent or reduce arterial stiffness.



Benefits of Vitamin K

In a laboratory study, diabetic rats were shown to have reductions in activated matrix Gla-protein of **36%**, compared with nondiabetic controls. This led to increases in major artery calcium deposits of up to **56%**, and ultimately produced a **44%** increase in **arterial stiffness**.[23]

A recent human randomized controlled clinical trial illustrated the value of oral vitamin K supplementation, using a form of **vitamin K2** called *menaquinone-7*, or **MK-7**.[39] The study involved 244 healthy, postmenopausal women, a group whose risk for cardiovascular disease approaches that of men. Half received placebo, and the other half received **vitamin K2** in the form of MK-7.[39]

This three-year study showed that supplementation with MK-7 significantly reduced (by **50%**) levels of *inactive* **matrix Gla-protein**, indicating vitamin K's protective effect on cardiovascular health.[39] The results from this study showed the vitamin K (MK-7)-supplemented women had significant reductions in **arterial *stiffness***.

As an added benefit, those with the highest stiffness at baseline experienced *significant improvements* in a host of other arterial health parameters related to arterial suppleness as well.

Taken together, this combination of animal and human data strongly indicates the need for ample vitamin K supplementation for all of us who are at risk for arterial stiffening and the resulting hypertension, cardiovascular disease, and premature death.

How Arterial Stiffness Accelerates Aging

The term "arterial stiffness" refers to an abnormal stiffening in the walls of large arteries leading from the heart to major organs. In healthy young people, those large arteries remain elastic, while more distant, smaller arteries are stiffer.[17]

This has the effect of "dampening" the large pressure waves produced with each heartbeat, which allows blood to flow smoothly, without big fluctuations in pressure, through the vital capillary beds that nourish all of our tissues.[17]

The lack of major pulsations in capillaries protects them from pressure-induced damage, allowing for normal exchange of oxygen, carbon dioxide, nutrients, and waste products.

But with aging, and under constant attack by blood sugar, inflammation, and other factors, those central arteries begin to stiffen.

The result of that stiffening is a loss of the pressure damping effect, leading to highly pulsatile pressure waves reaching the delicate capillary beds, which in turn induces physical stresses on capillaries, and disrupts their normal function.[17,56,57]

Furthermore, arterial stiffening leads to elevated blood pressure, which itself is a major cause of further stiffening, leading to a vicious cycle of aging, hypertension, arterial stiffening, and even worse hypertension.[18,56]

The end result is damage of the organs supplied by those capillaries, which we recognize as heart attacks, strokes, brain changes leading to cognitive decline and dementia, liver disease, kidney failure, and a host of other disorders related to atherosclerosis, aging, or both.

Preventing arterial stiffening, then, is an essential step in preventing virtually all age-related organ failures and related disorders.

Summary

Arterial *stiffening* is a major contributor to cardiovascular disease risk. It occurs when arteries lose their youthful suppleness, leaving us with narrowed arteries incapable of regulating blood flow and pressure, and in turn damaging the fragile capillary beds that nourish our organs.

One of the main underlying causes of arterial stiffening is a buildup of **calcium** in the arteries.

Vitamins D and K are intimately involved in how our bodies manage calcium—specifically keeping it ***in*** our bones, and ***out*** of our arteries. This makes these vitamins essential for preventing arterial stiffening.

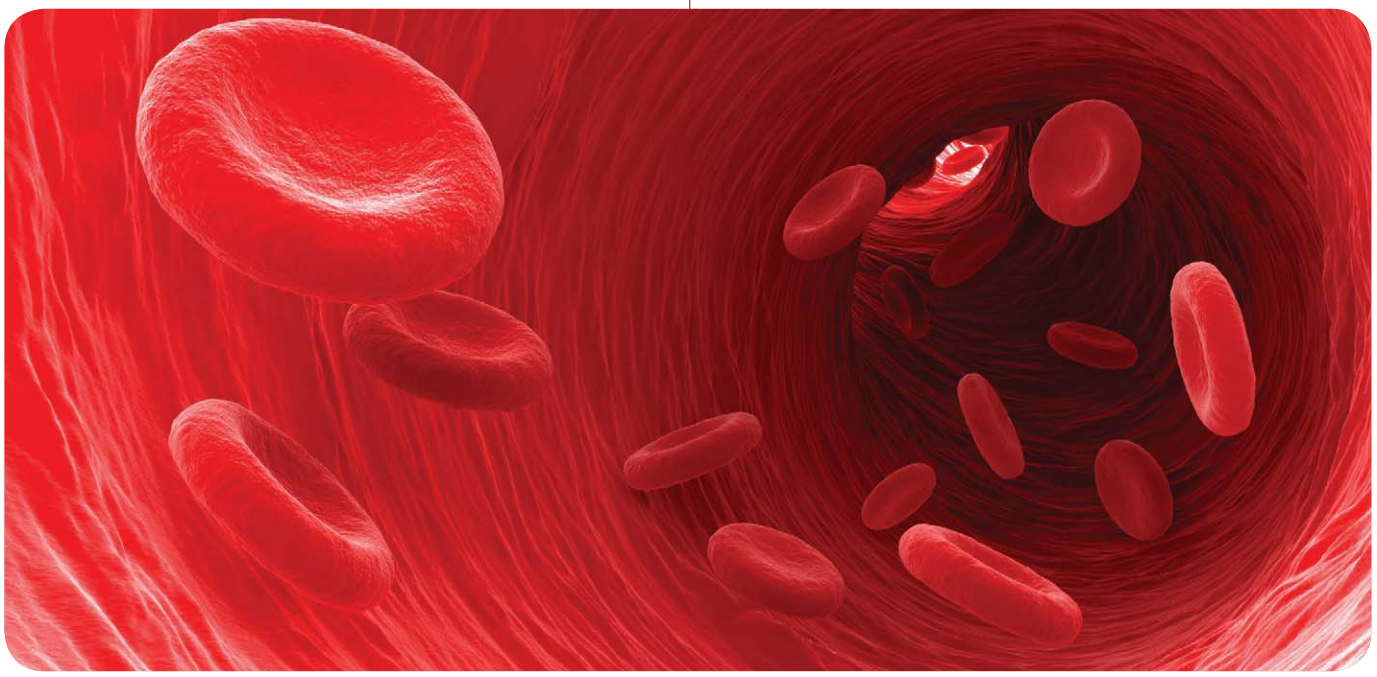
Vitamin D3 (cholecalciferol) and vitamin K2 have been shown in human clinical trials to significantly reduce arterial stiffness, thereby reducing one of the most dangerous risk factors for heart disease, stroke, neurodegenerative diseases, and a variety of other so-called "age-related" disorders.

The important role vitamins D and K play in preventing arterial stiffening make it critical for all older adults to get sufficient intakes of these important vitamins—both of which are lacking in even healthy diets. ●

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

1. Available at: https://www.nhlbi.nih.gov/health/health-topics/topics/atherosclerosis. Accessed November 4, 2017.
2. Available at: https://www.cdc.gov/chronicdisease/overview/index.htm. Accessed December 4, 2017.
3. Palombo C, Kozakova M. Arterial stiffness, atherosclerosis and cardiovascular risk: Pathophysiologic mechanisms and emerging clinical indications. *Vascul Pharmacol.* 2016;77:1-7.
4. van Popele NM, Grobbee DE, Bots ML, et al. Association between arterial stiffness and atherosclerosis: the Rotterdam Study. *Stroke.* 2001;32(2):454-60.
5. Thorin-Trescases N, Thorin E. Lifelong Cyclic Mechanical Strain Promotes Large Elastic Artery Stiffening: Increased Pulse Pressure and Old Age-Related Organ Failure. *Can J Cardiol.* 2016;32(5):624-33.
6. Levin A, Tang M, Perry T, et al. Randomized Controlled Trial for the Effect of Vitamin D Supplementation on Vascular Stiffness in CKD. *Clin J Am Soc Nephrol.* 2017;12(9):1447-60.
7. Mayer O, Jr., Seidlerova J, Wohlfahrt P, et al. Synergistic effect of low K and D vitamin status on arterial stiffness in a general population. *J Nutr Biochem.* 2017;46:83-9.
8. Mozos I, Stoian D, Luca CT. Crosstalk between Vitamins A, B12, D, K, C, and E Status and Arterial Stiffness. *Dis Markers.* 2017;2017:8784971.
9. Mozos I, Luca CT. Crosstalk between Oxidative and Nitrosative Stress and Arterial Stiffness. *Curr Vasc Pharmacol.* 2017;15(5):446-56.
10. Cecelja M, Chowienczyk P. Molecular Mechanisms of Arterial Stiffening. *Pulse (Basel).* 2016;4(1):43-8.
11. Cho JY, Kim KH. Evaluation of Arterial Stiffness by Echocardiography: Methodological Aspects. *Chonnam Med J.* 2016;52(2):101-6.
12. Cardoso CR, Salles GF. Aortic Stiffness as a Surrogate Endpoint to Micro- and Macrovascular Complications in Patients with Type 2 Diabetes. *Int J Mol Sci.* 2016;17(12).
13. Villela-Nogueira CA, Leite NC, Cardoso CR, et al. NAFLD and Increased Aortic Stiffness: Parallel or Common Physiopathological Mechanisms? *Int J Mol Sci.* 2016;17(4).
14. Wang M, Norman JE, Srinivasan VJ, et al. Metabolic, inflammatory, and microvascular determinants of white matter disease and cognitive decline. *Am J Neurodegener Dis.* 2016;5(5):171-7.
15. Cheng HM, Park S, Huang Q, et al. Vascular aging and hypertension: Implications for the clinical application of central blood pressure. *Int J Cardiol.* 2017;230:209-13.



16. Joly L. Arterial stiffness and cognitive function. *Geriatr Psychol Neuropsychiatr Vieil.* 2017;15(1):83-8.
17. Fortier C, Agharazii M. Arterial Stiffness Gradient. *Pulse (Basel).* 2016;3(3-4):159-66.
18. Gavish B, Izzo JL, Jr. Arterial Stiffness: Going a Step Beyond. *Am J Hypertens.* 2016.
19. Prasad K, Mishra M. Do Advanced Glycation End Products and Its Receptor Play a Role in Pathophysiology of Hypertension? *Int J Angiol.* 2017;26(1):1-11.
20. Shirwany NA, Zou MH. Arterial stiffness: a brief review. *Acta Pharmacol Sin.* 2010;31(10):1267-76.
21. Prenner SB, Chirinos JA. Arterial stiffness in diabetes mellitus. *Atherosclerosis.* 2015;238(2):370-9.
22. Zieman SJ, Melenovsky V, Kass DA. Mechanisms, pathophysiology, and therapy of arterial stiffness. *Arterioscler Thromb Vasc Biol.* 2005;25(5):932-43.
23. Doyon M, Mathieu P, Moreau P. Decreased expression of gamma-carboxylase in diabetes-associated arterial stiffness: impact on matrix Gla protein. *Cardiovasc Res.* 2013;97(2):331-8.
24. LaRocca TJ, Martens CR, Seals DR. Nutrition and other lifestyle influences on arterial aging. *Ageing Res Rev.* 2017;39:106-19.
25. Papaioannou TG, Karatzi K, Psaltopoulou T, et al. Arterial ageing: Major nutritional and life-style effects. *Ageing Res Rev.* 2017;37:162-3.
26. Maresz K. Proper Calcium Use: Vitamin K2 as a Promoter of Bone and Cardiovascular Health. *Integr Med (Encinitas).* 2015;14(1):34-9.
27. Al-Dujaili EA, Munir N, Iniesta RR. Effect of vitamin D supplementation on cardiovascular disease risk factors and exercise performance in healthy participants: a randomized placebo-controlled preliminary study. *Ther Adv Endocrinol Metab.* 2016;7(4):153-65.
28. Rodriguez AJ, Scott D, Srikanth V, et al. Effect of vitamin D supplementation on measures of arterial stiffness: a systematic review and meta-analysis of randomized controlled trials. *Clin Endocrinol (Oxf).* 2016;84(5):645-57.
29. Sunbul M, Cincin A, Bozbay M, et al. Arterial stiffness parameters associated with vitamin D deficiency and supplementation in patients with normal cardiac functions. *Turk Kardiyol Dern Ars.* 2016;44(4):281-8.
30. Larsen T, Mose FH, Bech JN, et al. Effect of cholecalciferol supplementation during winter months in patients with hypertension: a randomized, placebo-controlled trial. *Am J Hypertens.* 2012;25(11):1215-22.
31. Zaleski A, Panza G, Swales H, et al. High-Dose versus Low-Dose Vitamin D Supplementation and Arterial Stiffness among Individuals with Prehypertension and Vitamin D Deficiency. *Dis Markers.* 2015;2015:918968.
32. Dong Y, Stallmann-Jorgensen IS, Pollock NK, et al. A 16-week randomized clinical trial of 2000 international units daily vitamin D3 supplementation in black youth: 25-hydroxyvitamin D, adiposity, and arterial stiffness. *J Clin Endocrinol Metab.* 2010;95(10):4584-91.
33. McGreevy C, Barry M, Davenport C, et al. The effect of vitamin D supplementation on arterial stiffness in an elderly community-based population. *J Am Soc Hypertens.* 2015;9(3):176-83.
34. Breslavsky A, Frand J, Matas Z, et al. Effect of high doses of vitamin D on arterial properties, adiponectin, leptin and glucose homeostasis in type 2 diabetic patients. *Clin Nutr.* 2013;32(6):970-5.
35. Forouhi NG, Menon RK, Sharp SJ, et al. Effects of vitamin D2 or D3 supplementation on glycaemic control and cardiometabolic risk among people at risk of type 2 diabetes: results of a randomized double-blind placebo-controlled trial. *Diabetes Obes Metab.* 2016;18(4):392-400.
36. Pivin E, Ponte B, Pruijm M, et al. Inactive Matrix Gla-Protein Is Associated With Arterial Stiffness in an Adult Population-Based Study. *Hypertension.* 2015;66(1):85-92.
37. Sardana M, Vasim I, Varakantam S, et al. Inactive Matrix Gla-Protein and Arterial Stiffness in Type 2 Diabetes Mellitus. *Am J Hypertens.* 2017;30(2):196-201.
38. Vaccaro JA, Huffman FG. Phylloquinone (vitamin K(1)) intake and pulse pressure as a measure of arterial stiffness in older adults. *J Nutr Gerontol Geriatr.* 2013;32(3):244-57.
39. Knapen MH, Braam LA, Drummen NE, et al. Menaquinone-7 supplementation improves arterial stiffness in healthy postmenopausal women. A double-blind randomised clinical trial. *Thromb Haemost.* 2015;113(5):1135-44.
40. Booth SL. Vitamin K: food composition and dietary intakes. *Food Nutr Res.* 2012;56.
41. Villines TC, Hatzigeorgiou C, Feuerstein IM, et al. Vitamin K1 intake and coronary calcification. *Coron Artery Dis.* 2005;16(3):199-203.
42. Poli D, Antonucci E, Lombardi A, et al. Safety and effectiveness of low dose oral vitamin K1 administration in asymptomatic outpatients on warfarin or acenocoumarol with excessive anticoagulation. *Haematologica.* 2003;88(2):23 7-8.
43. Shetty HG, Backhouse G, Bentley DP, et al. Effective reversal of warfarin-induced excessive anticoagulation with low dose vitamin K1. *Thromb Haemost.* 1992;67(1):13-5.
44. Bolton-Smith C, McMurdo ME, Paterson CR, et al. Two-year randomized controlled trial of vitamin K1 (phylloquinone) and vitamin D3 plus calcium on the bone health of older women. *J Bone Miner Res.* 2007;22(4):509-19.
45. Okano T, Shimomura Y, Yamane M, et al. Conversion of phylloquinone (Vitamin K1) into menaquinone-4 (Vitamin K2) in mice: two possible routes for menaquinone-4 accumulation in cerebra of mice. *J Biol Chem.* 2008;283(17):11270-9.
46. Elder SJ, Haytowitz DB, Howe J, et al. Vitamin k contents of meat, dairy, and fast food in the u.s. Diet. *J Agric Food Chem.* 2006;54(2):463-7.
47. Komai M, Shirakawa H. [Vitamin K metabolism. Menaquinone-4 (MK-4) formation from ingested VK analogues and its potent relation to bone function]. *Clin Calcium.* 2007;17(11):1663-72.
48. Miki T, Nakatsuka K, Naka H, et al. Vitamin K(2) (menaquinone 4) reduces serum undercarboxylated osteocalcin level as early as 2 weeks in elderly women with established osteoporosis. *J Bone Miner Metab.* 2003;21(3):161-5.
49. Kawashima H, Nakajima Y, Matubara Y, et al. Effects of vitamin K2 (menatetrenone) on atherosclerosis and blood coagulation in hypercholesterolemic rabbits. *Jpn J Pharmacol.* 1997;75(2):135-43.
50. Shearer MJ, Newman P. Metabolism and cell biology of vitamin K. *Thromb Haemost.* 2008;100(4):530-47.
51. Suhara Y, Murakami A, Nakagawa K, et al. Comparative uptake, metabolism, and utilization of menaquinone-4 and phylloquinone in human cultured cell lines. *Bioorg Med Chem.* 2006;14(19):6601-7.
52. Chow CK. Dietary intake of menaquinones and risk of cancer incidence and mortality. *Am J Clin Nutr.* 2010;92(6):1533-4; author reply 4-5.
53. Sato T, Schurgers LJ, Uenishi K. Comparison of menaquinone-4 and menaquinone-7 bioavailability in healthy women. *Nutr J.* 2012;11:93.
54. Schurgers LJ, Teunissen KJ, Hamulyak K, et al. Vitamin K-containing dietary supplements: comparison of synthetic vitamin K1 and natto-derived menaquinone-7. *Blood.* 2007;109(8):3279-83.
55. Schurgers LJ, Spronk HM, Soute BA, et al. Regression of warfarin-induced medial elastocalcinosis by high intake of vitamin K in rats. *Blood.* 2007;109(7):2823-31.
56. Harvey A, Montezano AC, Lopes RA, et al. Vascular Fibrosis in Aging and Hypertension: Molecular Mechanisms and Clinical Implications. *Can J Cardiol.* 2016;32(5):659-68.
57. Saji N, Toba K, Sakurai T. Cerebral Small Vessel Disease and Arterial Stiffness: Tsunami Effect in the Brain? *Pulse (Basel).* 2016;3(3-4):182-9.

HIGHLY-PURIFIED FISH OIL

YOUR CHOICE OF **HIGHLY-CONCENTRATED** FORMULAS:

SUPER OMEGA-3 Fish oil EPA/DHA with sesame lignans and olive polyphenols

	Retail Price	Your Price
1 bottle	$32	**$24**
4 bottles		**$21 each**

Item # 01982 • 120 softgels

SUPER-OMEGA-3 Fish oil EPA/DHA with sesame lignans and olive polyphenols
(Enteric-coated for sensitive stomachs)

	Retail Price	Your Price
1 bottle	$34	**$25.50**
4 bottles		**$23.25 each**

Item # 01984 • 120 enteric coated softgels

Fish oil EPA/DHA with krill, astaxanthin, sesame lignans, and olive polyphenols

	Retail Price	Your Price
1 bottle	$45	**$33.75**
4 bottles		**$31.50 each**

Item # 01988 • 120 softgels

Smaller, easy-to-swallow CLEARLY EPA/DHA contains only highly purified fish oil

	Retail Price	Your Price
1 bottle	$30	**$22.50**
4 bottles		**$20 each**

Item # 02200 • 120 softgels

For full product description and to order **Super Omega-3**, **Enteric Coated Super Omega-3**, **Super Omega-3 Plus**, or **Clearly EPA/DHA**, call **1-800-544-4440** or **visit www.LifeExtension.com**

NON GMO LE CERTIFIED

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

SUPPORT **ARTERIAL** HEALTH

Now With a Highly Purified, Natural MK-7

Provides **all-*trans*** form of **MK-7**.

Just one daily softgel of **Super K** provides:

Vitamin K1	**1,500 mcg**
Vitamin K2 (MK-4)	**1,000 mcg**
Vitamin K2 (all-*trans* MK-7)	**100 mcg**

Super K with Advanced K2 Complex
Item #02034 • 90 softgels

	Retail Price	Your Price
1 bottle	$30	**$22.50**
4 bottles		**$20.25 each**

Each bottle lasts for three months.

For full product description and to order
Super K with Advanced K2 Complex,
call **1-800-544-4440** or visit **www.LifeExtension.com**

Vitamin K1, vitamin K2 (MK-4), and vitamin K2 (MK-7) can also be found in Once-Daily **Health Booster**. If you take Health Booster, you do not need additional Super K with Advanced K2 formula.

Warning to Coumadin® (warfarin) Drug Users: Patients prescribed vitamin K-antagonist anticoagulant prescription drugs like warfarin should consult their physician before taking vitamin K supplements like Super K and Once-Daily Health Booster. There is evidence, however, that users of drugs like warfarin could benefit from a consistent low dose of supplemental K. Ask your doctor if you can take a low dose (**45 mcg** a day) of vitamin K2 in the long-acting MK-7 form for the purpose of stabilizing your INR levels and also protecting your body against long-term vitamin K deficit. Do not initiate any form of vitamin K supplementation without full cooperation of your treating doctor, as your doctor may need to increase your dose of warfarin to compensate for your vitamin K supplement. Life Extension® provides several forms of low-dose vitamin K for physician consideration.

*Optimize your **vitamin K** and help keep calcium in your bones and out of blood vessels.*

NON GMO LE CERTIFIED

EXTEND-RELEASE

MAGNESIUM

WHEN YOU NEED IT

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

	Retail Price	Your Price
1 bottle	$13	**$9.75**
4 bottles		**$8.75 each**

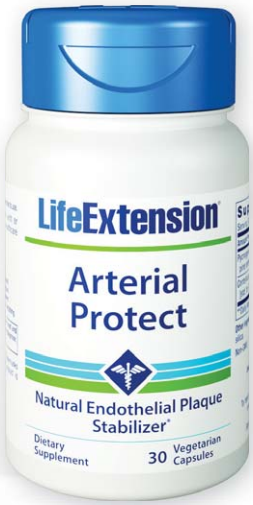
Item # 02107 • 60 vegetarian capsules

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

NON GMO LE CERTIFIED

Promote Healthy Circulation with

ARTERIAL PROTECT



Arterial Protect supports the body's ability to control arterial plaque formation.*

	Retail Price	Your Price
1 bottle	$44	**$33**
4 bottles		**$29** each

Item# 02004 • 30 vegetarian capsules

Reference

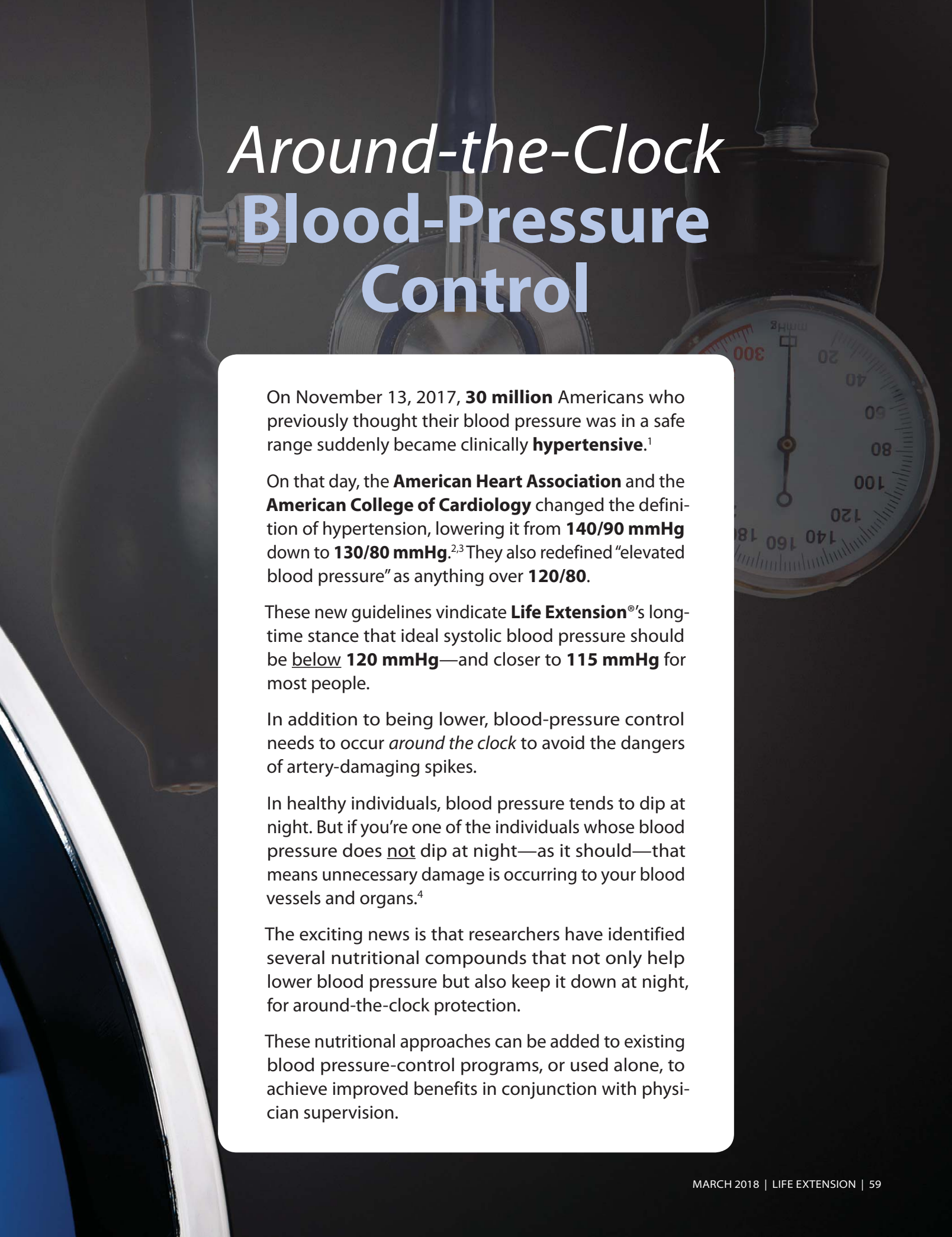
* *Int Angiol.* 2014 Feb;33(1):20-6.

Note: Do not change dosing or discontinue cardiovascular medications unless advised to do so by your physician.

NON GMO LE CERTIFIED

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

BY MICHAEL DOWNEY



Around-the-Clock Blood-Pressure Control

On November 13, 2017, **30 million** Americans who previously thought their blood pressure was in a safe range suddenly became clinically **hypertensive**.[1]

On that day, the **American Heart Association** and the **American College of Cardiology** changed the definition of hypertension, lowering it from **140/90 mmHg** down to **130/80 mmHg**.[2,3] They also redefined "elevated blood pressure" as anything over **120/80**.

These new guidelines vindicate **Life Extension®**'s longtime stance that ideal systolic blood pressure should be below **120 mmHg**—and closer to **115 mmHg** for most people.

In addition to being lower, blood-pressure control needs to occur *around the clock* to avoid the dangers of artery-damaging spikes.

In healthy individuals, blood pressure tends to dip at night. But if you're one of the individuals whose blood pressure does not dip at night—as it should—that means unnecessary damage is occurring to your blood vessels and organs.[4]

The exciting news is that researchers have identified several nutritional compounds that not only help lower blood pressure but also keep it down at night, for around-the-clock protection.

These nutritional approaches can be added to existing blood pressure-control programs, or used alone, to achieve improved benefits in conjunction with physician supervision.

New Hypertension Guidelines

In November 2017, the American Heart Association and the American College of Cardiology issued the following new blood-pressure guidelines:[2]

Blood Pressure Category	Systolic		Diastolic
Normal	<120 mmHg	and	<80 mmHg
Elevated	120-129 mmHg	and	<80 mmHg
Hypertension			
Stage I	130-139 mmHg	or	80-89 mmHg
Stage II	≥140 mmHg	or	≥90 mmHg

These new numbers validate **Life Extension®**'s longtime stance that the ideal systolic blood pressure for most people should be below **120 mmHg**—and closer to **115 mmHg**.

Now that mainstream medicine has redefined full-blown high blood pressure as a reading of **130/80 mmHg** or above, a startling **103 million** Americans will now be advised to address this critical health issue.[2,3]

The Silent Dangers of Hypertension

The damage from hypertension impacts your entire body. High blood pressure pounds organs and blood vessels with each heartbeat, hour after hour, day after day.

Because the symptoms of high blood pressure are often silent or invisible, most people are unaware of the damage that is occurring. But over the years, the effects of this relentless trauma begin to show.

In addition to increasing the risk of cardiac events, high blood pressure contributes to other conditions including retinopathy, kidney failure, vascular dementia, and diabetes.[5-8]

In the kidneys, the ability to filter the body's waste products and separate excess fluid from the blood weakens.[7]

In the brain, the relentless pounding damages delicate capillary beds leading to reduced cerebral perfusion (blood flow). Higher-than-optimal blood pressure can lead to multi-infarct dementia that arises from many mini-strokes.

Women who develop high blood pressure in their 40s are **73%** more likely to develop dementia than women who maintain healthy blood pressure.[9]

Nighttime Dangers

Some people with high blood pressure face an **extra** risk at night.

Daily variations in blood-pressure patterns are tremendously important, especially in older adults.[10,11] Blood pressure **dips** somewhat at night, providing temporary relief from the pounding damage.[4]

But in about **35%** of adults with hypertension, their blood pressure does not fall at night. In these "**non-dippers**," the damage may continue around the clock,[4] exposing these individuals to a significantly higher risk of cardiovascular disease and death compared to "normal dippers"—*even when both have the same blood pressure during the day*.[4]

For these individuals, preventing high blood pressure—or aggressively treating it at an early stage—is even more important for preventing the relentless damage.

Blood-Pressure Basics

When it comes to lowering blood pressure, **at-home monitoring** is essential to ensure that optimal **24-hour** protection is achieved. The availability of low-cost and reliable at-home **blood-pressure monitors** makes this easy.

Lifestyle changes such as losing weight and increasing cardiovascular fitness through exercise can help support healthy blood-pressure levels.

The older drug classes of medication often have side effects that patients find frustrating and bothersome. Side effects can include nighttime urinary frequency with the use of diuretics, or cold hands/feet and sexual dysfunction with the use of beta-blockers.

Newer classes of antihypertensive drugs like **angiotensin II receptor blockers** are usually better tolerated by patients in comparison with older medications like diuretics and beta-blockers.

Some people may only need to take one angiotensin II receptor blocker like **telmisartan** (**40 mg** to **80 mg** a day) to achieve good results. This drug has additional benefits for vascular health.[12-17]

For others, the best strategy for hypertension control is the use of low doses of several different classes (different mechanisms of action) of medications.

Solutions for High Blood Pressure

Despite billions of dollars spent on drugs to lower blood pressure,[18] the condition continues to threaten millions of Americans each year. Statistics show that about a **quarter** of those with hypertension cannot reduce their readings even when taking three different blood-pressure medications![19]

For many people, blood-pressure drugs can have uncomfortable—and sometimes dangerous—side effects.

Several nutritional compounds have been found to help reduce blood pressure both day and night. They work in ways similar to many prescription drugs—but without the side effects.

These compounds represent a novel approach to promoting healthy blood pressure and can provide critical ***around-the-clock*** management. For many people, this may provide an adequate maintenance program in consultation with their physician.

Angiotensin-Blocking Flavonoids

Three natural compounds have been found to help block the receptor for angiotensin II,[20] which is a hormone that triggers the constriction (narrowing) of arteries.[21] These flavonoid molecules—**quercetin**, **myricitrin**, and **myricetin**—are found in a wide variety of plant foods, but only in small amounts.[22,23]

Much like a finger over a garden hose, the narrowing of arteries raises pressure within them. Thus, blocking the **angiotensin receptors** is an effective way of bringing down blood pressure by helping to relax the arteries.

Experimental studies using assessment of receptor docking (i.e. the ability of a molecule to bind to a receptor) suggest that both quercetin and myricetin are effective at blocking angiotensin II receptors.[20]

A study conducted on rats showed that **myricetin** reduced systolic blood pressure by inhibiting the arterial-contracting response to angiotensin by **43%**.[24]

These encouraging results led scientists to study the blood pressure-lowering effects of these flavonoid nutrients in placebo-controlled clinical trials—and the results did not disappoint.

What You Need to Know

Natural Solutions for Lowering Blood Pressure

- **Hypertension boosts the risk of numerous serious disorders by damaging blood vessels and major organs throughout the body.**
- **Several natural nutrients have been found to help control blood pressure using the same mechanisms as many hypertension drugs.**
- **The flavonoids quercetin, myricitrin, and myricetin target the receptor for angiotensin II, while the molecule stevioside effectively blocks calcium channels—relaxing artery walls.**
- **Controlled-release melatonin lowers blood pressure throughout the night for around-the-clock protection.**

Human Studies

Studies in adults showed that **flavonoids** like quercetin are effective at lowering blood pressure in healthy adults, in those with elevated blood pressure and hypertension (according to new guidelines), and in those with type II diabetes.

In both healthy adults and in those who were overweight or obese, **150 mg** a day of quercetin reduced systolic blood pressure compared to placebo.[25,26] In adults with elevated blood pressure and hypertension (according to new guidelines), **162 mg** of quercetin daily reduced systolic blood pressure by **3.9 mmHg** compared to a placebo.[27]

Higher amounts—**730 mg** of quercetin daily—reduced systolic blood pressure by **7 mmHg** and diastolic blood pressure by **5 mmHg**.[28]

Blood-Pressure Recommendations

For most aging individuals, **Life Extension** recommends an optimal blood-pressure goal of **115/75 mmHg**.

However, those aging individuals with long-standing hypertension and/or coronary artery disease, individuals with kidney disease, and those over 80 years of age should be aware that a rapid, overly-aggressive reduction of blood pressure should be avoided. Signs of overly aggressive blood-pressure reduction may include worsening cognitive function, dizziness and/or lightheadedness when standing quickly from a sitting position, and worsening biomarkers of kidney function.

Regrettably, some older, fragile patients may simply not tolerate a target blood pressure of **115/75 mm Hg** due to long-standing damage to the vascular system, thus requiring a higher perfusion pressure to meet physiologic demands. In these fragile patients, maintaining the lowest blood pressure tolerated is reasonable.

Life Extension recommends frequent blood testing of kidney function biomarkers like BUN and creatinine when embarking on an aggressive blood pressure control program. Also, **Life Extension** strongly recommends that all people purchase a low-cost, *at-home* blood-pressure monitor so they can check themselves when trying new medications or nutrients.

In patients with **type II diabetes**—a population that has a higher risk of hypertension—researchers found both quercetin and myricitrin to be especially effective at lowering blood pressure:

In one study, **500 mg** a day of quercetin lowered systolic pressure by **5.3 mmHg** compared with a placebo.[29]

In another study, **600 mg** a day of leaf powder from a myricitrin-containing extract produced an **11 mmHg** decrease in systolic blood pressure.[30]

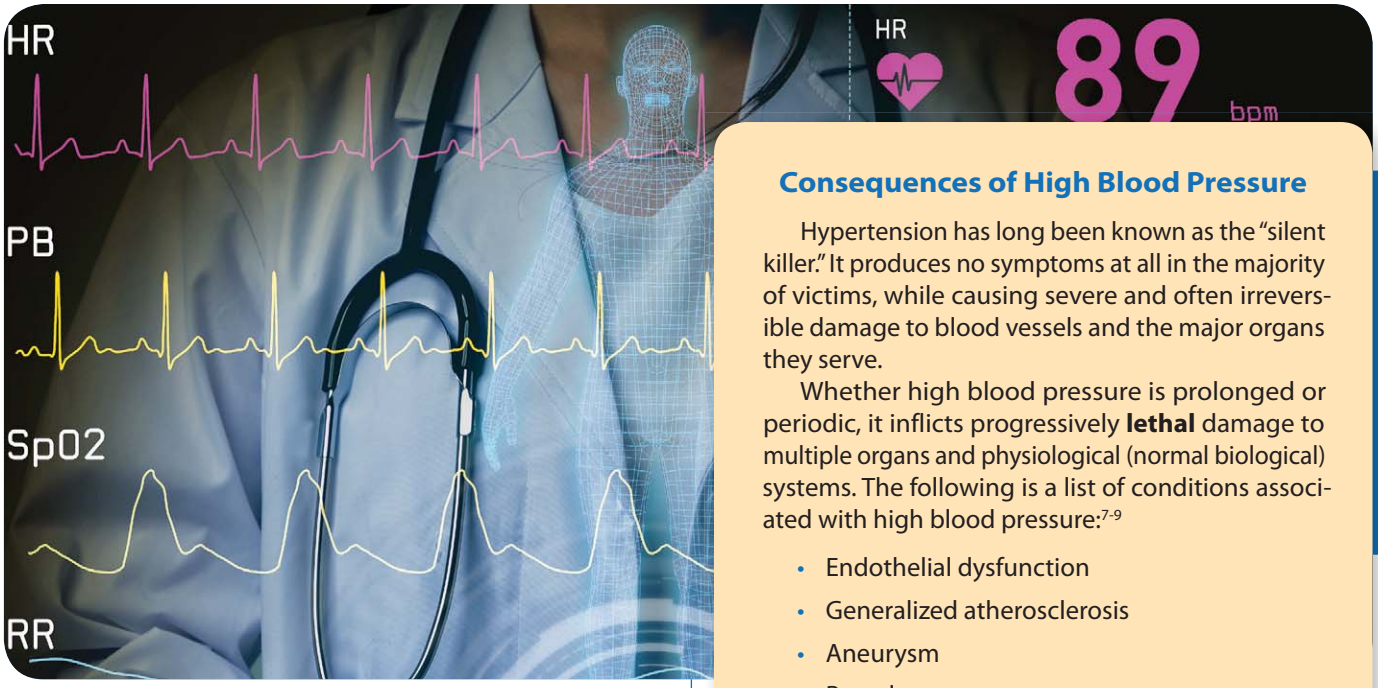
Calcium Channel-Blocking Stevioside

When *intracellular calcium* levels rise in smooth-muscle cells, it causes those cells to contract, which narrows arteries and increases blood pressure. Thus, blocking calcium channels is a distinct—and extremely effective—means of reducing blood pressure.

Scientists have found that a plant extract called **stevioside** mimics the activity of calcium channel-blocking drugs, effectively blocking calcium channels in the smooth-muscle cells of the arteries.[31-33]

Stevioside is derived from the leaves of *Stevia rebaudiana* that is often used in no-calorie sweeteners.[34,35] A **2017** review found that stevia glycosides provide therapeutic effects against diseases such as cancer, diabetes mellitus, obesity, inflammation—and hypertension—without any toxicity.[36]

Calcium channel-blocking medications work well in combination with angiotensin II receptor-blocking medications. In the same way, **stevioside** can work well



with the flavonoids quercetin, myricitrin, and myricetin to deliver a similar **dual mechanism** of action.

A recent meta-analysis included data on 788 patients taking between **750 mg** and **1,500 mg** of stevioside a day. Across all studies, stevioside demonstrated a **4.5 mmHg** decrease in systolic blood pressure. And when stevioside was continued for a year or more, the mean decrease in systolic blood pressure was a substantial **11.9 mmHg**![37]

Around-the-Clock Protection With Melatonin

The hormone **melatonin** has numerous mechanisms of action that help lower blood pressure.

It dilates blood vessels[38] and inhibits "fight-or-flight" signals from the sympathetic nervous system.[38,39] It also helps regulate mitochondria—the energy-producing structures inside cells—to maintain a cardiovascular function.[40] But what makes melatonin especially noteworthy is its impact on **nighttime** blood pressure.

Studies have shown that melatonin helps regulate circadian rhythms and reduces nighttime blood pressure.[41-43] This is important for everyone with hypertension—but it is especially important for the **35%** of non-dippers.

Not all types of melatonin have equally effective blood-pressure benefits. A meta-analysis compared **5 mg** daily of *immediate-release* melatonin with **2-3 mg** daily of *controlled-release* melatonin.

While immediate-release melatonin eked-out insignificant reductions of **0.3 mmHg** systolic and **0.2 mmHg** diastolic, the controlled-release melatonin slashed systolic readings by an average **6.1 mmHg** and diastolic readings by **3.5 mmHg**.[43]

Melatonin's effects are so substantial that the author of a recent study concluded that, *"[S]upplementation of melatonin…has been shown to be efficient in…the control of hypertension and metabolic syndrome."*[44]

As an added benefit, melatonin has also been shown to protect various organs from long-term hypertension.[45-47]

Consequences of High Blood Pressure

Hypertension has long been known as the "silent killer." It produces no symptoms at all in the majority of victims, while causing severe and often irreversible damage to blood vessels and the major organs they serve.

Whether high blood pressure is prolonged or periodic, it inflicts progressively **lethal** damage to multiple organs and physiological (normal biological) systems. The following is a list of conditions associated with high blood pressure:[7-9]

- Endothelial dysfunction
- Generalized atherosclerosis
- Aneurysm
- Bone loss
- Stroke
- TIA (transient ischemic attack)
- Intracerebral hemorrhage
- Hypertensive encephalopathy (brain dysfunction)
- Pulmonary edema (fluid in the lungs)
- Retinopathy
- Dementia and vascular dementia
- Mild cognitive impairment
- Atrial fibrillation (irregular heartbeat)
- Heart attack
- Coronary artery disease
- Heart failure
- Left ventricular hypertrophy (enlarged left heart)
- Kidney failure

Summary

Life Extension has long maintained that the blood-pressure readings called normal by national guidelines were in fact much too high, lulling millions of people into a false sense of security while they are experiencing body-wide dangers.

New official guidelines have finally validated **Life Extension**'s longstanding blood-pressure recommendations.

High blood pressure elevates the risk of disorders ranging from kidney disease to dementia because of the severe damage it does to blood vessels and the organs they serve.

A unique combination of five nutrients—quercetin, myricitrin, myricetin, stevioside, and melatonin—can work by multiple mechanisms to control blood pressure around the clock.

No one should ever assume a drug, supplement, or healthy lifestyle regimen is producing **optimal** blood pressure readings.

Use of an ***at-home*** blood-pressure monitor can enable people to better achieve 24-hour blood-pressure control. ●

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

1. Dyer O. New guideline will put 30 million more Americans in high BP group. *BMJ.* 2017;359:j5357.
2. Whelton PK, Carey RM, Aronow WS, et al. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Hypertension.* 2017.
3. Available at: https://newsnetwork.mayoclinic.org/discussion/american-college-of-cardiology-and-american-heart-association-announce-new-blood-pressure-guidelines/. Accessed December 11, 2017.
4. Verdecchia P, Schillaci G, Porcellati C. Dippers versus non-dippers. *J Hypertens Suppl.* 1991;9(8):S42-4.
5. Cho NH, Kim KM, Choi SH, et al. High Blood Pressure and Its Association With Incident Diabetes Over 10 Years in the Korean Genome and Epidemiology Study (KoGES). *Diabetes Care.* 2015;38(7):1333-8.
6. Long AN, Dagogo-Jack S. Comorbidities of diabetes and hypertension: mechanisms and approach to target organ protection. *J Clin Hypertens (Greenwich).* 2011;13(4):244-51.
7. Schmieder RE. End organ damage in hypertension. *Dtsch Arztebl Int.* 2010;107(49):866-73.
8. Available at: http://www.mayoclinic.org/diseases-conditions/high-blood-pressure/in-depth/high-blood-pressure/art-20045868. Accessed December 11, 2017.
9. Gilsanz P, Mayeda ER, Glymour MM, et al. Female sex, early-onset hypertension, and risk of dementia. *Neurology.* 2017;89(18):1886-93.
10. Elliott HL. 24-hour blood pressure control: its relevance to cardiovascular outcomes and the importance of long-acting antihypertensive drugs. *J Hum Hypertens.* 2004;18(8):539-43.
11. Pierdomenico SD, Pierdomenico AM, Coccina F, et al. Circadian blood pressure changes and cardiovascular risk in elderly-treated hypertensive patients. *Hypertens Res.* 2016.
12. Goyal SN, Bharti S, Bhatia J, et al. Telmisartan, a dual ARB/partial PPAR-gamma agonist, protects myocardium from ischaemic reperfusion injury in experimental diabetes. *Diabetes Obes Metab.* 2011;13(6):533-41.

(References continue on page 66.)

Take Charge of Hypertension!

At-Home Blood Pressure Monitor

Many physicians recommend that patients check their blood pressure at home on a regular basis.

You can do so with the easy-to-use **AccuFit™ Plus Cuff Multi-User Blood Pressure Monitor**. It provides:

- A customizable cuff to fit any size arm (8.6 to 16.5-inch circumferences)
- Irregular heartbeat detection (IHB)
- Data storage for up to four family members (60 results each)
- Easy-to-retrieve results for reporting to your physician
- Clinical accuracy

AccuFit™ Plus Cuff Multi-User Blood Pressure Monitor
Item# 70000 • Medium/large cuff

	Retail Price	Your Price
1 monitor	$79.99	**$49.99**

For full product description and to order **AccuFit™ Plus Cuff Multi-User Blood Pressure Monitor**, call **1-800-544-4440** or visit **www.LifeExtension.com**

13. Iwai M, Inaba S, Tomono Y, et al. Attenuation of focal brain ischemia by telmisartan, an angiotensin II type 1 receptor blocker, in atherosclerotic apolipoprotein E-deficient mice. *Hypertens Res.* 2008;31(1):161-8.
14. Iwanami J, Mogi M, Tsukuda K, et al. Low dose of telmisartan prevents ischemic brain damage with peroxisome proliferator-activated receptor-gamma activation in diabetic mice. *J Hypertens.* 2010;28(8):1730-7.
15. Myojo M, Nagata D, Fujita D, et al. Telmisartan activates endothelial nitric oxide synthase via Ser1177 phosphorylation in vascular endothelial cells. *PLoS One.* 2014;9(5):e96948.
16. Yuen CY, Wong WT, Tian XY, et al. Telmisartan inhibits vasoconstriction via PPARgamma-dependent expression and activation of endothelial nitric oxide synthase. *Cardiovasc Res.* 2011;90(1):122-9.
17. Yusuf S, Teo K, Anderson C, et al. Effects of the angiotensin-receptor blocker telmisartan on cardiovascular events in high-risk patients intolerant to angiotensin-converting enzyme inhibitors: a randomised controlled trial. *Lancet.* 2008;372(9644):1174-83.
18. Available at: https://meps.ahrq.gov/data_files/publications/st404/stat404.shtml. Accessed December 11, 2017.
19. Calhoun DA, Jones D, Textor S, et al. Resistant hypertension: diagnosis, evaluation, and treatment. A scientific statement from the American Heart Association Professional Education Committee of the Council for High Blood Pressure Research. *Hypertension.* 2008;51(6):1403-19.
20. Laskar MA, Choudhury MD. In silico screening of some plant based natural products as angiotensin receptor blockers against cardiovascular diseases. *World Journal of Pharmacy and Pharmaceutical Science.* 2015;4(1):1248-57.
21. Taubman MB. Angiotensin II: a vasoactive hormone with ever-increasing biological roles. *Circ Res.* 2003;92(1):9-11.
22. Hobbs CA, Swartz C, Maronpot R, et al. Genotoxicity evaluation of the flavonoid, myricitrin, and its aglycone, myricetin. *Food Chem Toxicol.* 2015;83:283-92.
23. Ross JA, Kasum CM. Dietary flavonoids: bioavailability, metabolic effects, and safety. *Annu Rev Nutr.* 2002;22:19-34.
24. Godse S, Mohan M, Kasture V, et al. Effect of myricetin on blood pressure and metabolic alterations in fructose hypertensive rats. *Pharm Biol.* 2010;48(5):494-8.
25. Egert S, Bosy-Westphal A, Seiberl J, et al. Quercetin reduces systolic blood pressure and plasma oxidised low-density lipoprotein concentrations in overweight subjects with a high-cardiovascular disease risk phenotype: a double-blinded, placebo-controlled cross-over study. *Br J Nutr.* 2009;102(7):1065-74.
26. Pfeuffer M, Auinger A, Bley U, et al. Effect of quercetin on traits of the metabolic syndrome, endothelial function and inflammation in men with different APOE isoforms. *Nutr Metab Cardiovasc Dis.* 2013;23(5):403-9.
27. Brull V, Burak C, Stoffel-Wagner B, et al. Effects of a quercetin-rich onion skin extract on 24 h ambulatory blood pressure and endothelial function in overweight-to-obese patients with (pre-)hypertension: a randomised double-blinded placebo-controlled cross-over trial. *Br J Nutr.* 2015;114(8):1263-77.
28. Edwards RL, Lyon T, Litwin SE, et al. Quercetin reduces blood pressure in hypertensive subjects. *J Nutr.* 2007;137(11):2405-11.
29. Zahedi M, Ghiasvand R, Feizi A, et al. Does Quercetin Improve Cardiovascular Risk factors and Inflammatory Biomarkers in Women with Type 2 Diabetes: A Double-blind Randomized Controlled Clinical Trial. *Int J Prev Med.* 2013;4(7):777-85.
30. Sales DS, Carmona F, de Azevedo BC, et al. Eugenia punicifolia (Kunth) DC. as an adjuvant treatment for type-2 diabetes mellitus: a non-controlled, pilot study. *Phytother Res.* 2014;28(12):1816-21.
31. Liu JC, Kao PK, Chan P, et al. Mechanism of the antihypertensive effect of stevioside in anesthetized dogs. *Pharmacology.* 2003;67(1):14-20.
32. Melis MS. Influence of calcium on the blood pressure and renal effects of stevioside. *Braz J Med Biol Res.* 1992;25(9):943-9.
33. Melis MS, Sainati AR. Effect of calcium and verapamil on renal function of rats during treatment with stevioside. *J Ethnopharmacol.* 1991;33(3):257-62.

34. Gardana C, Simonetti P, Canzi E, et al. Metabolism of stevioside and rebaudioside A from Stevia rebaudiana extracts by human microflora. *J Agric Food Chem.* 2003;51(22):6618-22.
35. Soejarto DD, Kinghorn AD, Farnsworth NR. Potential sweetening agents of plant origin. III. Organoleptic evaluation of Stevia leaf herbarium samples for sweetness. *J Nat Prod.* 1982;45(5):590-99.
36. Momtazi-Borojeni AA, Esmaeili SA, Abdollahi E, et al. A Review on the Pharmacology and Toxicology of Steviol Glycosides Extracted from Stevia rebaudiana. *Curr Pharm Des.* 2017;23(11):1616-22.
37. Onakpoya IJ, Heneghan CJ. Effect of the natural sweetener, steviol glycoside, on cardiovascular risk factors: a systematic review and meta-analysis of randomised clinical trials. *Eur J Prev Cardiol.* 2015;22(12):1575-87.
38. Pechanova O, Paulis L, Simko F. Peripheral and central effects of melatonin on blood pressure regulation. *Int J Mol Sci.* 2014;15(10):17920-37.
39. Mutoh T, Shibata S, Korf HW, et al. Melatonin modulates the light-induced sympathoexcitation and vagal suppression with participation of the suprachiasmatic nucleus in mice. *J Physiol.* 2003;547(Pt 1):317-32.
40. Baltatu OC, Amaral FG, Campos LA, et al. Melatonin, mitochondria and hypertension. *Cell Mol Life Sci.* 2017;74(21):3955-64.
41. Altun A, Ugur-Altun B. Melatonin: therapeutic and clinical utilization. *Int J Clin Pract.* 2007;61(5):835-45.
42. Cicero AF, Colletti A. Nutraceuticals and Blood Pressure Control: Results from Clinical Trials and Meta-Analyses. *High Blood Press Cardiovasc Prev.* 2015;22(3):203-13.
43. Grossman E, Laudon M, Zisapel N. Effect of melatonin on nocturnal blood pressure: meta-analysis of randomized controlled trials. *Vasc Health Risk Manag.* 2011;7:577-84.
44. Gomes Domingos AL, Hermsdorff HHM, Bressan J. Melatonin intake and potential chronobiological effects on human health. *Crit Rev Food Sci Nutr.* 2017:1-8.
45. Cano Barquilla P, Pagano ES, Jimenez-Ortega V, et al. Melatonin normalizes clinical and biochemical parameters of mild inflammation in diet-induced metabolic syndrome in rats. *J Pineal Res.* 2014;57(3):280-90.
46. Leibowitz A, Volkov A, Voloshin K, et al. Melatonin prevents kidney injury in a high salt diet-induced hypertension model by decreasing oxidative stress. *J Pineal Res.* 2016;60(1):48-54.
47. Qiao YF, Guo WJ, Li L, et al. Melatonin attenuates hypertension-induced renal injury partially through inhibiting oxidative stress in rats. *Mol Med Rep.* 2016;13(1):21-6.

Supports a Healthy Stomach Environment

Gastro-Ease™ contains a unique nutrient compound (zinc-L-carnosine) to help soothe the stomach lining while providing a beneficial bacteria (*Lactobacillus reuteri*) for optimal gastric health.

Suggested dose is one capsule twice daily, after breakfast and before bed.

Gastro-Ease™

Item #02100 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	$44	**$33**
4 bottles		**$30 each**

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

NON GMO LE CERTIFIED

Pylopass™ is a trademark of Organobalance GmbH. PepZinGI® is a registered trademark of Hamari Chemicals, Ltd.

Cardiometabolic
International Summit

July 7-14, 2018

7-Night Eastern Caribbean Cruise Conference
Round-trip from Miami, Florida

Cardiovascular disease remains the leading cause of death for men and women worldwide. This conference highlights the recent advances in the treatment and prevention of coronary heart disease, stroke, and metabolic disorders such as insulin resistance and diabetes.

FEATURING:

Michael Ozner, MD, FACC, FAHA
COURSE DIRECTOR

Medical Director, Center for Prevention and Wellness, Baptist Health South Florida • Voluntary Assistant Professor of Medicine (Cardiology), University of Miami Miller School of Medicine
www.drozner.com

ACCME ACCREDITED
Accreditation: Continuing Education, Inc. is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.
Designation: Continuing Education, Inc. designates this live activity for a maximum of *18 AMA PRA Category 1 Credits™*. Each physician should claim only the credit commensurate with the extent of their participation in the activity.

INCLUDES:

- 20 credit hours, including 18 AMA PRA Category 1 Credit(s)™ for health care providers
- State-of-the-art lectures covering the treatment and prevention of cardiometabolic disease (including heart attack and stroke prevention, insulin resistance and diabetes prevention, management and prevention of obesity and metabolic syndrome, hypertension and lipid guidelines)
- Opening keynote lecture: ***The Prevention Revolution and the End of the Heart Attack Epidemic***, Michael Ozner, MD
- Welcome and Farewell Receptions
- Culinary medicine and live cooking demonstrations
- Special session on alternative approaches to cardiovascular disease prevention (stress management, vitamins, supplements and nutritional approaches that lower cardiometabolic risk, the role of exercise for optimal cardiovascular health)
- Panel discussions and Q&A with faculty
- Complimentary autographed copies of ***The Complete Mediterranean Diet*** and ***Heart Attack Proof***
- Special discounts for **Life Extension**® members including a welcome gift package (please mention **Life Extension** discount upon registration).

For more information and registration:
Call: 800-422-0711

https://continuingeducation.net/LifeExtension

Continuing Education, Inc. / University at Sea®
5700 4th St. N. • St Petersburg, Florida, 33703

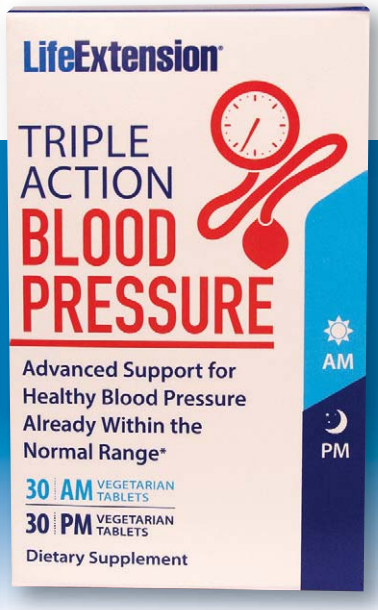
ADVANCED **24-HOUR**
BLOOD PRESSURE SUPPORT

Triple Action Blood Pressure AM/PM is formulated with myricetin, myrilitrin, and quercetin flavonoids along with steviosides to support a healthy 24-hour blood pressure cycle.

Suggested dose is one tablet in the morning and one tablet 30-60 minutes before bedtime. This formula is available *with* or *without* (**2 mg**) melatonin.

Triple Action Blood Pressure AM/PM with controlled release melatonin
Item #02024 • 60 tablets

	Retail Price	Your Price
1 box	$44	**$33**
4 boxes		**$28** each



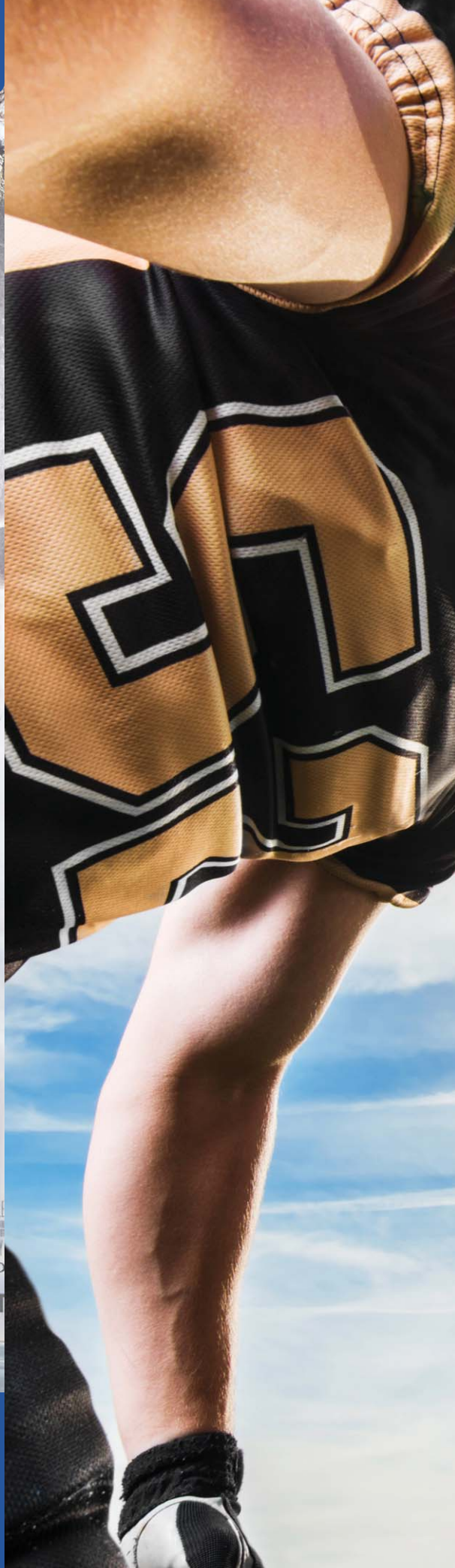
Also available, **Dual Action Blood Pressure Support (without melatonin)**. Item# 02025.

For full product description and to order **Triple Action Blood Pressure AM/PM** or **Dual Action Blood Pressure**, call **1-800-544-4440** or visit **www.LifeExtension.com**

NON GMO LE CERTIFIED

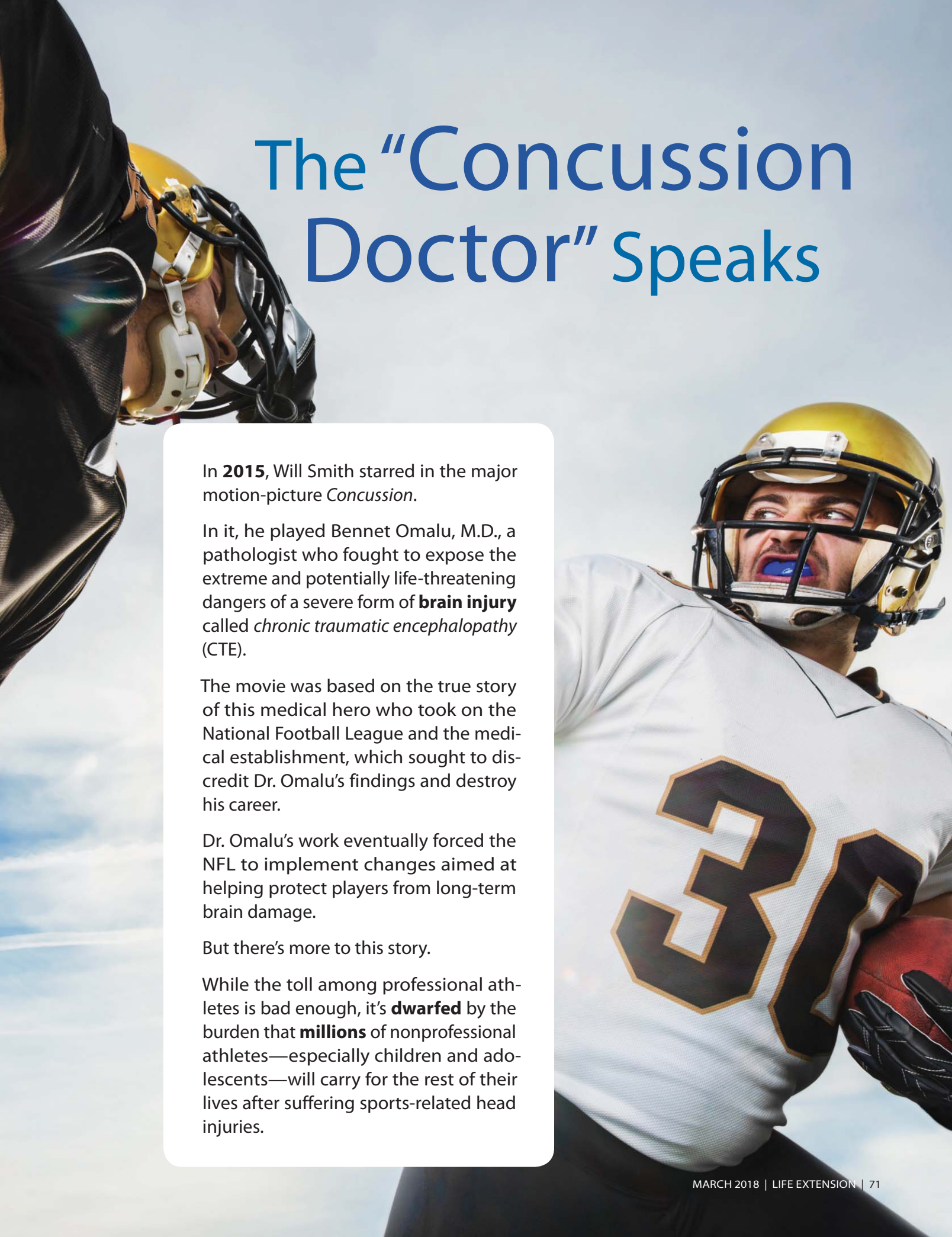
CAUTION: Consult your healthcare provider before use if you are taking medication or are being treated for a medical condition. Do not use if under the age of 18, pregnant, lactating, or trying to become pregnant. After taking the PM tablet, do not attempt to drive or operate heavy machinery and use caution if combining with alcohol. This product is not intended to replace anti-hypertensive medications your doctor may have prescribed.

BY JON VANZILE



Will Smith starred in the movie *"Concussion,"* released in 2015 by Columbia Pictures.

The "Concussion Doctor" Speaks



In **2015**, Will Smith starred in the major motion-picture *Concussion*.

In it, he played Bennet Omalu, M.D., a pathologist who fought to expose the extreme and potentially life-threatening dangers of a severe form of **brain injury** called *chronic traumatic encephalopathy* (CTE).

The movie was based on the true story of this medical hero who took on the National Football League and the medical establishment, which sought to discredit Dr. Omalu's findings and destroy his career.

Dr. Omalu's work eventually forced the NFL to implement changes aimed at helping protect players from long-term brain damage.

But there's more to this story.

While the toll among professional athletes is bad enough, it's **dwarfed** by the burden that **millions** of nonprofessional athletes—especially children and adolescents—will carry for the rest of their lives after suffering sports-related head injuries.

In his book, *Truth Doesn't Have a Side*, Dr. Omalu takes on this epidemic of traumatic brain injury (TBI) in the United States.

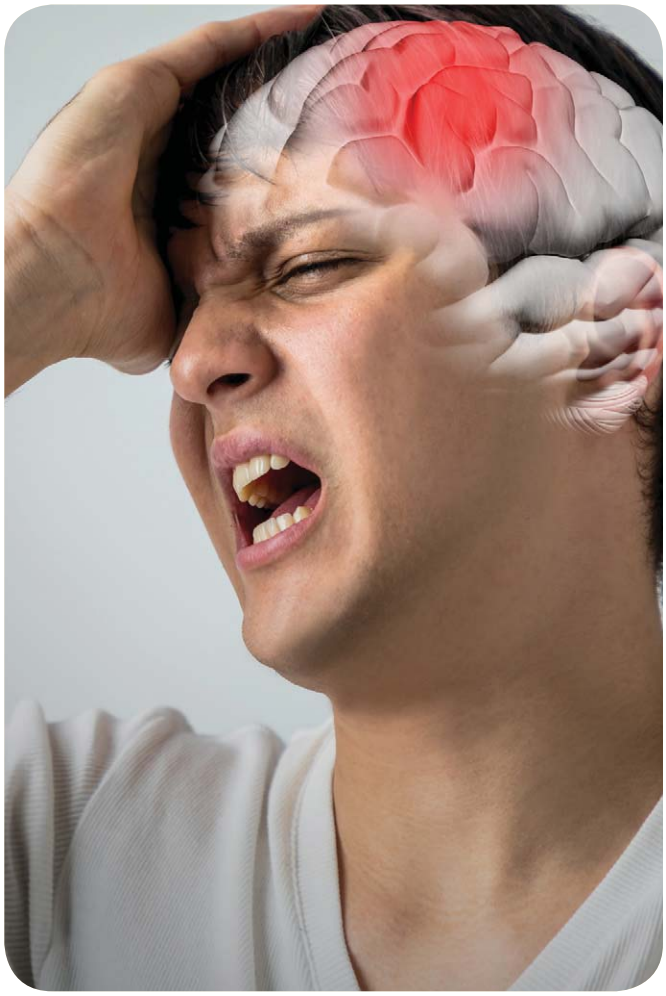
Even mild TBIs can cause headaches, fatigue, dizziness, sleep problems, and mood disorders.[1] It can also cause serious psychiatric disorders like depression, aggression, and increased risk of suicide.[2]

Despite the dangers—and the prevalence—mainstream medicine doesn't know much about the condition, and certainly doesn't have any ways to effectively treat it.

Fortunately, a number of innovative doctors are working to revolutionize the treatment of traumatic brain injury.

The NFL and Traumatic Brain Injury

In 2005, the prestigious journal *Neurosurgery* published Dr. Bennet Omalu's blockbuster report detailing his findings from the autopsy of Mike Webster.[3] This former player for the Pittsburgh Steelers died suddenly at age 50 in 2002 after struggling for years with progressive neurological symptoms.



After conducting the autopsy, Dr. Omalu concluded that Mike Webster suffered from a neurodegenerative disease as a result of repeated blows to the head. This condition, **chronic traumatic encephalopathy**, or CTE, is characterized by the accumulation of tau proteins in the brain, similar to Alzheimer's disease.[4]

In his conclusion, Dr. Omalu wrote, "*This case highlights potential long-term neurodegenerative outcomes in retired professional National Football League players subjected to repeated mild traumatic brain injury*."[3]

The backlash against Dr. Omalu was intense and instant. Worried about protecting its profits, the NFL immediately launched an organized and well-funded campaign to destroy him. First, the league pushed for retraction of his paper.

"To get a retraction, you need to successfully prove the researcher engaged in fraudulent behavior and generated false data," Dr. Omalu said. "They were pretty much labeling me a criminal."

To help bolster its case, Dr. Omalu said the NFL made a substantial grant to Boston University to fund research that would discredit him. At the same time, the medical establishment mobilized against Dr. Omalu and his research.

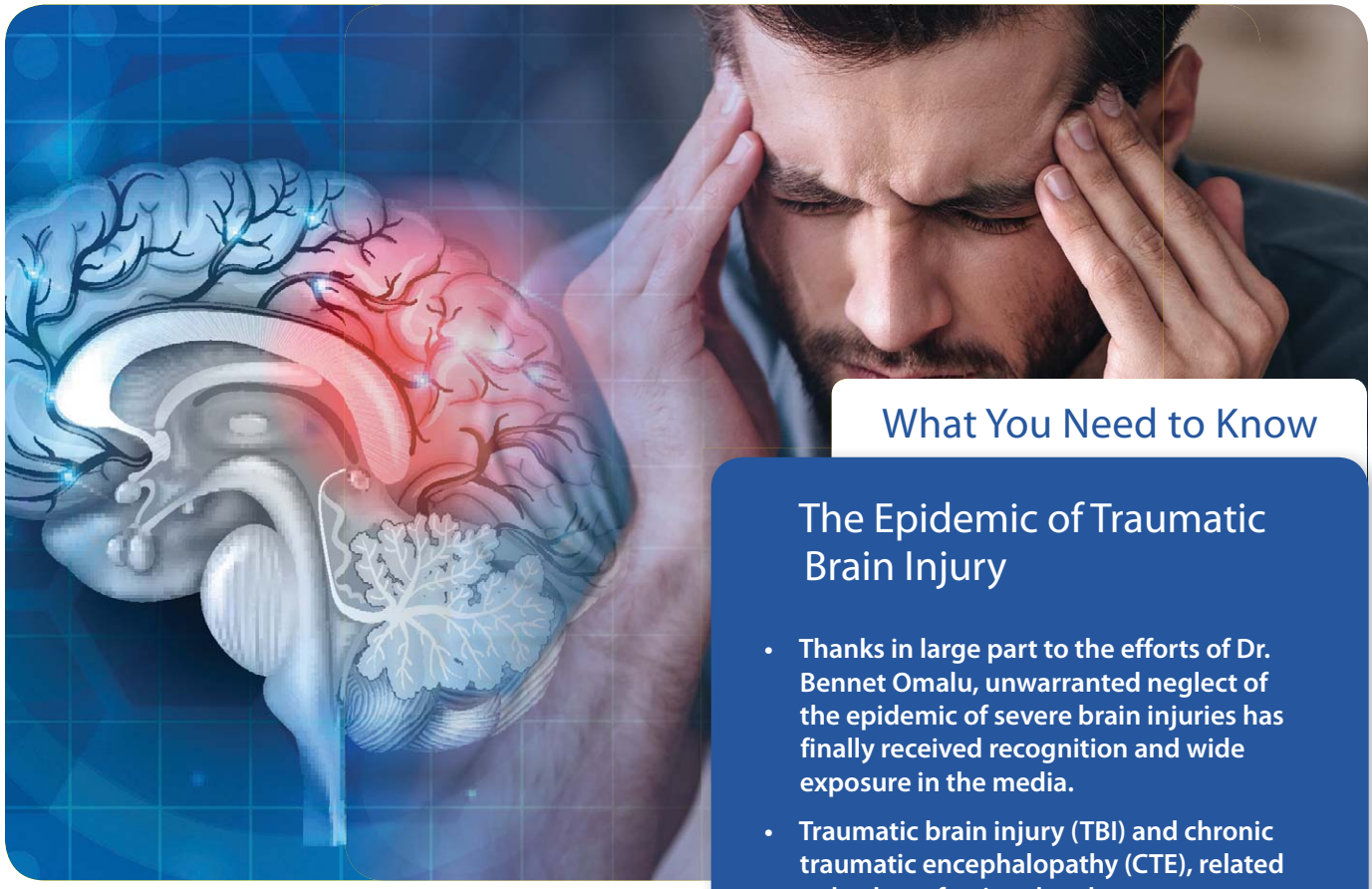
"They knew what they were doing," he said. "If they had succeeded, that would have been the end of me. I would have lost my license and my career would be over. But I defended myself and presented my data to a committee at the journal. A ruling was made that I had done nothing wrong."

Unfortunately for Dr. Omalu, his trials weren't over yet. Once his findings had been accepted and CTE described as a legitimate issue, the medical establishment launched a furious assault against him to discredit him personally and professionally. He was ostracized at every level of his profession, denied funding to continue his research, and he avoided conferences for fear of professional retaliation.

"I had to spend my own money because nobody would give me any to fund my research," he said. "They even enlisted the National Institutes of Health. Usually if someone introduces something new, the NIH will invite them to talk and see what they need. That didn't happen with me."

In fact, the narrative was "being rewritten" as the truth of his findings gained traction, and Dr. Omalu found himself being written out of the story.

"I was very confused," he said. "Why would they want to remove me? Other doctors were going around saying they were the first to publish this. In 2016, the NIH said it was the first to establish a diagnostic criteria for CTE. What about me? It was very difficult. I struggled with depression and contemplated suicide."



His enemies in the NFL and medical establishment stooped to the worst kind of smear campaign, he said.

"They used xenophobia against me because I'm a black guy and a foreigner," he said. "I wasn't a big name. I didn't have a big lab. I was working from my apartment and paying for my own research. But I believed the truth would prevail. It just took a foreigner from Nigeria to prove this was happening in America's biggest sport."

Ultimately, Dr. Omalu took his story to Hollywood, the only institution in American he thought was powerful enough to get the truth out about CTE and his story. "Will Smith didn't want to do the movie at first," he said. "But he did it to make the truth known. I'm deeply grateful to Hollywood, but it's still affecting me. I'm still being marginalized."

In 2016, Boston University rescinded its plans to give Dr. Omalu the prestigious Beyond Health Award. The school's reason? An interview Dr. Omalu gave in which he cited a potential conflict of interest at the school's Concussion Legacy Foundation and World Wrestling Entertainment, Inc., which is also struggling with the CTE question thanks to Dr. Omalu's pioneering work.

What You Need to Know

The Epidemic of Traumatic Brain Injury

- **Thanks in large part to the efforts of Dr. Bennet Omalu, unwarranted neglect of the epidemic of severe brain injuries has finally received recognition and wide exposure in the media.**
- **Traumatic brain injury (TBI) and chronic traumatic encephalopathy (CTE), related to both professional and amateur sports players, is now being more frequently diagnosed, but medical understanding of the mechanisms involved in these injuries is lacking. Experts believe this lack of understanding has likely led to millions of undiagnosed cases and sufferers who therefore don't receive the treatment they need.**
- **TBI symptoms include fatigue, dizziness, sleep disorders, headaches, and mood disturbances. Changes in personality are sometimes observed, as well as behavioral and cognitive difficulties. Compared to the general population, patients with chronic traumatic encephalopathy are much more likely to commit suicide.**
- **Innovative treatments are being developed to help relieve the effects of chronic traumatic encephalopathy. These include the use of certain nutrients and hormone replacement therapy.**

There's no way to know how many NFL players suffer from CTE because it can only be diagnosed post-mortem, but there's no debate it's widespread. The list of professional football players who have committed suicide or died of other causes and had CTE diagnosed at autopsy includes Andre Waters (2006), Junior Seau (2012), Ken Stabler (2016), Dave Duerson (2011), Ray Easterling (2012), and dozens more—including at least seven members of the Pro Football Hall of Fame.[5]

In fact, according to a 2017 study published in the *Journal of the American Medical Association*, the number of NFL players who suffer from CTE could be as high as ***99%***. The blockbuster study examined the donated brains of 111 NFL players and found evidence of mild to severe CTE in 110. It was found in every position, from placekicker to quarterback to linebacker.[6]

This means that playing in the NFL is, in terms of this specific affliction, ***more dangerous than fighting in Iraq***, where tens of thousands of soldiers suffered mild traumatic brain injury (TBI).

Why Children are More at Risk

While the link between chronic traumatic encephalopathy and professional football is new, the connection between sports and brain injury has been known for decades.[7] We are all familiar with famous boxer Muhammad Ali, who was diagnosed with Parkinson's disease in 1984 and publicly struggled with it for the rest of his life.[8]

But the risk is especially great for children and adolescents involved in sports.

A survey published in the journal *Pediatrics* estimated that **1.1** to **1.9 million** children and adolescents under the age of 18 sustain a sports-related concussion every year.[9] And according to the American Association of Neurological Surgeons (AANS), sports-related injuries contribute to about **21%** of all TBIs reported in American children and adolescents.[10]

In fact, TBI is the leading cause of sports-related **fatality**.[10]

As far back as 1957, the American Academy of Pediatrics issued a position paper warning that children should not engage in football, boxing, or wrestling out of a fear of head injury.[11] Almost 20 years later, the *Lancet* published an editorial saying it was "foolhardy" for people to engage in sports that have a risk of brain trauma.[12]

And now, with Dr. Omalu's new book, *Truth Doesn't Have a Side*, he is sounding the alarm once again.

"I don't think any child under 18 should play a high-impact, high-contact sport," he told **Life Extension**®. "That includes football, rugby, boxing, hockey, mixed-martial arts, and wrestling. The most important part of your life is your intellect, your intuition. If a game is meant to uplift your state of well-being, but actually robs you of your well-being, that is not a game. That is not a sport."

Many people might not realize that you don't have to suffer from a concussion to experience a traumatic brain injury.

"The focus on concussions alone is ridiculous," he says. "Concussion is a disease caused by TBI. The more important issue is subconcussive, repetitive injury. Every blow to the head causes brain injury. Every blow."

The bottom line, according to Dr. Omalu, is that ***there is no safe level of head trauma.***

The Search for Answers

Despite intense research into better understanding the neurobiological effects of mild TBI and concussion, there is no approved biomarker test used to diagnose it—and no consensus about exactly how mild TBI causes the long-term brain damage and cognitive deficits seen in so many soldiers and athletes.[13] This lack of agreement makes identification and treatment exponentially more difficult.

Most TBI cases are never reported, and few people get medical attention. Those who do are typically seen on an outpatient basis.[9]

Clearly, something has to change.

If there is a silver lining, it's that the increased focus on sports-related head trauma has spurred interest in novel approaches to limit the damage and help victims recover. There is no cure for CTE, but for the first time, innovative doctors are raising the hope of at least containing the damage.

Hormones and Brain Injury

While mainstream medicine continues to struggle just to understand chronic traumatic encephalopathy, a number of physicians are looking to ***revolutionize*** treatment of traumatic brain injury.

Their focus is on **hormone replacement therapy**.

The National Institutes of Health database has dozens of studies showing the interaction between hormone status and TBI, yet virtually no mainstream doctors are using hormone therapy to address long-term damage caused by repeated TBI.

For example, there is a well-documented connection between reduced pituitary function and mild TBI. Specifically, studies have found hypopituitarism in **16%** to **68%** of patients.[14-16] The more severe the injury, the worse the damage.[17]

The pituitary gland is responsible for producing critical hormones, including growth hormone and thyroid-stimulating hormone (TSH), as well as stimulating the production of sex hormones such estrogen and testosterone.

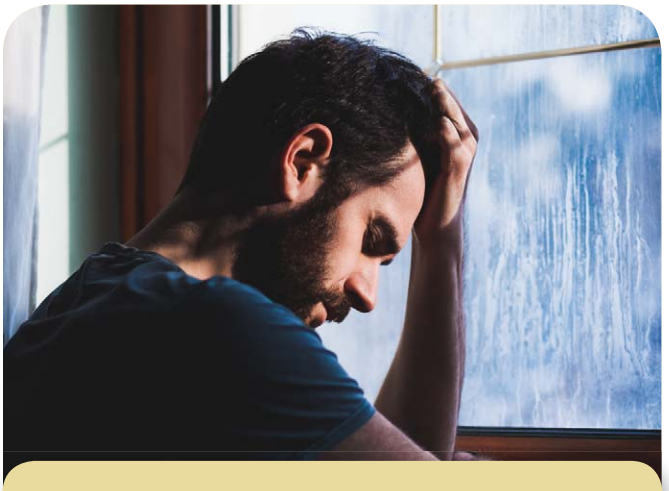
Because of the reduced pituitary function, patients with TBI often suffer from low growth-hormone levels and reduced production of gonadotropins (FSH and LH) and thyroid-stimulating hormone.[18,19] This reduction in growth hormone has been linked to increased abdominal obesity and metabolic alterations that are observable years after the original injury.[20]

Reductions in sex hormone levels after mild traumatic brain injury have been observed in mice.[21] In adolescent animals, repeated mild traumatic brain injury has been linked to hypogonadism in adulthood, as well as delayed puberty and erectile dysfunction.[22]

Research has shown that testosterone levels can be a good indicator of function in TBI patients.[23]

An animal study showed that treatment with estrogen reduced delayed swelling in the brain and intracranial pressure.[24] Estrogen has well-known neuroprotective and anti-inflammatory properties.[25,26]

These discoveries have prompted innovative physicians to investigate treating the long-term effects of TBI with **hormone-replacement therapy**. Among these groundbreaking doctors is Dr. Mark L. Gordon, who understood the importance of reduced pituitary function in this context years ago while treating a young man exhibiting signs of sports-induced brain injury.



Short- and Long-Term Impact of TBI

A traumatic brain injury (TBI) is defined as an injury caused by brain trauma, whether it's from a blow to the head or from a piercing injury. They are categorized as mild, moderate, or severe on the Glasgow Coma Scale.

Concussions are a type of mild traumatic brain injury that results in symptoms, usually temporary, that may include headaches and confusion.[67,68] These can be caused by blows to the head such as in sports, falling, or accidents, or in the case of tens of thousands of soldiers in Iraq, exposure to blast waves from ordnance.

Symptoms of a mild traumatic brain injury may include brief loss of consciousness, headache, nausea, vomiting, and fatigue.[69] Most victims begin to recover from the acute injury within 24 hours while others experience persistent symptoms. And while some symptoms may occur soon after the injury, others can first appear weeks later.[70,71] While a CT scan might show localized swelling after a mild traumatic brain injury, many concussion sufferers show no abnormalities on MRI or CT scans.[72,73]

Unfortunately, this is only part of the picture. Once the acute phase ends, there is a **chronic phase** to the post-injury period that can last *indefinitely*. According to the American Academy of Family Physicians, up to **20%** of people who suffer from mild traumatic brain injury will exhibit "persistent physical, cognitive, or behavioral symptoms" for *years*. These physical symptoms can include headaches, dizziness, nausea, and problems with coordination, sleep, vision, and hearing.[74]

Traumatic brain injury has been linked to a grim litany of psychiatric disorders, including personality changes, anxiety, aggression, depression, increased risk of suicide, and psychosis.[75]

Today, he treats soldiers and athletes at his clinic, Millennium Health Centers, and hormone replacement is a vital part of his protocol.

Dr. Gordon's hormone-balancing approach relies on diligent testing, followed by physiological doses of vital hormones. The goal is to restore hormone levels to the middle of the optimal range, while carefully monitoring each patient for improvement. His results have earned him invitations to speak about hormone therapy at conferences on traumatic brain injury.

"For traumatic brain injury patients," Dr. Gordon told **Life Extension**, *"any proper diagnosis and treatment protocol should begin with baseline testing of testosterone, growth hormone, thyroid, cortisol, insulin, and vitamin D."*

Reversing Brain Damage in Former Football Players

In 2014, William Faloon wrote an article in **Life Extension Magazine®** titled ***Outwitting our Aging Brain***. It described how aging people suffer diminished brain blood-flow and what can be done to correct it.

In the box below is an excerpt from the article that describes a study showing reversal of traumatic brain injury clinical measures in response to a six-month treatment using specific nutrients:

Brain injuries are common in professional **football players** and severe cases sometimes make headline news stories.[27-29]

A clinical trial was conducted on 30 retired NFL players who demonstrated brain damage and cognitive impairment. They underwent baseline testing of **cognitive function** and **brain perfusion** as measured by **SPECT** imaging.[30]

Participants were encouraged to lose weight (if appropriate) and take the following supplements for six months:

Fish oil[30-33]	1,720 mg EPA 1,160 mg DHA
Vinpocetine[34-39]	15 mg
Ginkgo extract[40-45]	120 mg
Alpha Lipoic Acid[46-49]	300 mg
Acetyl L-Carnitine[48,50-52]	1,000 mg
Huperzine A[53-55]	150 mcg
N-acetyl-cysteine[56-60]	600 mg
High-potency multivitamin[61,62]	

The Gut-Brain Connection

Researchers are also beginning to understand the potential of using the "gut brain" to help treat TBI.[63] This is a layer of nerve cells in the digestive system known as the enteric nervous system (ENS) that is sometimes called the "second brain" or "gut brain."

The **enteric nervous system** functions independently of the central nervous system, secreting enzymes, immune system components, and hormones and relying on neurotransmitters identical to the ones used in the brain.[63,64]

Researchers used to think that communication between the central nervous system and the enteric nervous system was a one-way street, with the brain passing signals to the gut.[65] In more recent years, we have learned that communication is a two-way street and the ENS is in constant communication with the brain.

People with TBI show "structural damage to the GI tract."[66] This raises the possibility that treating the ENS/CNS axis by restoring normal gut flora, neurotransmitter function, and hormone production might reduce the risk of CTE and even help reduce symptoms of existing CTE.

The rationale behind using these nutrients was that they were individually shown to enhance blood flow, protect against free radicals, enhance brain-cell membrane structure, boost acetylcholine, enhance neuronal metabolic activity, and reduce chronic inflammatory markers.

After six months, the tests were repeated. There were statistically significant increases in scores of attention, memory, reasoning, information processing speed, and accuracy in these retired NFL players. The SPECT scan showed increased **perfusion** in areas throughout much of the brain. The researchers who conducted this trial concluded:

"This study demonstrates that cognitive and cerebral blood flow improvements are possible in this group with multiple interventions."[30]

Neurological trauma during football events accelerates brain aging. ***Life Extension*** members should be gratified to know that they have been taking most, if not all of the nutrients shown in this study to reverse **brain damage** in retired NFL players. This brain damage clearly linked **hypoperfusion** (reduced brain blood flow) with **cognitive impairment.**

Summary

There has been an explosion in the recognition and diagnosis of TBI and CTE in recent years, both in professional sports and among the general population. Despite this wave of new cases, our understanding of the underlying mechanisms of traumatic brain injury and CTE remains primitive. As a result, millions of cases are likely not diagnosed and people don't receive proper treatment.

The effects of TBI can include headaches, fatigue, dizziness, sleep and mood disturbances, and cognitive, behavioral, and personality changes. The risk of suicide among people suffering from CTE caused by repeated mild TBIs is much higher than the normal population.

New research is helping us understand the link between TBI and disturbances in the endocrine system. Innovative doctors are using hormone replacement therapy, along with specific nutrients, to help reduce the effects of CTE and improve patients' quality of life. ●

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

AN OVERLOOKED MEDICAL HERO

This article does not fully relay the persecution and threats to his personal safety that **Dr. Bennet Omalu** endured by a **medical establishment** that was bought off by the **NFL**.

This article also does not fully describe the brilliant and painstaking research Dr. Omalu conducted that resulted in significant risk to his medical license, employment and immigration status.

History is laden with pioneers who defied conventional authority to advance medical science, often at great personal risk.

Identical situations exist today where effective means to save human lives exist, but are suppressed by a labyrinth of state and federal **regulations** that delay their introduction.

Dr. Omalu Uncovers Further Wrongdoing

Dr. Bennet Omalu

Dr. Bennet Omalu recently resigned from his position as chief medical examiner for San Joaquin County, California, due to what he sees as inappropriate police meddling in his work.

Dr. Omalu claims Sheriff-Coroner Steve Moore has "routinely" interfered with his investigations in an effort to protect police officers. He said the interference from the sheriff was so excessive that it nearly amounted to unlicensed medical practice.

In a statement given to the media, Dr. Omalu wrote that he had "observed long before this that the sheriff was using his political office as the coroner to influence the death investigation of persons who die while in custody or during arrest by the police."

Dr. Omalu's claims were backed up by his former assistant, forensic pathologist Dr. Susan Parson, who also resigned. Omalu and Parson have turned over detailed documents related to their allegations to county supervisors and the district attorney.

As one example of alleged misconduct, Dr. Omalu pointed to the case of a 26-year-old man who died after fighting with both police and civilians. Dr. Omalu ruled the death a homicide by blunt force trauma.

Afterward, he said, "The sheriff called me into his office and told me that he wanted to make it an accident since officers were involved. He said that I should amend my report and state that he died from the civilians and not the police officers."

In addition to numerous other cases, Dr. Omalu also cited a case from 2007 in which a man died during his arrest. "Information was intentionally withheld from me by the sheriff in order to mislead me from determining the case to be a homicide," he said. "The sheriff still went behind my back months later and changed the manner of death to an accident to minimize the seriousness of the case."

The San Joaquin County Medical Society has called on authorities to conduct a full investigation. The group's president, Dr. R. Grant Mellor, called the charges alarming and said, "Physician independence is paramount to avoid improper influence on the practice of medicine."

Changing Football

When Dr. Bennet Omalu's autopsy report of Mike Webster was released in 2005, he was met with opposition from the National Football League (NFL)—but the league couldn't wish the issue away forever.

After years of denying the real-world trauma of players suffering from horrifying symptoms long after their playing days were over, the NFL finally admitted it had a concussion problem.

In late **2016**, NFL Commissioner Roger Goodell announced the **Play Smart Play Safe campaign**, which included a $100 million pledge to study, prevent, and treat head injuries, the hiring of a Chief Medical Officer at the NFL, and increased focus on the league's concussion protocol.[76]

Football rule changes have been implemented in an effort to reduce blows to the head, but these will not eliminate the brain damage.

References

1. Laskowski RA, Creed JA, Raghupathi R. Frontiers in Neuroengineering Pathophysiology of Mild TBI: Implications for Altered Signaling Pathways. In: Kobeissy FH, ed. *Brain Neurotrauma: Molecular, Neuropsychological, and Rehabilitation Aspects*. Boca Raton (FL): CRC Press/Taylor & Francis(c) 2015 by Taylor & Francis Group, LLC.; 2015.
2. Barnes SM, Walter KH, Chard KM. Does a history of mild traumatic brain injury increase suicide risk in veterans with PTSD? *Rehabil Psychol.* 2012;57(1):18-26.
3. Omalu BI, DeKosky ST, Minster RL, et al. Chronic traumatic encephalopathy in a National Football League player. *Neurosurgery.* 2005;57(1):128-34; discussion -34.
4. McKee AC, Cantu RC, Nowinski CJ, et al. Chronic traumatic encephalopathy in athletes: progressive tauopathy after repetitive head injury. *J Neuropathol Exp Neurol.* 2009;68(7):709-35.
5. Available at: https://www.nytimes.com/interactive/2016/02/03/sports/football/nfl-brain-disease-cte-concussions.html. Accessed August 31, 2017.
6. Mez J, Daneshvar DH, Kiernan PT, et al. Clinicopathological Evaluation of Chronic Traumatic Encephalopathy in Players of American Football. *Jama.* 2017;318(4):360-70.
7. Omalu BI, DeKosky ST, Hamilton RL, et al. Chronic traumatic encephalopathy in a national football league player: part II. *Neurosurgery.* 2006;59(5):1086-92; discussion 92-3.
8. Available at: http://articles.latimes.com/1987-07-16/sports/sp-4337_1_muhammad-ali. Accessed August 31, 2017.
9. Bryan MA, Rowhani-Rahbar A, Comstock RD, et al. Sports- and Recreation-Related Concussions in US Youth. *Pediatrics.* 2016;138(1).
10. Available at: http://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Sports-related-Head-Injury. Accessed August 31, 2017.
11. COMPETITIVE athletics: a statement of policy: report of the Committee on School Health, American Academy of Pediatrics. *Pa Med J.* 1957;60(5):627-9.
12. Brain Damage in Sport. *The Lancet.* 1976;307(7956):401-2.
13. Papa L, Edwards D, Ramia M. Frontiers in Neuroengineering Exploring Serum Biomarkers for Mild Traumatic Brain Injury. In: Kobeissy FH, ed. *Brain Neurotrauma: Molecular, Neuropsychological, and Rehabilitation Aspects*. Boca Raton (FL): CRC Press/Taylor & Francis (c) 2015 by Taylor & Francis Group, LLC.; 2015.
14. Klose M, Juul A, Poulsgaard L, et al. Prevalence and predictive factors of post-traumatic hypopituitarism. *Clin Endocrinol (Oxf).* 2007;67(2):193-201.
15. Salehi F, Kovacs K, Scheithauer BW, et al. Histologic study of the human pituitary gland in acute traumatic brain injury. *Brain Inj.* 2007;21(6):651-6.
16. Schneider HJ, Samann PG, Schneider M, et al. Pituitary imaging abnormalities in patients with and without hypopituitarism after traumatic brain injury. *J Endocrinol Invest.* 2007;30(4):Rc9-rc12.
17. Schneider HJ, Kreitschmann-Andermahr I, Ghigo E, et al. Hypothalamopituitary dysfunction following traumatic brain injury and aneurysmal subarachnoid hemorrhage: a systematic review. *Jama.* 2007;298(12):1429-38.
18. Dalwadi PP, Bhagwat NM, Tayde PS, et al. Pituitary dysfunction in traumatic brain injury: Is evaluation in the acute phase worthwhile? *Indian J Endocrinol Metab.* 2017;21(1):80-4.
19. Casano-Sancho P. Pituitary dysfunction after traumatic brain injury: are there definitive data in children? *Arch Dis Child.* 2017;102(6):572-7.
20. Giuliano S, Talarico S, Bruno L, et al. Growth hormone deficiency and hypopituitarism in adults after complicated mild traumatic brain injury. *Endocrine.* 2016.
21. Lopez-Rodriguez AB, Acaz-Fonseca E, Spezzano R, et al. Profiling Neuroactive Steroid Levels After Traumatic Brain Injury in Male Mice. *Endocrinology.* 2016;157(10):3983-93.
22. Greco T, Hovda DA, Prins ML. Adolescent TBI-induced hypopituitarism causes sexual dysfunction in adult male rats. *Dev Neurobiol.* 2015;75(2):193-202.
23. Young TP, Hoaglin HM, Burke DT. The role of serum testosterone and TBI in the in-patient rehabilitation setting. *Brain Inj.* 2007;21(6):645-9.
24. Kim H, Yu T, Cam-Etoz B, et al. Treatment of traumatic brain injury with 17alpha-ethinylestradiol-3-sulfate in a rat model. *J Neurosurg.* 2017;127(1):23-31.
25. Chakrabarti M, Das A, Samantaray S, et al. Molecular mechanisms of estrogen for neuroprotection in spinal cord injury and traumatic brain injury. *Rev Neurosci.* 2016;27(3):271-81.
26. Brotfain E, Gruenbaum SE, Boyko M, et al. Neuroprotection by Estrogen and Progesterone in Traumatic Brain Injury and Spinal Cord Injury. *Curr Neuropharmacol.* 2016;14(6):641-53.
27. Casson IR, Viano DC, Powell JW, et al. Twelve years of national football league concussion data. *Sports Health.* 2010;2(6):471-83.
28. Available at: http://articles.latimes.com/2000/jun/09/sports/sp-39252. Accessed December 19, 2017.
29. Available at: https://www.deseretnews.com/article/383760/CONCUSSIONS-FORCE-MERRIL-HOGE-TO-RETIRE.html. Accessed December 19, 2017.

30. Amen DG, Wu JC, Taylor D, et al. Reversing brain damage in former NFL players: implications for traumatic brain injury and substance abuse rehabilitation. *J Psychoactive Drugs.* 2011;43(1):1-5.
31. Bazan NG, Musto AE, Knott EJ. Endogenous signaling by omega-3 docosahexaenoic acid-derived mediators sustains homeostatic synaptic and circuitry integrity. *Mol Neurobiol.* 2011;44(2):216-22.
32. Palacios-Pelaez R, Lukiw WJ, Bazan NG. Omega-3 essential fatty acids modulate initiation and progression of neurodegenerative disease. *Mol Neurobiol.* 2010;41(2-3):367-74.
33. Pu H, Guo Y, Zhang W, et al. Omega-3 polyunsaturated fatty acid supplementation improves neurologic recovery and attenuates white matter injury after experimental traumatic brain injury. *J Cereb Blood Flow Metab.* 2013;33(9):1474-84.
34. Santos MS, Duarte AI, Moreira PI, et al. Synaptosomal response to oxidative stress: effect of vinpocetine. *Free Radic Res.* 2000;32(1):57-66.
35. Gaal L, Molnar P. Effect of vinpocetine on noradrenergic neurons in rat locus coeruleus. *Eur J Pharmacol.* 1990;187(3):537-9.
36. Valikovics A. Investigation of the effect of vinpocetine on cerebral blood flow and cognitive functions. *Ideggyogy Sz.* 2007;60(7-8):301-10.
37. Vishnevskii AA, Korotkevich IG, Zhaparalieva Ch O. Membrane and functional effects of vinpocetine and tocopherol in rats with experimental cerebral ischemia. *Biomed Khim.* 2009;55(5):635-42.
38. Hadjiev D. Asymptomatic ischemic cerebrovascular disorders and neuroprotection with vinpocetine. *Ideggyogy Sz.* 2003;56(5-6):166-72.
39. Szilagyi G, Nagy Z, Balkay L, et al. Effects of vinpocetine on the redistribution of cerebral blood flow and glucose metabolism in chronic ischemic stroke patients: a PET study. *J Neurol Sci.* 2005;229-230:275-84.
40. Ahlemeyer B, Krieglstein J. Neuroprotective effects of Ginkgo biloba extract. *Cell Mol Life Sci.* 2003;60(9):1779-92.
41. DeKosky ST, Williamson JD, Fitzpatrick AL, et al. Ginkgo biloba for prevention of dementia: a randomized controlled trial. *Jama.* 2008;300(19):2253-62.
42. Ihl R. Effects of Ginkgo biloba extract EGb 761 (R) in dementia with neuropsychiatric features: review of recently completed randomised, controlled trials. *Int J Psychiatry Clin Pract.* 2013;17 Suppl 1:8-14.
43. Stoll S, Scheuer K, Pohl O, et al. Ginkgo biloba extract (EGb 761) independently improves changes in passive avoidance learning and brain membrane fluidity in the aging mouse. *Pharmacopsychiatry.* 1996;29(4):144-9.
44. Bridi R, Crossetti FP, Steffen VM, et al. The antioxidant activity of standardized extract of Ginkgo biloba (EGb 761) in rats. *Phytother Res.* 2001;15(5):449-51.
45. Chung HS, Harris A, Kristinsson JK, et al. Ginkgo biloba extract increases ocular blood flow velocity. *J Ocul Pharmacol Ther.* 1999;15(3):233-40.
46. Astiz M, de Alaniz MJ, Marra CA. The oxidative damage and inflammation caused by pesticides are reverted by lipoic acid in rat brain. *Neurochem Int.* 2012;61(7):1231-41.
47. Pershadsingh HA. Alpha-lipoic acid: physiologic mechanisms and indications for the treatment of metabolic syndrome. *Expert Opin Investig Drugs.* 2007;16(3):291-302.
48. Liu J, Head E, Gharib AM, et al. Memory loss in old rats is associated with brain mitochondrial decay and RNA/DNA oxidation: partial reversal by feeding acetyl-L-carnitine and/or R-alpha -lipoic acid. *Proc Natl Acad Sci U S A.* 2002;99(4):2356-61.
49. Maczurek A, Hager K, Kenklies M, et al. Lipoic acid as an anti-inflammatory and neuroprotective treatment for Alzheimer's disease. *Adv Drug Deliv Rev.* 2008;60(13-14):1463-70.
50. Wilson AD, Hart A, Wiberg M, et al. Acetyl-l-carnitine increases nerve regeneration and target organ reinnervation - a morphological study. *J Plast Reconstr Aesthet Surg.* 2010;63(7):1186-95.
51. Long J, Gao F, Tong L, et al. Mitochondrial decay in the brains of old rats: ameliorating effect of alpha-lipoic acid and acetyl-L-carnitine. *Neurochem Res.* 2009;34(4):755-63.
52. Poon HF, Calabrese V, Calvani M, et al. Proteomics analyses of specific protein oxidation and protein expression in aged rat brain and its modulation by L-acetylcarnitine: insights into the mechanisms of action of this proposed therapeutic agent for CNS disorders associated with oxidative stress. *Antioxid Redox Signal.* 2006;8(3-4):381-94.
53. Wang J, Zhang HY, Tang XC. Huperzine a improves chronic inflammation and cognitive decline in rats with cerebral hypoperfusion. *J Neurosci Res.* 2010;88(4):807-15.
54. Zhang HY, Yan H, Tang XC. Non-cholinergic effects of huperzine A: beyond inhibition of acetylcholinesterase. *Cell Mol Neurobiol.* 2008;28(2):173-83.
55. Shang YZ, Ye JW, Tang XC. Improving effects of huperzine A on abnormal lipid peroxidation and superoxide dismutase in aged rats. *Zhongguo Yao Li Xue Bao.* 1999;20(9):824-8.
56. Khan M, Sekhon B, Jatana M, et al. Administration of N-acetylcysteine after focal cerebral ischemia protects brain and reduces inflammation in a rat model of experimental stroke. *J Neurosci Res.* 2004;76(4):519-27.
57. Wang X, Svedin P, Nie C, et al. N-acetylcysteine reduces lipopolysaccharide-sensitized hypoxic-ischemic brain injury. *Ann Neurol.* 2007;61(3):263-71.
58. Pawlas N, Malecki A. Neuroprotective effect of N-acetylcysteine in neurons exposed to arachidonic acid during simulated ischemia in vitro. *Pharmacol Rep.* 2009;61(4):743-50.
59. Holmay MJ, Terpstra M, Coles LD, et al. N-Acetylcysteine boosts brain and blood glutathione in Gaucher and Parkinson diseases. *Clin Neuropharmacol.* 2013;36(4):103-6.
60. Hoffer ME, Balaban C, Slade MD, et al. Amelioration of Acute Sequelae of Blast Induced Mild Traumatic Brain Injury by N-Acetyl Cysteine: A Double-Blind, Placebo Controlled Study. *PLOS ONE.* 2013;8(1):e54163.
61. Kidd PM. Alzheimer's disease, amnestic mild cognitive impairment, and age-associated memory impairment: current understanding and progress toward integrative prevention. *Altern Med Rev.* 2008;13(2):85-115.
62. Kamphuis PJ, Scheltens P. Can nutrients prevent or delay onset of Alzheimer's disease? *J Alzheimers Dis.* 2010;20(3):765-75.
63. Goyal RK, Hirano I. The enteric nervous system. *N Engl J Med.* 1996;334(17):1106-15.
64. Nezami BG, Srinivasan S. Enteric nervous system in the small intestine: pathophysiology and clinical implications. *Curr Gastroenterol Rep.* 2010;12(5):358-65.
65. Mayer EA. Gut feelings: the emerging biology of gut-brain communication. *Nat Rev Neurosci.* 2011;12(8):453-66.
66. Sundman MH, Chen NK, Subbian V, et al. The bidirectional gut-brain-microbiota axis as a potential nexus between traumatic brain injury, inflammation, and disease. *Brain Behav Immun.* 2017.
67. Available at: http://bestpractice.bmj.com/best-practice/monograph/515.html. Accessed September 1, 2017.
68. Available at: http://www.aans.org/Patients/Neurosurgical-Conditions-and-Treatments/Concussion. Accessed September 1, 2017.
69. Available at: http://www.mayoclinic.org/diseases-conditions/traumatic-brain-injury/basics/definition/con-20029302. Accessed September 1, 2017.
70. Available at: https://www.nichd.nih.gov/health/topics/tbi/conditioninfo/Pages/symptoms.aspx. Accessed September 1, 2017.
71. Marshall S, Bayley M, McCullagh S, et al. Clinical practice guidelines for mild traumatic brain injury and persistent symptoms. *Can Fam Physician.* 2012;58(3):257-67, e128-40.
72. McCrory P, Johnston K, Meeuwisse W, et al. Summary and agreement statement of the 2nd International Conference on Concussion in Sport, Prague 2004. *Br J Sports Med.* 2005;39(4):196-204.
73. Available at: http://emedicine.medscape.com/article/92095-workup. Accessed September 1, 2017.
74. Mott TF, McConnon ML, Rieger BP. Subacute to chronic mild traumatic brain injury. *Am Fam Physician.* 2012;86(11):1045-51.
75. Fleminger S. Long-term psychiatric disorders after traumatic brain injury. *Eur J Anaesthesiol Suppl.* 2008;42:123-30.
76. Available at: https://www.playsmartplaysafe.com/commitment-letter/. Accessed September 1, 2017.

'C' TO THE MAX

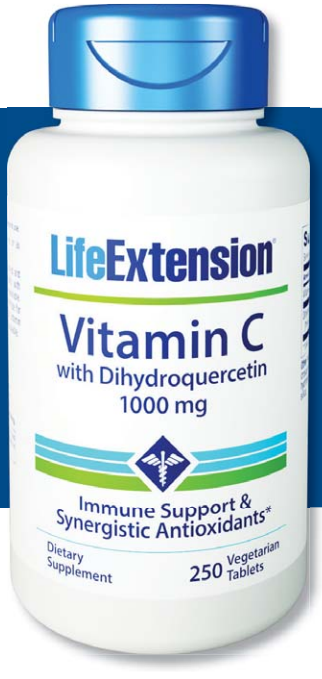
Humans don't manufacture **vitamin C** internally, so it must be obtained through dietary sources or supplements.

Vitamin C is water soluble and needs to be constantly replenished.[1]

Fortunately, a *flavonoid* known as *dihydroquercetin* functions as a **vitamin C** "supercharger" that helps maintain its concentration throughout the body.[2,3]

Vitamin C
Item #00927 • 250 vegetarian tablets

	Retail Price	Your Price
1 bottle	$30	**$22.50**
4 bottles		**$20** each



NON GMO PROJECT VERIFIED

References
1. *PLoS Med*. 2005 Sep;2(9):e307;author reply e309.
2. *Am J Clin Nutr*. 1988 Sep;48(3):601-4.
3. *J Food Tech*. 1969;4:255-67.

For full product description and to order **VITAMIN C with Dihydroquercetin, call 1-800-544-4440 or visit www.LifeExtension.com**

Maintain Better Memory Function

VINPOCETINE

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

Among its many benefits, vinpocetine has been shown to:

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

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

	Retail Price	Your Price
1 bottle	$18	**$13.50**
4 bottles		**$10.50 each**

Item #01327 • 100 vegetarian tablets

NON GMO LE CERTIFIED

FINANCIAL REPORT

COALITION FOR RADICAL LIFE EXTENSION - RAADFEST 2017

Revenues		
Ticket Sales	$	321,000.35
Sponsors	$	49,000.00
Exhibit Booths	$	19,145.00
Video Sales	$	8,878.70
Sales from DVD	$	4,911.42
T-Shirts Sales	$	3,997.25
Bookstore Sales	$	3,256.05
Donations	$	82.69
Interest	$	18.23
Total Revenues	**$**	**410,289.69**
Other Revenue		
Donation (LEF – Facebook promotion)	$	5,000.00
TOTAL REVENUES	**$**	**415,289.69**
Expenses		
Insurance		
Officers Liability	$	1,620.00
Liability for Event	$	251.00
Total Cost of Insurance	**$**	**1,871.00**
Fees		
Merchant Account fees	$	10,894.00
Subscriptions/Dues	$	1,692.66
Bank Service Charges	$	254.00
Total Cost of Fees	**$**	**12,840.66**
Marketing/Promotion		
CVENT & APP	$	18,144.20
Facebook PD promotions	$	8,602.10
Affiliate	$	1,000.00
Total Marketing/Promotion	**$**	**27,746.30**
Event Costs		
Food & Beverage	$	194,299.96
AV/Audio - AV101 -	$	39,800.00
Accommodation Staff /VIP	$	27,500.00
AVMS – Rigging- Internet	$	16,039.39
Hotel Deposits	$	10,000.00
Videographer	$	11,000.00
Graphics	$	7,888.80
Graphics	$	5,769.00
Sponsored Transport	$	2,600.63
Draping	$	2,350.00
Rental Stools x 12	$	554.00
Play- Director	$	450.00
Total Costs for Event Costs	**$**	**318,251.78**
Contract Services		
Sponsor/Exhibit	$	24,930.00
Admin Support	$	12,740.00
Promotions	$	8,600.00
Marketing	$	7,700.00
Total Cost for Contract Services	**$**	**53,970.00**
Equipment		
Banner Stage	$	2,240.00
Coalition Video	$	1,099.00
Step/Repeat Banner	$	565.44
Coalition Banner	$	535.00
Portable Printer	$	101.00
Total Cost of Equipment	**$**	**4,540.44**
Operations		
Give Aways	$	2,310.50
Telephone Communication	$	1,728.82
Photocopying/Printing	$	1,240.00
Computer/Internet	$	755.35
Total Cost of Administration	**$**	**6,034.67**
TOTAL EXPENSES	**$**	**425,254.85**
NET INCOME	**$**	**(9,965.16)**

RAADfest 2018

Exciting breakthroughs, invaluable insights, festivity and fun

We live in an unprecedented era as it relates to our knowledge about the underlying causes of aging.

Headlines routinely report on billionaires who are funding projects aimed at significantly extending healthy lifespans.

We at the **Life Extension Buyers Club** applaud all efforts to turn aging into a relic of the past, as smallpox and polio were last century.

But the complexity of the causes of aging makes it unlikely that one person will discover an ultimate cure.

A better approach is to engage with a broad array of scientists, activists, organizations and interested individuals through open sharing of information and inspiration.

This is the premise behind the annual RAADfest that will be held this year on September 20 - 23, 2018 in San Diego, California.

Sponsored by **Life Extension®**, RAADfest stands for the **Revolution Against Aging and Death**.

What distinguishes **RAADfest** from *any* event on the planet is the focus on human age reversal, group collaboration, community building and personal involvement.

Unlike typical conferences where you get lost in the crowd and feel buried in technical jargon, **RAADfest** brings people and experts together in a friendly atmosphere of collaboration and motivation.

Register for RAADfest 2018 now!

Take advantage of advanced discount pricing by calling **1-480-345-6554** (24 hours) or log on to **www.RAADFest.com**

RAADfest 2018—
Practical Approaches to Age-reversal.

For the past **38** years, **Life Extension** has relentlessly introduced scientific methods aimed at systematically abolishing limitations imposed by degenerative aging.

Now, rather than merely slowing aging and protecting against degenerative illness, we've entered a new era of **regenerative medicine**. At **RAADfest 2018** we expect to announce results from a wide range of interventions including:

Intervention	Age-Reversal Mechanism
Dasatinib/Quercetin	Selective removal of senescent cells
NAD^+ infusion	Repair broken DNA/Re-energize cells
Young plasma/cord infusions	Restore pro-youth proteins/hormones
Stem cell exosomes	Cell regeneration/telomere lengthening
Rapamycin/metformin	Turn on autophagy/stem-cell renewal
GDF11	Restore this pro-youth hormone
Thymus regeneration	Partial reversal of immune senescence
Periodic fasting	Restore hematopoietic function/immunity

RAADfest is the first large-scale event where multiple methods to reverse human aging are presented by credentialed individuals.

It's also important to note that many of these interventions are **affordable**. The news media has disseminated misleading reports that only the wealthy will be able to achieve indefinitely extended lifespans.

As you will learn, some of the interventions cost relatively little. Prices will likely plummet as more of the public realizes they can defy their hereditary longevity limitations.

There Is No Time to Waste

Each day, over **5,000** Americans perish from a degenerative illness. Included in this carnage are longevity enthusiasts whose biological clock dwindled before regenerative interventions were initiated. Stated succinctly, time is running out for many of our longtime supporters (including me)!

For these reasons, **RAADfest 2018** will focus on specific therapies now in human trials, and the opportunity to directly connect with researchers who have often **self-experimented**. There will be lots of group interactions, question-and-answer sessions, and other forms of communication that will enable you to initiate practical rejuvenation approaches based on your individual needs.

The ultimate objective of **RAADfest** is to support *systematic* strategies to counteract all known pathologies involved in degenerative aging. Yes, this is an ambitious undertaking. But the science is so close that it is now realistic to speak in these terms.

Register for RAADfest 2018 now to take advantage of advanced **discount pricing** by calling **1-480-345-6554** (24 hours) or log on to www.RAADFest.com

I look forward to seeing you personally at RAADfest.

At **RAADfest 2018** I expect to present results from clinical studies in which reversals of clinical measures and biomarkers of aging appear to have *already* occurred.

Clinical measurements evaluate blood pressure, glucose, lipids, and tissue/organ functions. When these improve, we suspect we are reducing degenerative disease risk and possibly inducing regenerative effects.

Biomarkers of aging may include telomere length, DNA methylation patterns and immune risk/inflammatory profiles. When these improve, it indicates we may be achieving reversals of aging itself.

Anecdotal feedback can help corroborate if improvements of clinical measures and aging biomarkers are translating into youthful vitality and wellbeing.

How to Register for RAADFest 2018

Most people delay registering and pay a fee of **$647** to attend. If you register by March 15th, 2018, your cost is only **$497**.

As you can see from the financial report on the first page of this article, **RAADfest** is a **nonprofit** endeavor and the registration fees paid equate closely with the hard costs of putting on the event, including three free meals and direct access to marquee names in the life-extension sciences.

You can register to attend RAADfest 2018 by calling **1-480-345-6554** (24 hours) or log on to www.RAADFest.com

I look forward to RAADfest each year as it enables me to personally interact with so many of you who enable age-reversal research projects to be funded.

Life Extension is Proud to Be a Founding Sponsor

How did RAADfest get started? As scientific evidence mounted, I received calls from activists suggesting that **Life Extension** sponsor a **conference** whereby scientists and longevity enthusiasts exchange concepts to accelerate development of **rejuvenation** therapies.

We at **Life Extension** guaranteed **$200,000** up-front in case the conference was unable to cover expenses.

Speakers at RAADfest focus on an array of topics, including visions for the future, current research, as well as how society will adapt and transform to a shifting paradigm of radically extended lifespans.

RAADfest provides a lot of enjoyment as well with live entertainment, a planned party, and impromptu evening get-togethers. All of this on an affordable resort hotel property to make this unique gathering an inspiring and heartwarming experience for all those interested in radical life extension. After all, if we want to extend life, we need to celebrate it too!

The main theme for **RAADfest 2018** is disseminating information about practical approaches of reversing biological senescence in order to realize the goal of ending aging in our lifetime.

Findings from proof-of-concept studies will be announced that reveal reversal of aging factors in human study subjects, with the potential to do more very soon. The audience will be able to submit questions for the speakers and directly interact with speakers and like-minded individuals, all of which will provide an engaging and interactive experience throughout the event.

RAADfest is presented by the nonprofit **Coalition for Radical Life Extension**, directed by James Strole, whose purpose is to unite like-minded people in ways that will benefit all of humanity, including readers of ***Life Extension Magazine***®.

If this were a **profit-making** business, registration would be over **$1,200**, especially when considering the healthy **meals** included in the package. The goal is to keep registration fees low so that as many people can afford to attend as possible.

As you can see from the **financial report** (on opening page of this article), **RAADfest** operates on a very lean budget in order to remain as accessible as possible to more people.

Register Now to Save $$$

If you register by March 15th, 2018, your cost to attend this year's **RAADfest** is **$497**.
(The price goes up considerably after this date.)

To register at this **discount price** call **1-480-345-6554** (24 hours) or log on to www.RAADfest.com

About the Coalition for Radical Life Extension

The nonprofit ***Coalition for Radical Life Extension*** consists of groups supporting healthy longevity including Aubrey de Grey's SENS Research Foundation, People Unlimited Inc. led by James Strole and Bernadeane, Dave Kekich's Maximum Life Foundation, Liz Parrish's Bio Viva, Bill Andrews's Sierra Sciences, along with **Life Extension®**, the **Society for the Rescue of Our Elders**, and others. ●

You can register to attend RAADfest 2018 by calling 1-480-345-6554 (24 hours) or log on to www.RAADFest.com

For longer life,

William Faloon, Volunteer Board Member
Coalition for Radical Life Extension

Is SUGAR Aging You?

MEGA

BENFOTIAMINE

SUPPORTS HEALTHY BLOOD SUGAR METABOLISM

	Retail Price	Your Price
1 bottle	$30	**$22.50**
4 bottles		**$20.25** each

Item #00925 • 120 vegetarian capsules

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

NON GMO LE CERTIFIED

Fight Back Against Aging with LONGEVITY A.I.™

Geroprotect™ Longevity A.I.™ has been formulated using cutting-edge, artificial intelligence (AI) technology to *modulate* over **90 *anti-aging pathways*** favorably affected by a **calorie-restriction mimetic**.

Longevity A.I.™ concentrates three unique **geroprotective** ingredients in one daily softgel.

Modulate Over 90 Aging and Longevity Pathways

For full product description and to order **Geroprotect™ Longevity A.I.™**, call **1-800-544-4440** or visit **www.LifeExtension.com**

	Retail Price	Your Price
1 bottle	$56	**$42**
4 bottles		**$38 each**

Item #02133 • 30 softgels

NON GMO LE CERTIFIED

Patent Pending. Developed in collaboration with Insilico Medicine, Inc.

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

Support
THROAT HEALTH
with a Great-Tasting
PROBIOTIC LOZENGE

Flavored with **spearmint** and **cherry**!

Beneficial bacteria called *S. salivarius* K12 sustain throat health. Each **FLORASSIST® Throat Health** lozenge has **2 billion** colony-forming units of *S. salivarius* K12 that:

- **Maintain a balanced inflammatory response**
- **Help provide probiotic balance for throat health**
- **Maintain overall good health**

FLORASSIST® Throat Health
Item #01920 • 30 lozenges

	Retail Price	Your Price
1 bottle	$20	**$15**
4 bottles		**$13.50** each

NON GMO LE CERTIFIED

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

Cilantro

BY GARRY MESSICK

Many people don't realize that the herb known as cilantro does not come from a plant of that name, but is in fact the leaves and stems of the coriander plant. As such, cilantro is related to cumin, dill, fennel, and anise.

Cilantro has been used in cooking for hundreds of years, and is known for its strong, citrus-like flavor, which pairs well with seasonings such as mint, basil, and turmeric. The tasty herb is also famed for its health benefits, such as:

Anxiety relief

Cilantro has been found to have a significant calming effect, making it a good candidate as a natural treatment for relief of anxiety. In fact, high doses of cilantro extract were found to have effects similar to the popular anti-anxiety drug Valium®,[1] but without that drug's many distressing side effects, such as confusion, hallucinations, agitation, and memory problems.

Elimination of Heavy Metals

The accumulation of toxic metals and chemical elements such as lead, mercury, aluminum, and arsenic in our bodies can have seriously detrimental health effects, including neurological damage, infertility, heart disease and hormonal imbalances. Cilantro can help counter these effects. It has been found to accelerate the elimination of heavy metals.[2] In mice, simultaneous administration of cilantro extract protected against lead-induced oxidative stress.[3]

Wards off Infection

Cilantro helps protect against a wide range of diseases—including but not limited to salmonella, cholera, and food poisoning—due to its antibacterial properties. Research has shown that essential oil of cilantro is effective against *Listeria*.[4]

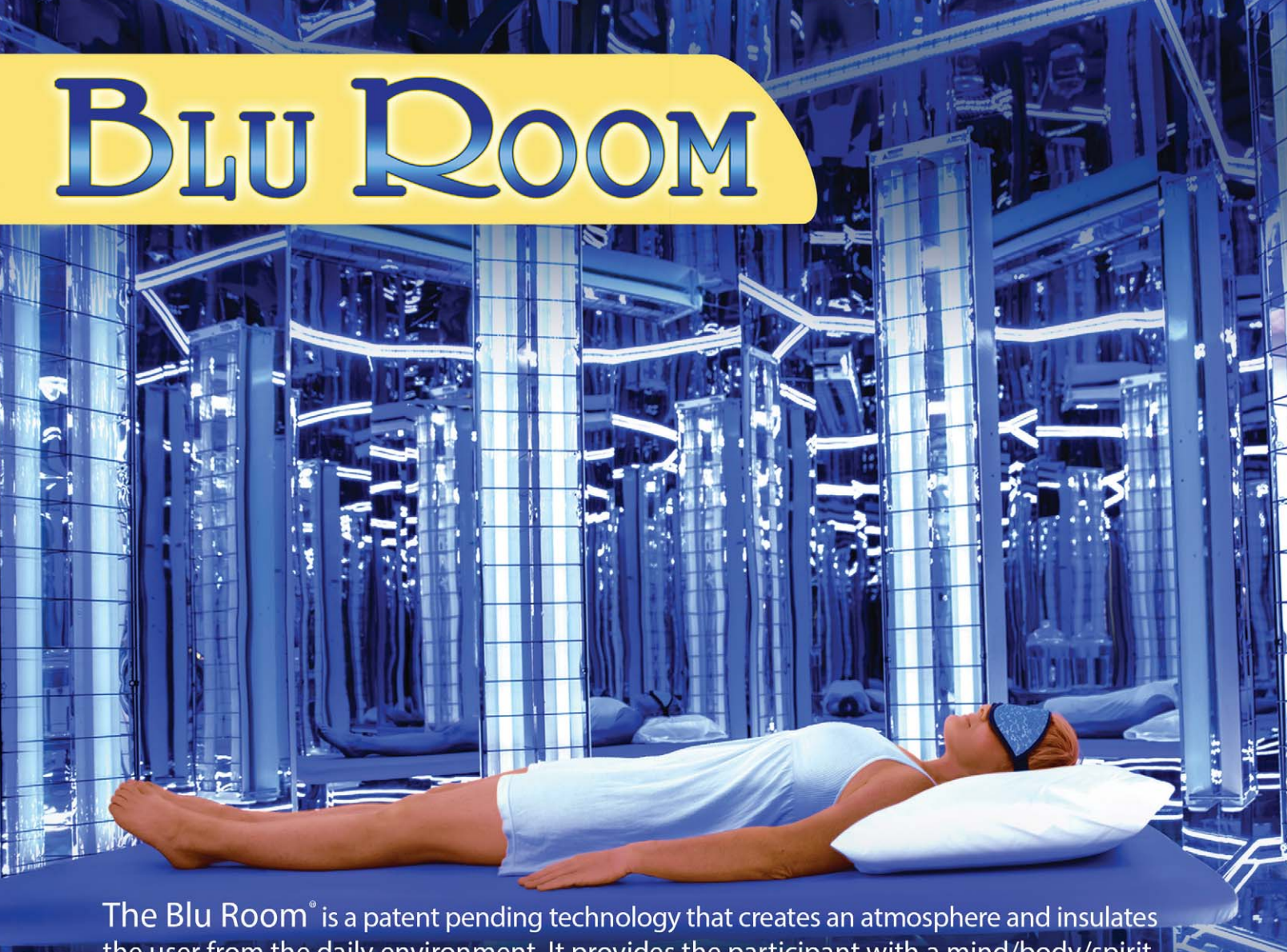
Fights Diabetes

In an animal study, cilantro extract has been shown to help lower blood sugar and support healthy liver function where diabetes is present.[5] In accordance with their findings, the study authors recommend cilantro extract be included in diabetics' diets.

References

1. *Indian J Pharmacol.* 2011;43(5):574-7.
2. *Acupunct Electrother Res.* 1995;20(3-4):195-229.
3. *Biol Trace Elem Res.* 2010;136(3):337-54.
4. *Int J Food Microbiol.* 2002;74(1-2):101-9.
5. *J Food Sci.* 2012;77(7):T119-23.

Blu Room



The Blu Room® is a patent pending technology that creates an atmosphere and insulates the user from the daily environment. It provides the participant with a mind/body/spirit consciousness lifting environment that can augment one's state of creative focus.

- Improved health and well-being
- Deepened focus
- Increased creativity
- Faster healing process
- Greater self-awareness
- Relief from physical pain
- Relief from mental stress & anxiety
- Significant source of vitamin D*

*Each 3 minutes of UVB provides a light-skinned person with an equivalent of around 10,000 IU of oral vitamin D and around 5,000 IU for a tanned or darker skinned person.

Find A Location at www.bluroom.com

BY GARRY MESSICK

Bartley J. Madden

Free to Choose Medicine

Bartley J. Madden sees one major flaw in the American effort to bring effective medications to patients at the lowest prices. That flaw is called The Food and Drug Administration (FDA).

Madden, a senior fellow at the National Center for Policy Analysis, is an expert in the application of systems thinking—the study of how elements that can be seen as working together in a system interrelate and affect each other.

In his book, *Free to Choose Medicine*, Madden advocates bringing free-market competition to the FDA's regulatory monopoly on the public's access to new drugs. He suggests the creation of an alternative path to new medications featuring internet-based, up-to-the-minute information which doctors and their patients can use to assess the risks of particular drugs for themselves, free of the hidebound FDA thinking which, Madden believes, often does more harm than good.

In this interview with ***Life Extension***®, Madden explains his view of the problematic nature of the FDA as it currently exists, how the system can be improved, and why he believes a grassroots movement advocating reform is necessary.

LE: What prompted your interest in FDA reform?

BJM: FDA reform became a top priority for me after reading the tragic details of how cancer patients were dying without access to the promising new drugs being tested in clinical trials. This struck me as an enormously important problem crying out for a solution.

LE: What's your approach to this problem, in a nutshell?

BJM: My two main ideas for FDA reform are, number one, the FDA itself is the bottleneck in the drugs-to-patients system, the goal of which is better drugs, sooner, at lower cost. As a practical matter, the FDA's continual push for more extensive clinical testing ignores the importance of providing new drugs sooner, at lower cost. Second, the system solution is to introduce consumer choice. Patients could then decide whether to use not-yet-approved new drugs based on their unique health conditions and risk preferences.

Anyone's death from the denial of access to a promising new drug is profoundly sad for the victim's family and loved ones. So too is the unnecessary pain and suffering of the much greater numbers of victims who are denied access to drugs that could significantly better manage their diseases.

LE: Could you give a specific example?

BJM: Multiple Sclerosis, or MS, is a disease of the nervous system that can cause difficulty in maintaining balance when walking, a painful loss of eyesight, and an almost constant state of fatigue.

An approved drug for treating MS, Tysabri®, demonstrated in clinical trials a remarkable ability to decrease relapses as well as the formation of additional brain lesions. But in 2005, following some reports of serious side effects, Tysabri® was pulled from the market. Many MS patients immediately pleaded with the FDA to restore access to Tysabri®, and the FDA eventually agreed. Even so, while the drug was off the market, hundreds of thousands of people suffered needless pain and worsening of their disease.

John Calfee, who worked as an economist with the American Enterprise Institute, reported survey responses of MS patients who were asked if they were willing to take their chances with Tysabri® despite its apparent one-in-1,000 chance of causing fatal complications. Roughly half of the patients said yes, they were willing to take the risk.

Additionally, **71%** of the MS patients surveyed agreed with the following statements: "If a drug has safety concerns, the FDA should warn people, but I should be free to decide with my doctor whether to use those drugs or not," and, "I am capable of making my own treatment choices, based on the information I get from my doctor."

LE: It seems like the situation is more fluid and complex than the FDA allows for.

BJM: The amount of risk patients are willing to accept for potential improvement to their health is not static. Health conditions change over time, pain can become intolerable, the degeneration associated with Parkinson's disease, MS, or Alzheimer's often becomes disabling, and for some there is little hope for survival using the drugs that have secured conventional FDA approval.

Further, the sum total of useful data about drugs grows over time, leading doctors and patients to change their opinions about how effective and how risky a new drug might be.

With today's system, the patient must meet the needs of the FDA's mandated clinical trial criteria—or, in almost all cases, get nothing. A single arbitrary level of risk is chosen by the FDA's risk-averse bureaucracy and imposed on everyone. Such a system cannot help but fail to achieve its stated objective of "advancing the public health by helping to speed innovations that make medicines and foods more effective, safer, and more affordable."

LE: What do you see as missing from the current healthcare debate?

BJM: An understanding of the overall drugs-to-patients system and of the current government policies that needlessly delay access to drugs and greatly increase cost. Also missing is sufficient appreciation for the lives extended and quality-of-life improvements made possible by innovative drugs and medical devices.

To mention just one type of drug, the estimated monetary value to society of the HIV/AIDS therapies that were introduced by private-sector pharmaceutical companies, beginning in the late 1980s, is $1.4 trillion, according to a 2006 study. Of that total, **95%** represented health benefits to patients and only **5%** accrued to private-sector drug developers. That seems to have been a remarkably good bargain for society.

Concern over the cost of healthcare so dominates the attention of politicians and reform advocates that little attention is given to the role of innovation. It is innovation that yields highly effective

drugs… Ignored is the average billion-dollar cost that drug companies incur to obtain FDA approval for a new drug. Also ignored is the possibility that changing the current drug-approval process could substantially reduce the cost of new drugs.

LE: What about government intervention?

BJM: Imposing government price controls on drugs, rather than addressing innovation and the way patients get access to new drugs may seem easier and faster—a more direct route to solving an apparent problem. It is not. Price controls strict enough to have a substantial impact on drug costs would decimate investment in new drug development because developers would be unable to earn an adequate return on their investors' capital. Investment capital would go elsewhere. Small biotech companies—the source of so many of the new drugs that are revolutionizing medicine—would become an endangered species.

LE: Why do you think a grassroots movement for your "Free to Choose Medicine" approach doesn't already exist?

BJM: Firstly, the nightly news keeps most of us frightened about serious side effects (including death) from the use of approved drugs. We rarely see stories blaming deaths on unnecessary regulatory delay by the FDA, even though a great many of such deaths occur for every one death due to an approved drug. Such lopsided coverage leads many people to believe that an even stronger FDA is needed to perform even more stringent testing of drugs. Moreover, few reporters understand that the discovery, testing, and sale of new drugs is a system—one that is failing because of the faulty design of one of its components. Or that suffering and deaths would be greatly reduced if promising new drugs moved faster through clinical testing.

Second, the FDA and its supporters erroneously choose to believe they are serving the public interest when they are highly motivated to preserve their authority by defending the status quo. They maintain their power, in part, by banging the drum of fear that any weakening of FDA powers would unleash a torrent of harmful drugs on the public. So far, that has worked. Pharmaceutical company experts who could contradict this claim are often silent out of fear of antagonizing the regulators whose decisions can spell the difference between their company's financial success or failure.

Third, most of us have not realized, thought about, or even been able to evaluate what economists call the "opportunity cost" of not being free to make an informed choice about the best drug treatment for ourselves. This freedom to choose is one we actually had prior to 1962, when legislation was enacted that greatly expanded the FDA, in effect granting it a monopoly over access to drugs, and thus preventing people from accessing medicines of their choice.

LE: Throughout your book, you stress a systems mindset that views the FDA as one component of a complex drugs-to-patients system. Why do you adopt this mindset?

BJM: Absent a systems mindset, most extensive FDA clinical testing is automatically viewed as a good thing regardless of the negative consequences elsewhere in the system. A fundamental central point is that the systems perspective provides the compelling argument that the FDA itself is the bottleneck in achieving the system's goal of better drugs, sooner, at lower cost.

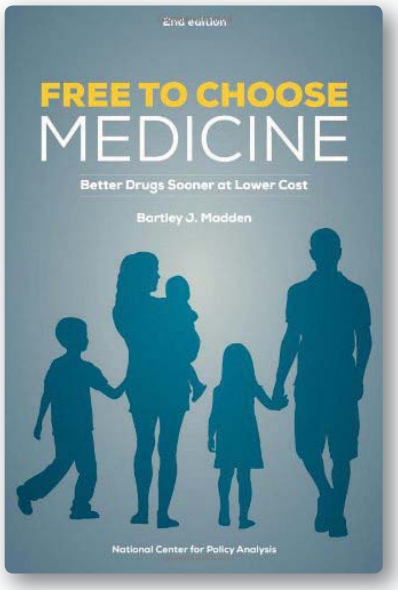
Consumer choice and competition are the heart of a market system. They are especially relevant in achieving truly large-scale benefits from "Free to Choose Medicine." This becomes apparent when you analyze how the FDA testing process works.

LE: Finally, what do you hope to accomplish with your book?

BJM: It lays out the practical tasks to begin building a reform movement that, if the book does the job I hope it will do, people will want to join. The core reason is this: We all want healthier, longer, and more productive lives for ourselves, our families, and all Americans. ●

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

To purchase a copy of *Free to Choose Medicine*, visit www.Amazon.com



WAKE UP TO THE HEALTHY COFFEE

Rainforest Blend

POLYPHENOL-RETAINED COFFEE

Most of a coffee **polyphenol** content is ***destroyed*** during the typical roasting process.

Among the most beneficial of these polyphenols is ***chlorogenic acid***.

Rainforest Blend coffee utilizes the patented **Healthy Roast®** process, which retains the naturally occurring polyphenols like **chlorogenic acid**.

A Patented Organic Roast

Life Extension®'s Rainforest Blends are made using a patented, **100%** *natural* process consisting of **100% USDA certified organic *arabica*** coffee beans.

Savory Taste Without Stomach Upset

The **HealthyRoast®** process also preserves special, naturally occurring compounds in coffee that **soothe** your stomach.

Tasty Decaf

Rainforest Blend is also available in a **decaffeinated** blend. The caffeine is removed through a chemical-free ***water process***. It delivers the full flavor, aroma, and body of the *arabica* bean.

Rainforest Blend
Item #02169 • 12 oz bag

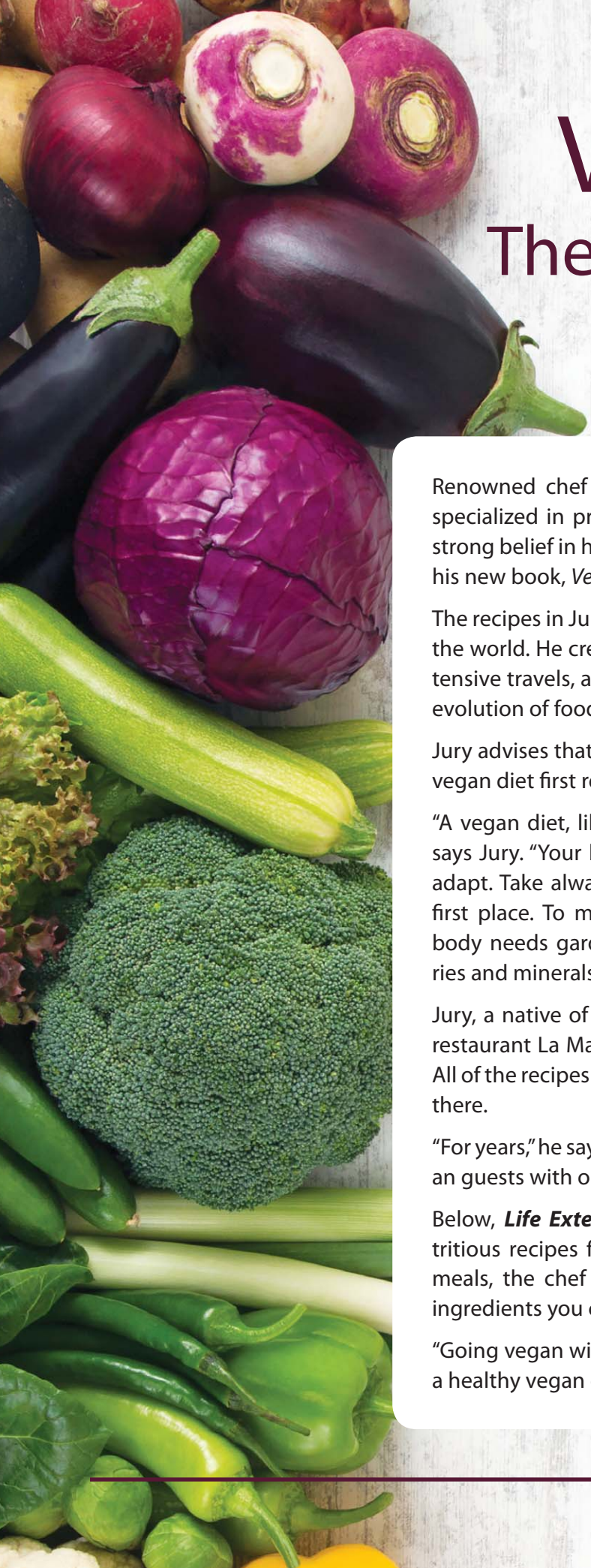
	Retail Price	Your Price
1 bag	$13	**$9.75**

Rainforest Decaffeinated Blend
Item #02170 • 12 oz bag

	Retail Price	Your Price
1 bag	$14	**$10.50**

For full product description and to order either of the **Rainforest Blend Coffees** call **1-800-544-4440** or visit **www.LifeExtension.com**

* US Patent 6,723,368.



Vegan
The Cookbook

BY GARRY MESSICK

Renowned chef Jean-Christian Jury has for many years specialized in preparing vegan and raw-food dishes. His strong belief in health-promoting foods has culminated in his new book, *Vegan: The Cookbook*.

The recipes in Jury's book originate from countries all over the world. He credits his interest in exotic foods to his extensive travels, as well as his research into the origins and evolution of foods from ancient to modern times.

Jury advises that people who are interested in adopting a vegan diet first read up on the subject.

"A vegan diet, like every other diet, has to be balanced," says Jury. "Your body and digestive system need time to adapt. Take always into consideration your health in the first place. To maintain a healthy immune system, your body needs garden fresh food, vitamins, enzymes, calories and minerals."

Jury, a native of Toulouse, France, has run the acclaimed restaurant La Mano Verde in Berlin, Germany, since 2008. All of the recipes in *Vegan: The Cookbook* have been served there.

"For years," he says, "my target was to surprise the non-vegan guests with our quality of cooking and imagination."

Below, ***Life Extension***® has collected four delicious, nutritious recipes from Jury's book. When preparing these meals, the chef recommends that you use the freshest ingredients you can find.

"Going vegan with garden fresh ingredients is the base of a healthy vegan diet," he says.

FROM SOUTH KOREA:

Broccoli Soup with Ginger and Lemon

Preparation time: 25 minutes • Cooking time: 35 minutes, plus 20 minutes chilling • Serves 4

Two heads of broccoli, trimmed and separated into florets, stems reserved

Two tablespoons olive oil

One shallot, finely chopped

One tablespoon finely grated fresh ginger

Three cups vegetable stock (broth)

One teaspoon finely grated lemon zest

Two tablespoons fresh lemon juice

Salt and freshly ground black pepper

½ cup coconut milk

Two scallions (spring onions), finely chopped, to garnish

One tablespoon white sesame seeds, to garnish

Preheat the oven to 400°F/200°C/Gas Mark 6

Put the broccoli florets into an ovenproof dish, add one tablespoon of the olive oil and toss to coat. Bake for 20 minutes, until tender. Remove from the oven and set aside.

Heat the remaining olive oil in a saucepan over medium heat, add the shallot and stir fry for four minutes, until the shallot has softened. Add the ginger and cook for another two minutes. Add the broccoli stems, broth, and lemon zest and juice. Season to taste with salt and freshly ground black pepper, then bring to a simmer and cook for about 10 minutes, until the broccoli stems are tender.

Add the broccoli florets and bring to a boil, then remove the pan from the heat and set aside to cool for 20 minutes.

In a food processor or high-speed blender, purée the soup in batches until smooth. Return the soup to the saucepan, add the coconut milk and bring to a boil, stirring frequently. Then immediately remove the saucepan from the heat.

Ladle the soup into bowls, garnish with the scallions and white sesame seeds, and serve.

FROM KURDISTAN:

Chickpea and Cilantro Salad

Preparation time: 20 minutes • Cooking time: 15 minutes Serves 4

Three tablespoons olive oil

Three cloves garlic, finely chopped

One red onion, finely chopped

One tablespoon ground cumin

One tablespoon finely chopped fresh ginger

½ teaspoon chopped piment d'espelette

Two tablespoons fresh lime juice

Nine oz. plum tomatoes, quartered

1 ¼ cups canned chickpeas, rinsed and drained

Salt and freshly ground black pepper

One bunch of cilantro (coriander), chopped

Heat the oil in a wok or deep saucepan over medium heat. Add the garlic and onion and stir-fry for five to six minutes, until golden brown. Add the cumin, mix to incorporate, and fry for another two minutes. Now add the ginger, chili, lime juice, tomatoes, and chickpeas, reduce the heat to low, and simmer for seven to eight minutes.

Season to taste with salt and freshly ground black pepper, then transfer to a large serving bowl. Sprinkle with the chopped cilantro and serve immediately.

Chickpea and Cilantro Salad

Recipes from *Vegan: The Cookbook* (Phaidon, 2017) by Jean-Christian Jury. Photograph © Sidney Bensimon.

FROM CHAD:

Kidney Bean and Coconut Curry

Preparation time: 25 minutes • Cooking time: one hour 30 minutes • Serves 4

Two cups dried kidney beans, soaked in water overnight

Two tablespoons vegetable oil

Two red onions, chopped

Two tomatoes, chopped

Two cups coconut milk

One teaspoon ground cardamom

Two cloves garlic, crushed

One teaspoon yellow curry powder

One green chili, seeded and finely chopped

Salt

Two tablespoons chopped cilantro (coriander), to garnish

Cooked basmati or jasmine rice, to serve

Rinse and drain the soaked kidney beans. Fill a large saucepan with enough water to cover the kidney beans and bring to a boil. Add the beans, bring to a simmer, and cook over low heat for one hour, until the beans are tender. Drain and set aside.

Heat the vegetable oil in a large saucepan over medium heat. Add the onion and stir fry for three to four minutes, until the onion becomes golden brown. Add the tomatoes and cook for four to five minutes. Add the coconut milk, cardamom, garlic, curry powder, and chili and season to taste with salt. Mix well to blend the ingredients together and bring the mixture to a simmer. Cook over low heat for 20 minutes.

Transfer to a large serving bowl, garnish with the cilantro, and serve with rice.

FROM SPAIN:

Peppers Stuffed with Quinoa and Zucchini

Preparation time: 20 minutes • Cooking time: 50 minutes, plus 15 minutes cooling • Serves 4

Two red bell peppers

Two cups quinoa, cooked according to the packet instructions

Two cups shredded zucchini (courgette) or summer squash

One tablespoon chopped basil

½ cup tomato sauce or crushed tomatoes

One clove garlic, finely chopped

½ cup grated vegan mozzarella cheese

Salt and freshly ground black/white pepper

Preheat the broiler (grill).

Arrange the peppers in a broiling (grill) pan and broil for about 20 minutes, until they are soft and the skin just beginning to become brown. Let cool for 15 minutes, then halve peppers lengthwise, remove the seeds and transfer to a baking pan.

Preheat the oven to 400°F/200°C/Gas Mark 6

Combine the quinoa, zucchini or squash, basil, tomato sauce, garlic, and half of the cheese in a large bowl and season to taste with salt and freshly ground white/black pepper. Divide the quinoa mixture equally among the pepper halves; top with the remaining cheese. Bake for 15 minutes, until the cheese has melted and is golden brown. Serve immediately.

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

To order *Vegan: The Cookbook*, call 1-800-544-4440 or visit www.LifeExtension.com
Item #34135
Retail price $49.95
Your price $37.46

Bone-Building **NUTRIENTS** In a *Tasty* **CHEWABLE TABLET**

Just two of the new **Bone Restore Chewable Tablets** provide:

Calcium	700	mg
Magnesium	300	mg
Silicon	5	mg
Boron	3	mg
Zinc	2	mg
Manganese	1	mg
Vitamin D3	1000	IU

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

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**.

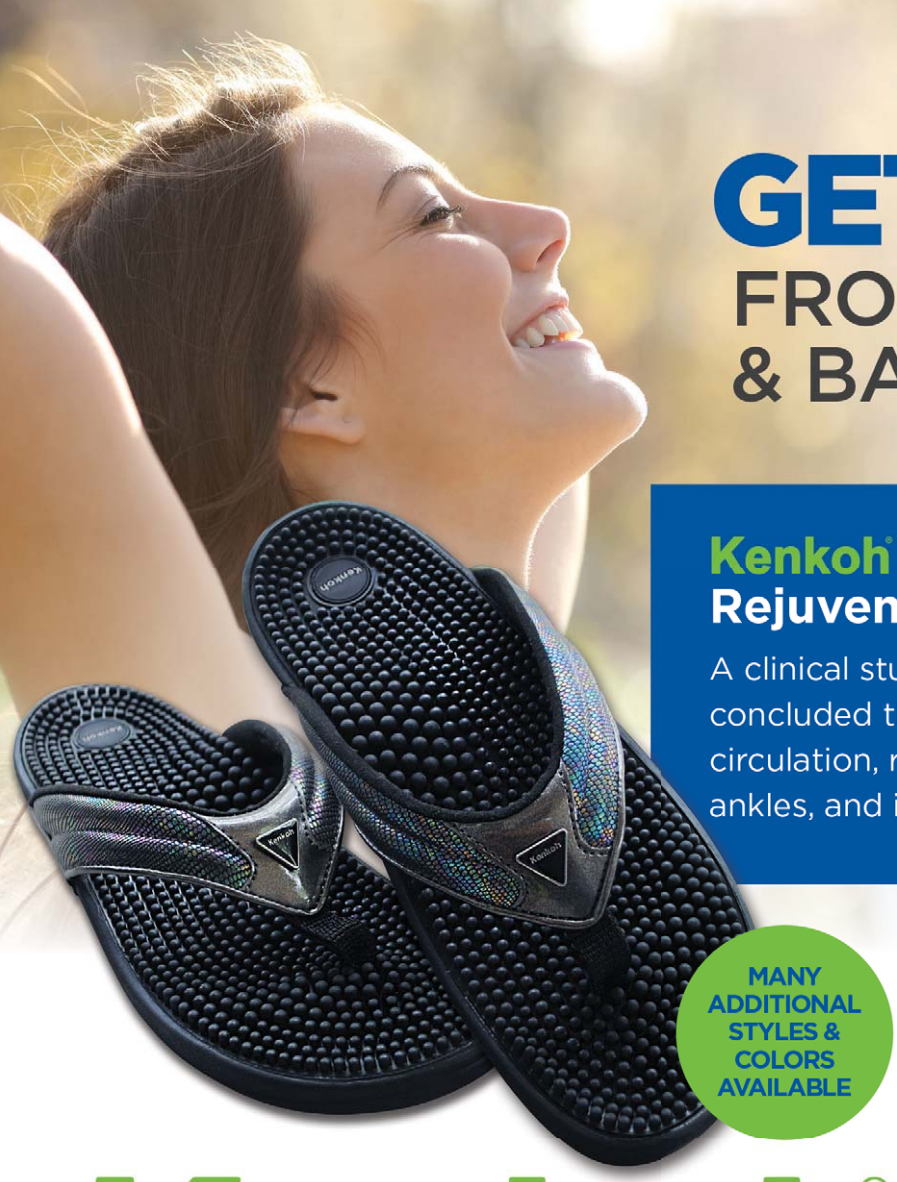
You'll be pleasantly surprised how good these **Chocolate Chewables** taste.

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

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

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

NON GMO LE CERTIFIED



GET RELIEF FROM FOOT, LEG & BACK PAIN

Kenkoh® Revitalizes and Rejuvenates Your Whole Body!

A clinical study in a Japanese school of medicine concluded that Kenkoh massage footwear improves circulation, reduces swelling around the legs and ankles, and improves energy levels and mood.

MANY ADDITIONAL STYLES & COLORS AVAILABLE

Kenkoh®

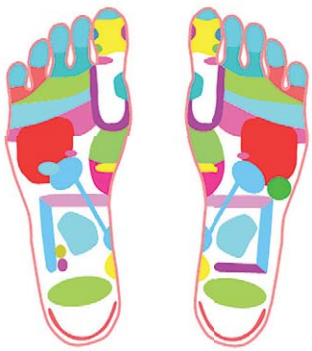
"The Original Japanese Massage Sandal"

LER.DiscoverKenkoh.com
1-800-336-6657

THE Kenkoh® MASSAGE SANDAL IS UNIQUELY DESIGNED TO STIMULATE THOUSANDS OF NERVE ENDINGS IN THE FEET

- Nerves corresponding to organs and tissues are concentrated in the soles of the feet.
- Stimulating these nerves daily helps improve overall health.
- Orthotic arch support alleviates foot pain.

FOOT REFLEXOLOGY CHART



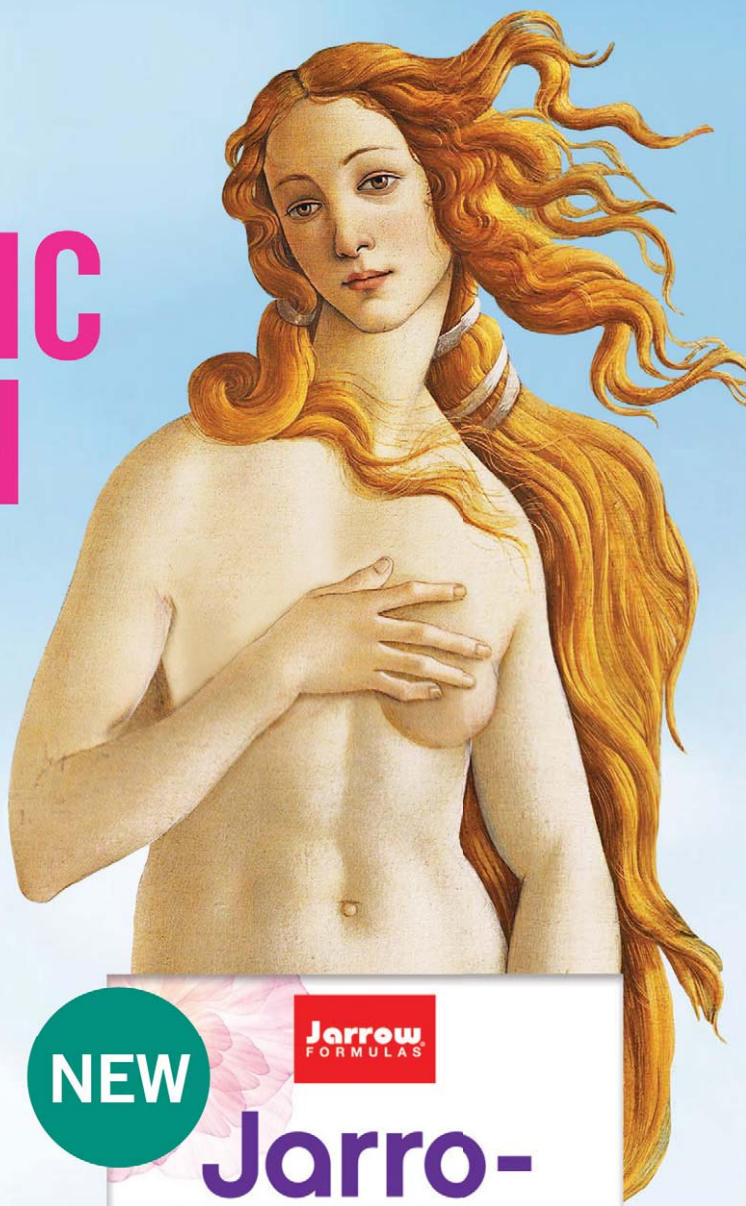
Kenkoh® IS JAPANESE FOR HEALTH AND BEAUTY

Kyu-Kichi Yamanashi invented the Kenkoh massage sandal in Japan in 1962. He designed the unique foot bed to mimic two ancient healing techniques that saved his life: *Aodake-Fumi* (stepping on bamboo) and *Sokushindo* (Japanese reflexology), meaning "the path that leads to the heart."

A FOOT MASSAGE WITH EVERY STEP

Jarrow FORMULAS®

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.*

- ***L. crispatus* LbV 88**
- ***L. jensenii* LbV 116**
- ***L. gasseri* LbV 150N**
- ***L. rhamnosus* LbV 96**

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
Item # **52142** Retail Price **$27.95** Your Price **$20.96**
For full product description or to order Jarro-Dophilus® Women call 1-800-544-4440 or visit www.LifeExtension.com

ASTARTE

Jarro-Dophilus® Women contains the clinically tested Astarte® strains which are protected by U.S. Patent 8,846,027 and European Patent 2,509,610. Astarte® is owned by HSO Health Care GmbH, Vienna, Austria, and licensed in the U.S. to Jarrow Formulas, Inc. Other international patents pending.

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

Visit us at www.jarrow.com for more product information.

FIVE EASY STEPS FOR ORDERING BLOOD TESTS:

1. Call **1-800-208-3444** to discuss and place your order with one of our knowledgeable Wellness Specialists. Online orders can also be placed at **www.LifeExtension.com/labtesting**
2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit, whichever is applicable. (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be mailed, emailed, or faxed directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable Wellness Specialists by calling **1-800-226-2370**; or review the results with your personal physician.

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

For Our Local Customers:

For those residing in the Ft. Lauderdale, Florida, area, blood-draws are also performed at the Life Extension Nutrition Center from 9:00 am to 2:00 pm Monday through Saturday. Simply purchase the blood test and have it drawn with no wait! Our address is:

5990 NORTH FEDERAL HIGHWAY, FT. LAUDERDALE, FL, 33308-2633

Terms and Conditions

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

LifeExtension

Blood Testing

The Ultimate Information

YOUR PRICE

◯ **CBC/CHEMISTRY PROFILE (LC381822)** ***includes:*** — **$35**

Lipid Profile:
Total cholesterol • Triglycerides
HDL cholesterol • LDL cholesterol (calc.)
VLDL cholesterol (calc.)
Total cholesterol/HDL ratio
Estimated Coronary Heart Disease risk

Liver Function:
Alkaline phosphatase • LDH (lactate dehydrogenase)
AST (aspartate aminotransferase)
ALT (alanine transaminase)
Total protein • Albumin • Globulin
Albumin/globulin ratio • Bilirubin

Electrolytes and Minerals:
Sodium • Potassium • Chloride
Calcium • Phosphorus • Iron

Blood Sugar:
Glucose

Kidney Function:
Uric acid • BUN (blood urea nitrogen)
Creatinine • BUN/creatinine ratio
eGFR (estimated glomerular filtration rate)

Complete Blood Count:
Red blood cell count • Hemoglobin
Hematocrit • MCV (mean corpuscular volume)
MCH (mean corpuscular hemoglobin)
MCHC (mean corpuscular hemoglobin concentration)
RDW (red blood cell distribution)
White blood cell count
Immune Cell Differentiation Count
Platelet count

◯ **NEUROTRANSMITTER BASIC PANEL**(LC100058)** — **$199**
Serotonin, Dopamine, Epinephrine, Norepinephrine, GABA, Glutamate. Alternations in these six neurotransmitters play a significant role in contributing to symptoms such as cognitive disorders, depression, anxiety, diminished drive, fatigue and sleep difficulties, cravings, addictions, pain and more! Not available in NY.

◯ **FOOD SAFE ALLERGY TEST – BASIC** (LCM73001)** — **$198**
This test measures delayed (IgG) food allergies for 95 common foods.

◯ **FOOD SAFE ALLERGY TEST – EXTENDED** (LCM73002)** — **$198**
This test measures delayed (IgG) food allergies to an additional 95 foods.

◯ **FOOD SAFE ALLERGY TEST – COMBO** (LCM73003)** — **$375**
This test measures delayed (IgG) food allergies to all 190 foods found in our Basic and Extended panels.

GENETIC TESTING

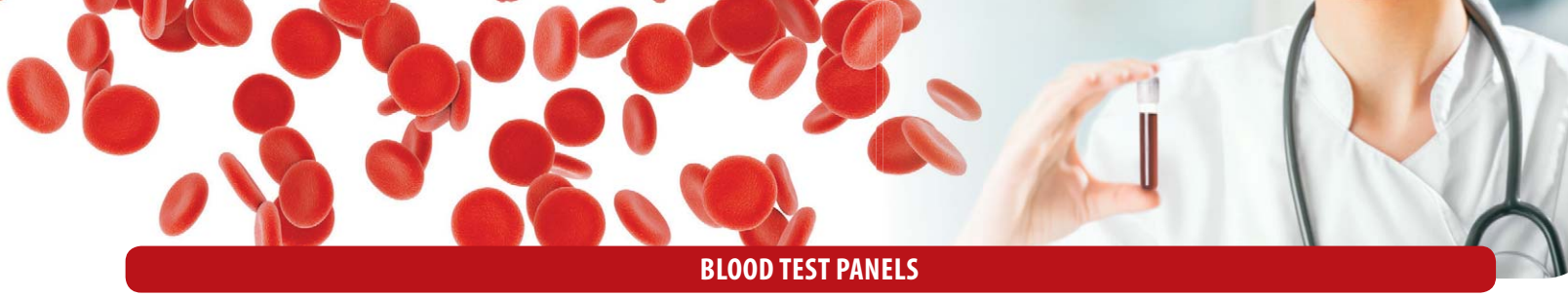
◯ **DNA GENETIC CANCER RISK PROFILE** (LC100057)** — **$299**
With only a saliva sample, you can identify your risk for 25 hereditary cancers by analyzing 98 genes from your DNA including the well-known BRCA1, BRCA2, TP53, and APC. Not available in NY and RI.

◯ **APOE GENETIC TEST FOR ALZHEIMER'S AND CARDIAC RISK ** (LC100059)** — **$149**
Apolipoprotein E (ApoE) is an important regulator of cholesterol and triglycerides levels in your blood and supports lipid transport and injury repair in your brain. Genetically, E4 is the strongest risk factor for developing Late Onset Alzheimer's disease. According to the National Institute of Health, inheriting a single copy of ApoE4 increases the risk of Alzheimer's disease by about three-fold. Inheriting two copies increases the risk by about 12-fold. In fact, almost 40% of AD patients have inherited an E4 allele.

◯ **PATHWAY FIT®- DNA WEIGHT MANAGEMENT (LC100067) **** — **$299**
Your DNA holds the blueprint to how your body responds to both food and exercise! This panel looks at 40+ genetic traits.

◯ **PAIN MEDICATION DNA INSIGHT® PROFILE (LC100069) **** — **$299**
This profile helps you understand your body's likely response to pain relief for 13 commonly prescribed pain medications.

◯ **MENTAL HEALTH DNA INSIGHT® PROFILE (LC100068) **** — **$299**
The Mental Health DNA Insight® profile helps you understand your body's likely response to 50+ psychiatric medications.



BLOOD TEST PANELS

YOUR PRICE

MALE LIFE EXTENSION PANEL (LC322582) — $269
CBC/Chemistry Profile • DHEA-S • PSA (prostate-specific antigen)
Homocysteine • C-Reactive Protein (high-sensitivity)
Free Testosterone • Total Testosterone • Estradiol • TSH for
thyroid function • Vitamin D (25-hydroxyvitamin D) • Hemoglobin A1c

MALE ELITE PANEL (LC100016)* — $575
CBC/Chemistry Profile • Free and Total Testosterone • Total Estrogens
Estradiol • DHEA-S • Progesterone • Pregnenolone • DHT • FSH • LH • TSH
Free T3 • Free T4 • Reverse T3 • Free and Total PSA • IGF-1 • SHBG • HbA1c
Vitamin D 25-OH • hs-CRP, ferritin • Homocysteine • Hemoglobin A1c

MALE COMPREHENSIVE HORMONE PANEL (LC100010)* — $299
CBC/Chemistry Profile • DHEA-S, Estradiol • DHT • PSA
Pregnenolone • Total and Free Testosterone • SHBG • TSH • Free T3
This panel now includes Free T4 and Cortisol with no increase in price!

MALE BASIC HORMONE PANEL (LC100012) — $75
DHEA-S • Estradiol • Total and Free Testosterone • PSA

FEMALE LIFE EXTENSION PANEL (LC322535) — $269
CBC/Chemistry Profile • DHEA-S • Estradiol • Homocysteine
C-Reactive Protein (high-sensitivity) • Progesterone • Free Testosterone
Total Testosterone • TSH for thyroid function
Vitamin D (25-hydroxyvitamin D) • Hemoglobin A1c

FEMALE ELITE PANEL (LC100017)* — $575
CBC/Chemistry Profile • Free and total Testosterone • Total Estrogens
Estradiol • Estrone • DHEA-S • Progesterone Pregnenolone
DHT • FSH • LH • TSH • Free T3 • Free T4 • Reverse T3 • IGF-1 • SHBG • HbA1c
Vitamin D 25-OH • hs-CRP • Ferritin • Homocysteine • Hemoglobin A1c

FEMALE COMPREHENSIVE HORMONE PANEL (LC100011)* — $299
CBC/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!

FEMALE BASIC HORMONE PANEL (LC100013) — $75
DHEA-S • Estradiol • Total and Free Testosterone • Progesterone

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.

YOUR PRICE

NMR LIPOPROFILE® (LC123810) — $99
The NMR Lipoprofile® directly measures LDL particle size and number as well as HDL particle number, total cholesterol, and triglycerides. It also provides a calculation of one's risk of insulin resistance by assessing abnormalities in lipoprotein markers.

WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028) — $275
CBC/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

HEALTHY AGING PANEL-COMPREHENSIVE (LC100026)* — $249
CBC/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

ADRENAL STRESS PROFILE – SALIVA (LC100070) ** — $159
Check your red flags of adrenal imbalance. This panel contains Cortisol (x4), DHEA, SIgA.

SLEEP HORMONES PROFILE – SALIVA (LC100071) ** — $159
Exhausted but still can't sleep? This panel contains Cortisol (x4) and Melatonin.

COMPREHENSIVE THYROID PANEL (LC100018) — $199
TSH, Total T4, Free T4, Free T3, Reverse T3, Thyroglobulin Antibody (ATA), Thyroid Peroxidase Antibody (TPO)

THYROID PANEL WITH REVERSE T3 (LC100044) — $120
TSH, Total T4, Free T4, Free T3, Reverse T3

DIABETES MANAGEMENT PROFILE (COMPREHENSIVE) (LC100040) — $99
Glucose, HbA1C, Insulin, Magnesium, DHEA-S, Cortisol, C-Reactive Protein, Chemistry/CBC panel

LE YOUR HEALTHY REWARDS

With **Your Healthy Rewards**, you earn **LE Dollars** back on every purchase you make — including blood tests!
See **www.LifeExtension.com/Rewards** for details.

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

* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit 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.

PRODUCTS

Amino Acids

Arginine/L-Ornithine Capsules
Arginine Ornithine Powder
Branched 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 Defense™ with Pomegranate Complete and CORDIART™
Endothelial Defense™ with GliSODin®
Optimal BP Management
NitroVasc with CORDIART™
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® Gastrodin
CocoaMind™
Cognitex® Basics
Cognitex® with Brain Shield®
Cognitex® with Pregnenolone & Brain Shield®
Cognizin® CDP-Choline Caps
DMAE Bitartrate (dimethylaminoethanol)
Dopa-Mind™
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin Granules
Memory Protect
Migra-Eeze™
Neuro-Mag® Magnesium L-Threonate
Optimized Ashwagandha Extract
PS (Phosphatidylserine) Caps
Vinpocetine

Cholesterol Management

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

Digestion Support

Artichoke Leaf Extract
Digest RC®
Effervescent Vitamin C - Magnesium Crystals
Enhanced Super Digestive Enzymes
Enhanced Super Digestive Enzymes w/Probiotics
EsophaCool™
Esophageal Guardian
Extraordinary Enzymes
Gastro-Ease™
Ginger Force®
Pancreatin
Regimint
Tranquil Tract™
TruFiber™
WellBetX PGX plus Mulberry

Energy Management

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

Eye Health

Astaxanthin 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 MaquiBright®

Fish Oil & Omegas

OMEGA FOUNDATIONS® Clearly EPA/DHA
OMEGA FOUNDATIONS® Mega GLA with Sesame Lignans
OMEGA FOUNDATIONS® Omega-3 (EPA/DHA)
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® Provinal® Purified Omega-7
OMEGA FOUNDATIONS® Vegetarian DHA
Organic Golden Flax Seed

Food

California Estate Extra Virgin Olive Oil
Rainforest Blend Decaf Ground Coffee
Rainforest Blend Ground Coffee
Rainforest Blend Ground Natural Mocha Flavor
Rainforest Blend Natural Vanilla Flavor
Rainforest Blend Whole Bean Coffee
Stevia Sweetener

Glucose Management

CinSulin® with InSea2® and Crominex® 3+
Glycemic Guard™
Mega Benfotiamine
Tri Sugar Shield®

Heart Health

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

Hormone Balance

DHEA (Dehydroepiandrosterone)
Pregnenolone
Triple Action Cruciferous Vegetable Extract with Resveratrol
Triple Action Cruciferous Vegetable Extract

Immune Support

AHCC®
Enhanced Zinc Lozenges
Immune Modulator with Tinofend®
Immune Protect with PARACTIN®
Immune Senescence Protection Formula™
Kinoko® Gold AHCC
Kinoko® Platinum AHCC
Kyolic® Garlic Formula 102
Kyolic® Reserve
Lactoferrin (apolactoferrin) Caps
NK Cell Activator™
Optimized Garlic
Optimized Quercetin
Peony Immune
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 & Turmerones
Black Cumin Seed Oil
Black Cumin Seed Oil with Bio-Curcumin®
Boswella
Comfort Max™
Cytokine Suppress™ with EGCG
Serraflazyme
Specially-Coated Bromelain
Super Bio-Curcumin®
Zyflamend® 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
Chlorophyllin
European Milk Thistle
Glutathione, Cysteine & C
HepatoPro
Liver Efficiency Formula
N-Acetyl-L-Cysteine
PectaSol-C®
Silymarin
SODzyme® 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

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®
Prelox® Enhanced 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
Solarshield® Sunglasses

Mood & Stress Management

Advanced Cortisol Balance
Enhanced Stress Relief
5 HTP
L-Theanine
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
Hair, Skin & Nail Rejuvenation Formula w/VERISOL®
Hair Suppress Formula
Life Extension Toothpaste
Sinus Cleanser
Venotone
Xyliwhite Mouthwash

Pet Care

Cat Mix
Dog Mix

Probiotics

Bifido GI Balance
FLORASSIST® Balance
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
Theralac® 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 Self MicroDermAbrasion
Anti-Aging Face Oil
Anti-Aging Mask
Anti-Aging Rejuvenating Face Cream
Anti-Aging Rejuvenating Scalp Serum
Anti-Glycation Serum with Blueberry & Pomegranate Extracts
Antioxidant Facial Mist Hydrator
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 Tightening 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 Phytoceramides with Lipowheat®
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 RejuveNight®
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
Quiet Sleep Melatonin

Sports Performance

Creatine Capsules
Creatine Whey Glutamine Powder (Vanilla Flavor)
New Zealand Whey Protein Concentrate (Natural Chocolate and Vanilla Flavor)
Tart 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
No Flush Niacin
Optimized Folate (L-Methylfolate)
Pantothenic Acid (Vitamin B-5)
Pyridoxal 5'-Phosphate Caps
Super Absorbable Tocotrienols
Super K with Advanced K2 Complex
Super Vitamin E
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
HCActive™ Garnicia Cambogia Extract
Integra-Lean®
Mediterranean Trim with Sinetrol™-XPur
Optimized Irvingia with Phase 3™ Calorie Control Complex
Optimized Saffron with Satiereal®
Super Citrimax®
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

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
	A						
01524	**ACETYL-L-CARNITINE** • 500 mg, 100 veg. caps	34.00	25.50	22.50			
01974	**ACETYL-L-CARNITINE ARGINATE** • 90 veg. caps	38.00	28.50	26.00			
01628	**ADRENAL ENERGY FORMULA** • 60 veg. caps	24.00	18.00	16.50			
01630	**ADRENAL ENERGY FORMULA** • 120 veg. caps	46.00	34.50	31.50			
01828	**ADVANCED LIPID CONTROL** • 60 veg. caps	30.00	22.50	20.25			
00681	**AHCC®** • 500 mg, 30 caps	59.98	44.99				
24404	**AHCC® (KINOKO® PLATINUM)** • 750 mg, 60 veg. caps	84.95	63.71				
29727	**AHCC® (KINOKO® GOLD)** • 500 mg, 60 veg. caps	74.95	52.47				
00457	**ALPHA-LIPOIC ACID W/BIOTIN** • 250 mg, 60 caps	37.00	27.75	24.00			
02207	**AMPK METABOLIC ACTIVATOR** • 30 veg. tabs	38.00	28.50	24.00			
01509	**ANTI-ADIPOCYTE FORMULA W/MERATRIM® & INTEGRA LEAN®** (Advanced) • 60 veg. caps	39.00	29.25	27.00			
02140	**ANTI-ALCOHOL w/HEPATOPRO COMPLEX** • 60 caps	22.00	16.50	15.00			
01625	**APPLEWISE** 600 mg, 30 veg. caps	21.00	15.75	14.25			
01039	**ARGININE/ORNITHINE** • 500/250, 100 caps	17.99	13.49				
00038	**ARGININE/ORNITHINE POWDER** • 150 grams	22.95	17.21	14.25			
01624	**(L)-ARGININE CAPS** • 700 mg, 200 veg. caps	26.50	19.88	17.44			
02004	**ARTERIAL PROTECT** • 30 veg. caps	44.00	33.00	29.00			
01617	**ARTHROMAX® W/THEAFLAVINS & APRÈSFLEX®** 120 veg. caps	44.00	33.00	30.00			
01618	**ARTHROMAX® ADVANCED W/UC-II® & APRÈSFLEX®** 60 caps	36.00	27.00	24.00			
02108	**ARTHROMAX® HERBAL JOINT FORMULA** • 60 veg. caps	40.00	30.00	27.00			
01404	**ARTHRO-IMMUNE JOINT SUPPORT** • 60 veg. caps	32.00	24.00	21.00			
00919	**ARTICHOKE LEAF EXTRACT** • 500 mg, 180 veg. caps	30.00	22.50	21.00			
01533	**ASCORBYL PALMITATE** • 500 mg, 100 veg. caps	22.50	16.88	15.00			
00888	**ASHWAGANDHA EXTRACT** (Optimized) • 60 veg. caps	10.00	7.50	6.75			
01805	**ASIAN ENERGY BOOST** • 90 veg. caps	24.00	18.00	16.50			
01066	**ASPIRIN** • 81 mg, 300 enteric coated tablets	6.00	4.50	4.00			
01923	**ASTAXANTHIN WITH PHOSPHOLIPIDS** • 4 mg, 30 softgels	16.00	12.00	10.50			
	B						
01945	**B-COMPLEX** (Bio-Active Complete) • 60 veg. caps	12.00	9.00	8.00			
00920	**BENFOTIAMINE W/ THIAMINE** • 100 mg, 120 veg. caps	19.95	14.96	13.95			
00925	**BENFOTIAMINE** (Mega) • 250 mg, 120 veg. caps	30.00	22.50	20.25			
01206	**BERRY COMPLETE** • 30 veg. caps	21.00	15.75	14.00			
01496	**BERRY COMPLETE** (Enhanced) • 60 veg. caps	29.00	21.75	19.50			
00664	**BETA-CAROTENE** • 25,000 IU, 100 softgels	11.50	8.63				
01622	**BIFIDO GI BALANCE** • 60 veg. caps	20.00	15.00	13.50			
01873	**BILBERRY EXTRACT** • 100 mg, 90 veg. caps	36.00	27.00	24.00			
01512	**BIOACTIVE MILK PEPTIDES** • 30 caps	18.00	13.50	12.00			
01631	**BIO-COLLAGEN W/PATENTED UC-II®** • 40 mg, 60 small caps	36.00	27.00	24.00			
††01006	**BIOSIL™** • 5 mg, 30 veg. caps	19.99	15.99				
††01007	**BIOSIL™** • 1 fl oz	31.99	25.59				
00102	**BIOTIN** • 600 mcg, 100 caps	7.50	5.63	4.88			
01709	**BLACK CUMIN SEED OIL** • 60 softgels	16.00	12.00	10.50			
	SUBTOTAL OF COLUMN 1						

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
01710	**BLACK CUMIN SEED OIL W/BIO-CURCUMIN®** • 60 softgels	32.00	24.00	22.50			
01008	**BLAST™** • 600 grams of powder	26.97	20.23				
02025	**BLOOD PRESSURE** (Dual Action) • 60 veg. tabs	44.00	33.00	28.00			
70000	**BLOOD PRESSURE MONITOR (ACCUFIT™)** • med/lg cuff	79.99	49.99				
70004	**BLOOD PRESSURE MONITOR** • Digital wrist cuff	69.95	52.46				
02024	**BLOOD PRESSURE** (Triple Action AM/PM) • 60 veg. tabs	44.00	33.00	28.00			
01214	**BLUEBERRY EXTRACT** • 60 veg. caps	22.50	16.88	15.00			
01438	**BLUEBERRY EXTRACT W/ POMEGRANATE** • 60 veg. caps	30.00	22.50	20.25			
01506	**BONE FORMULA** (DR. STRUM'S INTENSIVE) • 300 caps	56.00	42.00	37.50			
01726	**BONE RESTORE** • 120 caps	22.00	16.50	14.25			
02123	**BONE RESTORE** • Chocolate, Sugar-Free • 60 chewable tabs	22.00	16.50	14.25			
01727	**BONE RESTORE W/VITAMIN K2** • 120 caps	24.00	18.00	16.50			
01725	**BONE STRENGTH FORMULA W/KOACT®** • 120 caps	45.00	33.75	30.00			
00313	**BONE-UP®** • 240 caps	28.95	21.71	20.41			
01661	**BORON** • 3 mg, 100 veg. caps	5.95	4.46	3.94			
00202	**BOSWELLA** • 100 caps	38.00	28.50	22.50			
00984	**BP MANAGEMENT** (Optimal) • 60 tablets	44.00	33.00	30.00			
01802	**BRAIN SHIELD® GASTRODIN** • 300 mg, 60 veg. caps	33.00	24.75	22.50			
01253	**BRANCHED CHAIN AMINO ACIDS** • 90 caps	19.50	14.63	12.75			
01942	**BREAST HEALTH FORMULA** • 60 caps	34.00	25.50	22.50			
00893	**BRITE EYES III** • 2 vials, 5 ml each	34.00	25.50	24.00			
01203	**BROMELAIN** (Specially-coated) 500 mg, 60 enteric coated tablets	21.00	15.75	14.25			
	C						
01653	**CALCIUM CITRATE W/VITAMIN D** • 300 caps	24.00	18.00	15.94			
01651	**CALCIUM D-GLUCARATE** • 200 mg, 60 veg. caps	18.00	13.50	11.25			
†01823	**CALREDUCE SELECTIVE FAT BINDER** 120 mint chewable tablets	45.00	33.75	28.50			
01700	**CARDIO PEAK™ w/STANDARDIZED HAWTHORN & ARJUNA** 120 veg. caps	36.00	27.00	24.00			
02018	**CARNITINE** (Optimized) • 60 veg. caps	30.00	22.50	20.00			
01532	**L-CARNITINE** • 500 mg, 30 veg. caps	15.00	11.25	9.90			
01829	**CARNOSINE** • 500 mg, 60 veg. caps	36.00	27.00	24.00			
02020	**CARNOSINE** (Super) • 500 mg, 60 veg. caps	40.00	30.00	27.00			
01932	**CAT MIX** • 100 grams powder	14.00	10.50	8.25			
02199	**CHILDREN'S FORMULA LIFE EXTENSION MIX™** 120 chewable tablets	25.00	18.75	17.00			
00550	**CHLORELLA** • 500 mg, 200 tablets	23.98	17.99				
01571	**CHLOROPHYLLIN** • 100 mg, 100 veg. caps	24.00	18.00	15.00			
01359	**CHO-LESS™**• 90 capsules	35.00	26.25				
01910	**CHOL-SUPPORT™** • 60 liquid veg. caps	48.00	36.00	32.00			
01504	**CHROMIUM W/CROMINEX®** 3+ (Optimized) 500 mcg, 60 veg. caps	9.00	6.75	6.00			
01503	**CINSULIN® W/INSEA2® AND CROMINEX® 3+** • 90 veg. caps	38.00	28.50	25.50			
01906	***CISTANCHE*** (Standardized) • 30 veg. caps	20.00	15.00	12.00			
01818	**CITRIMAX®** (Super) • 180 veg. caps	40.00	30.00	28.50			
00818	**CLA BLEND W/SESAME LIGNANS** (Super) • 120 softgels	36.00	27.00	24.75	19.75		
	SUBTOTAL OF COLUMN 2						

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
02103	**COCOAMIND™** • 14 packets	24.00	18.00	16.00			
01896	**COGNITEX® W/BRAIN SHIELD®** • 90 softgels	60.00	45.00	39.00	36.00		
01897	**COGNITEX® W/PREGNENOLONE & BRAIN SHIELD®** 90 softgels	62.00	46.50	39.75	37.50		
01421	**COGNITEX® BASICS** • 60 softgels	38.00	28.50	26.25	24.00		
01659	**COGNIZIN® CDP-CHOLINE CAPS** • 250 mg, 60 veg. caps	36.00	27.00	25.50			
02202	**COMFORTMAX™** • 30 day supply	44.00	33.00	29.00			
01945	**COMPLETE B-COMPLEX** (BioActive) • 60 veg. caps	12.00	9.00	8.00			
02298	**COMPREHENSIVE NUTRIENT PACKS ADVANCED** • 30 packs	90.00	67.50	61.50			
01949	**COQ10 w/*d*-LIMONENE** (Super-Absorbable) • 50 mg, 60 softgels	25.00	18.75	16.50	15.00		
01948	**COQ10 w/*d*-LIMONENE** (Super-Absorbable) 100 mg, 100 softgels	46.00	34.50	28.00	26.25		
01951	**COQ10 w/*d*-LIMONENE** (Super-Absorbable) 100 mg, 60 softgels	30.00	22.50	20.00			
01929	**COQ10** (Super Ubiquinol) • 100 mg, 60 softgels	56.00	42.00	36.00	33.00		
01733	**COQ10 w/PQQ®** (Super Ubiquinol) • 100 mg, 30 softgels	50.00	37.50	30.00	27.00		
01437	**COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super Ubiquinol) • 100 mg, 30 softgels	33.00	24.75	22.00			
01426	**COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super Ubiquinol) • 100 mg, 60 softgels	62.00	46.50	39.00	36.00		
01425	**COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super Ubiquinol) • 50 mg, 100 softgels	58.00	43.50	34.50	31.50		
01427	**COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super Ubiquinol) • 50 mg, 30 softgels	20.00	15.00	12.00			
01431	**COQ10 w/ENH MITOCHONDRIAL SUPPORT™** (Super Ubiquinol) • 200 mg, 30 softgels	62.00	46.50	39.00	36.00		
02012	**CORTISOL BALANCE** (Advanced) • 30 veg. caps	45.00	33.75	30.00			
00862	**CRAN-MAX®** • 500 mg, 60 veg. caps	17.50	13.13	11.25			
01424	**CRAN-MAX® WITH ELLIROSE™** (Optimized) • 60 veg. caps	18.00	13.50	12.00			
01529	**CREATINE CAPSULES** • 120 veg. caps	10.95	8.21	6.94			
01746	**CREATINE WHEY GLUTAMINE POWDER** • 454 grams (vanilla)	30.00	22.50	19.50			
00467	**CURCUMIN®** (Super Bio) • 400 mg, 30 veg. caps	20.00	15.00	14.00			
00407	**CURCUMIN®** (Super Bio) • 400 mg, 60 veg. caps	38.00	28.50	26.25			
01924	**CURCUMIN® W/GINGER & TURMERONES** (Advanced Bio) 30 softgels	30.00	22.50	20.25			
01804	**CYTOKINE SUPPRESS™ W/EGCG** • 30 veg. caps	30.00	22.50	20.25			
	COSMESIS						
80157	**ADVANCED ANTI-GLYCATION PEPTIDE SERUM** • 1 fl. oz	53.00	39.75	34.50			
80165	**ADVANCED GROWTH FACTOR SERUM** • 1 fl. oz	65.00	48.75	42.75			
80154	**ADVANCED LIGHTENING CREAM** • 1 oz	65.00	48.75	42.75			
80155	**ADVANCED PEPTIDE HAND THERAPY** • 4 oz	46.00	34.50	29.25			
80152	**ADVANCED TRIPLE PEPTIDE SERUM** • 1 fl. oz	65.00	48.75	42.75			
80140	**ADVANCED UNDER EYE SERUM W/STEM CELLS** • .33 oz	49.00	36.75	31.50			
80139	**AMBER SELF MICRODERMABRASION** • 2 oz	49.00	36.75	31.50			
80158	**ANTI-AGING FACE OIL** • 1 fl. oz	59.00	44.25	39.00			
80118	**ANTI-AGING MASK** • 2 oz	72.00	54.00	47.52			
80151	**ANTI-AGING REJUVENATING FACE CREAM** • 2 oz	65.00	48.75	42.75			
80153	**ANTI-AGING REJUVENATING SCALP SERUM** • 2 fl. oz	46.00	34.50	29.25			
80134	**ANTI-GLYCATION SERUM W/BLUEBERRY & POMEGRANATE EXTRACTS** • 1 fl. oz	33.00	24.75	23.51			
	SUBTOTAL OF COLUMN 3						

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
80133	**ANTIOXIDANT FACIAL MIST HYDRATOR** • 2 fl. oz	32.00	24.00	22.80			
80105	**ANTI-REDNESS & ADULT BLEMISH LOTION** • 1 oz	74.50	55.88	49.17			
80156	**COLLAGEN BOOSTING PEPTIDE SERUM** • 1 fl. oz	59.00	44.25	39.00			
80141	**DNA REPAIR CREAM** • 1 oz	49.00	36.75	31.50			
80167	**ENVIRONMENTAL SUPPORT SERUM** • 1 fl. oz	59.00	44.25	39.00			
80108	**ESSENTIAL PLANT LIPIDS REPARATIVE SERUM** • 1 oz	74.95	56.21	49.46			
80163	**EYE LIFT CREAM** • 0.5 fl. oz	59.00	44.25	39.00			
80123	**FACE REJUVENATING ANTIOXIDANT CREAM** • 2 oz	69.50	52.13	45.87			
80137	**HEALING FORMULA ALL-IN-ONE CREAM** • 1 oz	53.00	39.75	34.07			
80102	**HEALING VITAMIN K CREAM** • 1 oz	79.50	59.63	52.47			
80109	**HYALURONIC FACIAL MOISTURIZER** • 1 oz	58.00	43.50	38.28			
80110	**HYALURONIC OIL-FREE FACIAL MOISTURIZER** • 1 oz	58.00	43.50	38.28			
80138	**HYDRATING ANTIOXIDANT FACE MIST** • 4 fl. oz	39.95	29.96	28.50			
80103	**LIFTING & TIGHTENING COMPLEX** • 1 oz	74.50	55.88	49.17			
80135	**MELATONIN CREAM** • 1 oz	33.00	24.75	20.33			
80114	**MILD FACIAL CLEANSER** • 8 fl. oz	59.00	44.25	38.94			
80159	**MULTI STEM CELL SKIN TIGHTENING COMPLEX** • 1 fl. oz	59.00	44.25	39.00			
80122	**NECK REJUVENATING ANTIOXIDANT CREAM** • 2 oz	64.00	48.00	42.24			
80150	**RENEWING EYE CREAM** • 1/2 oz	65.00	48.75	42.75			
80142	**RESVERATROL ANTI-OXIDANT SERUM** • 1 oz	46.00	34.50	29.25			
80166	**SKIN FIRMING COMPLEX** • 1 fl. oz (2 units $34.50)	53.00	39.75				
80112	**SKIN LIGHTENING SERUM** • 1/2 fl. oz	85.00	63.75	56.10			
80130	**SKIN STEM CELL SERUM** • 1 fl. oz	74.00	55.50	51.75			
80164	**SKIN TONE EQUALIZER** • 0.4 fl oz	59.00	44.25	39.00			
80143	**STEM CELL CREAM W/ALPINE ROSE** • 1 oz	66.00	49.50	43.50			
80148	**TIGHTENING & FIRMING NECK CREAM** • 2 oz	39.00	29.25	26.25			
80161	**TRIPLE ACTION VITAMIN C CREAM** • 1 oz jar	59.00	44.25	39.00			
80162	**ULTIMATE MICRODERMABRASION** • 8 fl. oz	39.00	29.25	26.25			
80160	**ULTRA EYELASH BOOSTER** • 0.25 oz (2 units $39)	59.00	44.25				
80116	**ULTRA LIP PLUMPER** • 1/3 oz	64.00	48.00	42.24			
80101	**ULTRA WRINKLE RELAXER** • 1 oz	89.95	67.46	59.82			
80113	**UNDER EYE REFINING SERUM** • 1/2 oz	74.50	55.88	49.17			
80104	**UNDER EYE RESCUE CREAM** • 1/2 oz	74.50	55.88	49.17			
80129	**VITAMIN C SERUM** • 1 fl. oz	85.00	63.75	56.10			
80136	**VITAMIN D LOTION** • 4 oz	36.00	27.00	25.25			
80145	**VITAMIN E-ESSENTIAL CREAM** • 1 oz	28.00	21.00	19.50			
80149	**YOUTH SERUM** • 1 oz	65.00	48.75	42.75			
	D						
00658	**7-KETO® DHEA METABOLITE** • 25 mg, 100 caps	28.00	21.00	18.00			
01479	**7-KETO® DHEA METABOLITE** • 100 mg, 60 veg. caps	40.00	30.00	27.00			
01640	**DHA** (Vegetarian) • 30 veg. softgels	20.00	15.00	13.50			
00607	**DHEA** • 25 mg, 100 tablets (Dissolve in mouth)	14.00	10.50	8.81			
01478	**DHEA COMPLETE** • 60 veg. caps	48.00	36.00	32.40			
00335	**DHEA** • 25 mg, 100 caps	16.00	12.00	11.00			
00454	**DHEA** • 15 mg, 100 caps	14.00	10.50	9.00			
00882	**DHEA** • 50 mg, 60 caps	19.00	14.25	12.75			
	SUBTOTAL OF COLUMN 4						

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
01689	**DHEA** • 100 mg, 60 veg. caps	24.00	18.00	16.50			
01358	**DIGEST RC®** • 30 tablets	19.95	14.96	12.75			
02021	**DIGESTIVE ENZYMES** (Enhanced Super) • 60 veg. caps	22.00	16.50	15.00			
02022	**DIGESTIVE ENZYMES w/PROBIOTICS** (Enhanced Super)•60 veg. caps	28.00	21.00	18.00			
01671	**D, L-PHENYLALANINE** • 500 mg, 100 veg. caps	18.75	14.06	12.00			
01540	**DMAE BITARTRATE** • 150 mg, 200 veg. caps	18.00	13.50	11.25			
02270	**DNA PROTECTION FORMULA** • 30 veg. caps	20.00	15.00	13.50			
01931	**DOG MIX** • 100 grams powder	18.00	13.50	11.25			
02006	**DOPA-MIND™** • 60 veg. tabs	44.00	33.00	28.00			
00321	**DR. PROCTOR'S ADVANCED HAIR FORMULA** • 2 oz	39.95	29.96	24.00			
00320	**DR. PROCTOR'S HAIR SHAMPOO** • 8 oz	24.95	18.71	16.50			
	E						
01997	**ENDOTHELIAL DEFENSE™ w/POMEGRANATE COMPLETE AND CORDIART™** • 60 softgels	68.00	51.00	46.50			
00997	**ENDOTHELIAL DEFENSE™ w/GLISODIN®** • 60 veg. caps	54.00	40.50	36.00			
02200	**EPA/DHA** (Clearly) • 120 softgels	30.00	22.50	20.00			
02009	**ESOPHACOOL™** • 120 chewable tablets	20.00	15.00	13.50			
01737	**ESOPHAGEAL GUARDIAN** (Berry flavor) • 60 chewable tablets	36.00	27.00	24.00			
01042	**EUROPEAN LEG SOLUTION DIOSMIN 95** 600 mg, 30 veg. tabs	20.00	15.00	13.50			
01706	**EXTRAORDINARY ENZYMES** • 60 caps	26.00	19.50	18.00			
02008	**(CALIFORNIA ESTATE) EXTRA VIRGIN OLIVE OIL** • 500 ml (16.9 fl. oz)	33.00	24.75	22.50			
01514	**EYE PRESSURE SUPPORT W/MIRTOGENOL®** • 30 veg. caps	38.00	28.50	25.50			
	F						
00965	**FAST-ACTING JOINT FORMULA** • 30 caps	39.00	29.25	27.00			
01717	**FAST-C® W/DIHYDROQUERCETIN** • 120 veg. tabs	26.00	19.50	18.00			
01064	**FEMMENESSENCE MACAPAUSE®** • 120 veg. caps	34.99	26.24				
02125	**FLORASSIST® GI w/PHAGE TECHNOLOGY**•30 liquid veg. caps	33.00	24.75	22.50			
01821	**FLORASSIST® HEART HEALTH** • 60 veg. caps	32.00	24.00	21.00			
02124	**FLORASSIST® IMMUNE HEALTH** • 30 veg. caps	26.00	19.50	18.00			
02120	**FLORASSIST® ORAL HYGIENE** • 30 lozenges	20.00	15.00	13.00			
01825	**FLORASSIST® BALANCE** • 30 liquid veg. caps	32.00	24.00	21.00			
02000	**FLORASSIST® MOOD** • 60 caps	33.00	24.75	22.50			
02203	**FLORASSIST® PREBIOTIC** •Natural Strawberry, 60 chewable tabs	20.00	15.00	13.00			
01920	**FLORASSIST® THROAT HEALTH** • 30 lozenges	20.00	15.00	13.50			
01913	**FOLATE HIGH POTENCY** (Optimized) • 5,000 mcg, 30 veg. tablets	18.00	13.50	12.00			
01939	**FOLATE** (Optimized) • 1,000 mcg, 100 veg. tablets	15.00	11.25	10.00			
01842	**FOLATE + VITAMIN B12** (BioActive) • 90 veg. caps	12.00	9.00	8.00			
01544	**FORSKOLIN** • 10 mg, 60 veg. caps	16.00	12.00	10.50			
01513	**FUCOIDAN W/MARITECH® 926** (Optimized) • 60 veg. caps	36.00	27.00	24.75			
	G						
02070	**GAMMA E MIXED TOCOPHEROL/TOCOTRIENOLS** • 60 softgels	40.00	30.00	27.00			
02075	**GAMMA E MIXED TOCOPHEROL w/ENHANCED SESAME LIGNANS** • 60 softgels	32.00	24.00	21.75			
01394	**GARLIC** (Optimized) • 200 veg. caps	24.95	18.71	15.75			
02100	**GASTRO-EASE™** • 60 veg. caps	44.00	33.00	30.00			
02119	**GEROPROTECT™ AGELESS CELL™** • 30 softgels	40.00	30.00	27.00			
02133	**GEROPROTECT™ LONGEVITY A.I.™** • 30 softgels	56.00	42.00	38.00			

SUBTOTAL OF COLUMN 5

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
**01122	**GINGER FORCE®** • 60 liquid caps	34.95	26.21				
01658	**GINKGO BILOBA CERTIFIED EXTRACT™** 120 mg, 365 veg. caps	50.00	37.50	33.00			
00756	**GLA WITH SESAME LIGNANS** (Mega) • 60 softgels	19.50	14.63	13.50			
00345	**(L-) GLUTAMINE CAPSULES** • 500 mg, 100 veg. caps	14.95	11.21	10.13			
00141	**(L-) GLUTAMINE POWDER** • 100 grams	22.00	16.50	15.00			
00522	**GLUCOSAMINE/CHONDROITIN CAPSULES** • 100 caps	38.00	28.50	24.00			
01541	**GLUTATHIONE, CYSTEINE & C** • 100 veg. caps	22.00	16.50	15.00			
02122	**GLYCEMIC GUARD™** • 30 veg. caps	42.00	31.50	28.00			
01669	**GLYCINE** • 1,000 mg, 100 veg. caps	12.00	9.00	8.10			
01411	**GRAPE SEED EXTRACT W/RESVERATROL & PTEROSTILBENE** 100 mg, 60 veg. caps	36.00	27.00	25.50			
01620	**GREEN COFFEE EXTRACT COFFEEGENIC®** 400 mg, 90 veg. caps	32.00	24.00	21.00			
00953	**GREEN TEA EXTRACT** (Mega)•lightly caffeinated,100 veg. caps	30.00	22.50	18.00			
00954	**GREEN TEA EXTRACT** (Mega)•decaffeinated, 100 veg. caps	30.00	22.50	18.00			
	H						
01074	**5 HTP** • 100 mg, 60 caps	27.95	20.96				
**02002	**HAIR, SKIN & NAIL REJUVENATION FORM W/VERISOL®** 90 tabs	32.00	24.00	22.00			
01738	**HCA** (Garcinia) • 90 veg. caps	17.00	12.75	11.25			
29754	**HCACTIVE™ GARCINIA CAMBOGIA EXTRACT** • 90 caps	30.00	22.50				
01393	**HEPATOPRO** • 900 mg, 60 softgels	50.00	37.50	34.50			
02121	**HOMOCYSTEINE RESIST** • 60 veg. caps	26.00	19.50	17.50			
01527	**HUPERZINE A** • 200 mcg, 60 veg. caps	40.00	30.00	27.00			
00661	**HYDRODERM®** • 1 oz	79.95	59.96	49.00			
	I						
01704	**IMMUNE MODULATOR W/TINOFEND®** • 60 veg. caps	17.00	12.75	11.25			
00955	**IMMUNE PROTECT W/PARACTIN®** • 30 veg. caps	29.50	22.13	19.91			
02005	**IMMUNE SENESCENCE PROTECTION FORMULA™** •60 veg. tabs	40.00	30.00	27.00			
01674	**INOSITOL CAPSULES** • 1,000 mg, 360 veg. caps	62.00	46.50	43.50			
01292	**INTEGRA-LEAN® AFRICAN MANGO IRVINGIA** 150 mg, 60 veg. caps	28.00	21.00	18.00			
30731	**IONIC SELENIUM** • 2 oz, 300 mcg	13.69	10.27				
01677	**IRON PROTEIN PLUS** • 300 mg, 100 caps	28.00	21.00	19.50			
01492	**IRVINGIA W/PHASE 3™ CALORIE CONTROL COMPLEX** (Optimized African Mango)• 120 veg. caps	56.00	42.00	36.00			
	J, K, L						
52142	**JARRO-DOPHILUS® PROBIOTIC FOR WOMEN** 30 enteric-coated veg. caps	27.95	20.96				
00056	**JARRO-DOPHILUS EPS®** • 60 veg. caps	23.95	17.96				
02034	**K W/ADVANCED K2 COMPLEX** (Super) • 90 softgels	30.00	22.50	20.25			
01600	**KRILL HEALTHY JOINT FORMULA** • 30 softgels	32.00	24.00	21.75			
01050	**KRILL OIL** (Jarrow)• 60 softgels	33.95	25.46				
00316	**KYOLIC® GARLIC FORMULA 102** • 200 veg. caps	27.45	20.59				
00789	**KYOLIC® RESERVE** • 600 mg, 120 caps	28.95	21.71				
01681	**LACTOFERRIN** • 60 caps	44.00	33.00	30.00			
00020	**LECITHIN** • 16 oz granules	18.00	13.50	12.00			
02255	**LIFE EXTENSION MIX™** • 240 tablets	74.00	55.50	48.00	42.00		

SUBTOTAL OF COLUMN 6

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
02257	**LIFE EXTENSION MIX™ W/EXTRA NIACIN** • 240 tablets	74.00	55.50	48.00	42.00		
02254	**LIFE EXTENSION MIX™** • 360 caps	78.00	58.50	50.00	44.00		
02256	**LIFE EXTENSION MIX™ POWDER** • 12.70 oz	72.00	54.00	46.00	40.00		
02265	**LIFE EXTENSION MIX™** • 240 tablets w/o copper	74.00	55.50	48.00	42.00		
02264	**LIFE EXTENSION MIX™** • 360 caps w/o copper	78.00	58.50	50.00	44.00		
01608	**LIVER EFFICIENCY FORMULA** • 30 veg. caps	18.00	13.50	12.00			
01639	**5-LOX INHIBITOR W/APRÈSFLEX®** • 100 mg, 60 veg. caps	22.00	16.50	15.00			
01678	**L-LYSINE** • 620 mg, 100 veg. caps	9.00	6.75	6.00			
00455	**LYCOPENE** (Mega) • 15 mg, 90 softgels	35.00	26.25	22.50			
	M						
01992	**MACUGUARD® OCULAR SUPPORT w/SAFFRON**• 60 softgels	25.00	18.75	17.50			
01993	**MACUGUARD® OCULAR SUPPORT w/SAFFRON & ASTAXANTHIN**• 60 softgels	44.00	33.00	30.00			
01459	**MAGNESIUM CAPS** • 500 mg, 100 veg. caps	12.00	9.00	7.50			
01682	**MAGNESIUM (CITRATE)** • 160 mg, 100 veg. caps	13.00	9.75	8.50			
02107	**(EXTEND-RELEASE) MAGNESIUM** • 60 veg. caps	13.00	9.75	8.75			
01908	**MEDITERRANEAN TRIM WITH SINETROL™-XPUR** 60 veg. caps	18.00	13.50	12.00			
02109	**MEDITERRANEAN WHOLE FOOD BLEND** • 90 veg. caps	44.00	33.00	30.00			
01668	**MELATONIN** • 300 mcg, 100 veg. caps	7.00	5.25	4.50			
01083	**MELATONIN** • 500 mcg, 200 veg. caps	18.00	13.50	12.00			
00329	**MELATONIN** • 1 mg, 60 caps	5.00	3.75	3.47			
00330	**MELATONIN** • 3 mg, 60 veg. caps	8.00	6.00	5.16			
00331	**MELATONIN** • 10 mg, 60 veg. caps	28.00	21.00	18.00			
00332	**MELATONIN** • 3 mg, 60 veg. lozenges	8.00	6.00	5.16			
01734	**MELATONIN** (Fast-Acting Liquid) • 2 fl. oz (Citrus-Vanilla)	12.00	9.00	8.25			
01787	**MELATONIN TIMED RELEASE** • 300 mcg, 100 veg. tabs	12.00	9.00	8.25			
01788	**MELATONIN TIMED RELEASE** • 750 mcg, 60 veg. tablets	8.00	6.00	5.25			
01786	**MELATONIN TIMED RELEASE** • 3 mg, 60 veg. tabs	12.00	9.00	8.25			
02101	**MEMORY PROTECT** • 36 day supply	24.00	18.00	16.00			
01536	**METHYLCOBALAMIN** • 1 mg, 60 veg. lozenges (vanilla)	9.95	7.46	6.00			
01537	**METHYLCOBALAMIN** • 5 mg, 60 veg. lozenges (vanilla)	32.00	24.00	18.75	17.25		
00709	**MIGRA-EEZE™** (Butterbur) • 60 softgels	33.00	24.75	22.00			
01522	**MILK THISTLE** (European) • 60 veg. caps	34.00	25.50	22.50			
01922	**MILK THISTLE** (European) • 60 softgels	28.00	21.00	18.75			
01925	**MILK THISTLE** (European) • 120 softgels	44.00	33.00	30.00			
01940	**MIRAFORTE w/STANDARDIZED LIGNANS** (Super) • 120 veg caps	62.00	46.50	42.00			
01869	**MITOCHONDRIAL BASICS W/BIOPQQ®** • 30 caps	40.00	30.00	27.00			
01868	**MITOCHONDRIAL ENERGY OPTIMIZER w/PQQ®**•120 caps	68.00	51.00	45.00			
00065	**MK-7** • 90 mcg, 60 softgels	28.00	21.00	18.75			
00451	**MSM** (Methylsulfonylmethane) • 1,000 mg, 100 caps	14.00	10.50	8.96			
	N						
01534	**N-ACETYL-L-CYSTEINE** • 600 mg, 60 veg. caps	14.00	10.50	9.25			
01904	**NAD+ CELL REGENERATOR™** • 100 mg, 30 veg. caps	22.00	call for pricing				
02144	**NAD+ CELL REGENERATOR™ NICOTINAMIDE RIBOSIDE** 250 mg, 30 veg. caps	42.00	call for pricing				
02148	**NAD+ CELL REGENERATOR™ W/RESVERATROL** (Optimized) 30 veg. caps	48.00	call for pricing				

SUBTOTAL OF COLUMN 7

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
01807	**NATURAL APPETITE SUPPRESS** (Advanced) • 60 veg. caps	38.00	28.50	25.50			
01894	**NATURAL ESTROGEN** • 30 veg. tabs	30.00	22.50	20.00			
01626	**NATURAL SEX FOR WOMEN® 50+** (Advanced) • 90 veg. caps	59.00	44.25	34.00			
01444	**NATURAL SLEEP®** • 60 veg. caps	13.00	9.75	7.50			
01551	**NATURAL SLEEP® w/ MELATONIN** (Enhanced) • 30 caps	22.00	16.50	15.00			
01511	**NATURAL SLEEP® W/O MELATONIN** (Enhanced) • 30 caps	20.00	15.00	13.50			
01603	**NEURO-MAG® MAGNESIUM L-THREONATE** • 90 veg. caps	40.00	30.00	27.00			
02032	**NEURO-MAG® MAGNESIUM L-THREONATE** 93.35 grams • Tropical Punch Flavor	38.00	28.50	26.00			
01990	**NITROVASC w/CORDIART™** • 30 veg. caps	18.00	13.50	12.00			
01903	**NK CELL ACTIVATOR™** • 30 veg. tablets	45.00	33.75	31.50			
00373	**NO FLUSH NIACIN** • 800 mg, 100 caps	19.00	14.25	12.75			
	O						
01824	**OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRACT** (Advanced) • 60 veg. caps	36.00	27.00	24.00			
01937	**OMEGA-3** (EPA/DHA) • 120 softgels	20.00	15.00	13.50			
01988	**OMEGA-3 PLUS EPA/DHA w/SESAME LIGNANS, OLIVE EXTRACT, KRILL & ASTAXANTHIN** (SUPER)• 120 softgels	45.00	33.75	31.50	24.75		
01983	**OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT** (Super) • 60 softgels	18.00	13.50	12.00	9.38		
01982	**OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT** (Super) • 120 softgels	32.00	24.00	21.00	17.05		
01984	**OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT** (Super) • 120 enteric coated softgels	34.00	25.50	23.25	18.00		
01985	**OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT** (Super) • 60 enteric coated softgels	20.00	15.00	13.50	10.50		
01986	**OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT** (Super) • 240 small softgels	32.00	24.00	21.00	17.25		
02092	**ONCE-DAILY HEALTH BOOSTER** • 30 softgels	30.00	22.50	20.00			
02091	**ONCE-DAILY HEALTH BOOSTER** • 60 softgels	54.00	40.50	38.00			
02213	**ONE-PER-DAY** • 60 tablets	23.00	17.25	16.00			
01328	**ONLY TRACE MINERALS** • 90 veg. caps	15.00	11.25	9.38			
	P						
01789	**PALMETTOGUARD® SAW PALMETTO W/BETA-SITOSTEROL** 30 softgels	15.00	11.25	10.50	9.00		
01790	**PALMETTOGUARD® SAW PALMETTO/ NETTLE ROOT W/BETA-SITOSTEROL** • 60 softgels	28.00	21.00	19.50	18.00		
*00342	**PECTA SOL-C® MODIFIED CITRUS PECTIN** • 454 grams powder	113.95	96.86				
*01080	**PECTA SOL-C® MODIFIED CITRUS PECTIN** • 270 veg. caps	82.95	70.51				
01811	**PEONY IMMUNE** • 60 veg. caps	36.00	27.00	24.00			
**00673	**PGX® PLUS MULBERRY** (WellBetX®) • 180 veg. caps	34.95	26.21				
01953	**POMEGRANATE COMPLETE** • 30 softgels	24.00	18.00	15.75			
00956	**POMEGRANATE FRUIT EXTRACT** • 30 veg. caps	19.50	14.63	13.16			
**01837	**POMI-T®** • 60 veg. caps	35.00	26.25	24.00			
00577	**POTASSIUM IODIDE** • 130 mg, 14 tabs	6.95	5.21	3.94			
01500	**PQQ CAPS** • 10 mg, 30 veg. caps	18.00	13.50	11.00	10.00		
01647	**PQQ CAPS** • 20 mg, 30 veg. caps	32.00	24.00	18.00	17.00		
00302	**PREGNENOLONE** • 50 mg, 100 caps	26.00	19.50	16.50			
00700	**PREGNENOLONE** • 100 mg, 100 caps	30.00	22.50	20.25			
**01373	**PRELOX® ENHANCED SEX FOR MEN** • 60 tablets	52.00	39.00	36.00			

SUBTOTAL OF COLUMN 8

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
00525	**PROBOOST™ THYMIC PROTEIN A** • 30 packets	66.60	49.95				
01441	**PROGESTA-CARE®** • 4 oz cream	36.39	27.29	25.72			
02029	**PROSTATE FORMULA** (Ultra Natural) • 60 softgels	38.00	28.50	26.25	24.00		
01909	**PROSTAPOLLEN™** (Triple strength) • 30 softgels	28.00	21.00	18.75			
01742	**PROTEIN-ISOLATE** (Whey) Vanilla • 403 grams	30.00	22.50	19.50			
01743	**PROTEIN-ISOLATE** (Whey) Chocolate • 437 grams	30.00	22.50	19.50			
01770	**PROTEIN CONCENTRATE** (New Zealand Whey) Vanilla 500 grams	30.00	22.50	19.95			
01771	**PROTEIN CONCENTRATE** (New Zealand Whey) Chocolate 640 grams	30.00	22.50	19.95			
02127	**PROTEIN (PLANT) COMPLETE & AMINO ACID COMPLEX** 15.87 oz	34.00	25.50	23.00			
01812	**PROVINAL® PURIFIED OMEGA-7** • 30 softgels	27.00	20.25	18.00			
01676	**PS CAPS** (Phosphatidylserine) • 100 mg, 100 veg. caps	54.00	40.50	36.00			
01508	**PTEROPURE®** Pterostilbene• 50 mg, 60 veg. caps	32.00	24.00	22.50			
01209	**PUMPKIN SEED EXTRACT** (Water-soluble) • 60 veg. caps	20.00	15.00	13.50			
01637	**PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT** 100 mg, 60 veg. caps	64.00	48.00	45.00			
01217	**PYRIDOXAL 5'-PHOSPHATE** • 100 mg, 60 veg. caps	22.00	16.50	14.85			
	Q, R						
01309	**QUERCETIN** (Optimized) • 250 mg, 60 veg. caps	22.00	16.50	15.00			
01030	**RED YEAST RICE** (Bluebonnet) • 600 mg, 60 veg. caps	18.08	13.56				
00605	**REGIMINT** • 60 enteric-coated caps	19.95	14.96	14.00			
01708	**REISHI EXTRACT MUSHROOM COMPLEX** • 60 veg. caps	30.00	22.50	20.25			
01448	**REJUVENEX® BODY LOTION** • 6 fl. oz	24.00	18.00	14.85	12.75		
01621	**REJUVENEX® FACTOR FIRMING SERUM** • 1.7 oz	65.00	48.75	37.50			
01220	**REJUVENEX® (ULTRA)** • 2 oz	52.00	39.00	33.00	29.25		
00676	**REJUVENIGHT® (ULTRA)** • 2 oz	39.95	29.96	27.00			
01410	**RESVERATROL W/PTEROSTILBENE** • 100 mg, 60 veg. caps	36.00	27.00	24.00			
02030	**RESVERATROL** (Optimized) • 60 veg. caps	46.00	34.50	31.00			
00889	**RHODIOLA EXTRACT** • 250 mg, 60 veg. caps	14.00	10.50	9.00			
01900	**RIBOGEN™ FRENCH OAK WOOD EXTRACT** 200 mg, 30 veg. caps	36.00	27.00	24.75			
00972	**(D) RIBOSE POWDER** • 150 grams	27.50	20.63	18.56			
01473	**(D) RIBOSE TABLETS** • 100 veg. tabs	32.00	24.00	21.00			
02169	**RAINFOREST BLEND GROUND COFFEE** • 12 oz. bag	13.00	9.75				
02173	**RAINFOREST BLEND GROUND COFFEE** Natural Mocha • 12 oz. bag	15.00	11.25				
02172	**RAINFOREST BLEND GROUND COFFEE** Natural Vanilla • 12 oz. bag	15.00	11.25				
02171	**RAINFOREST BLEND WHOLE BEAN COFFEE** 12 oz. bag	13.00	9.75				
02170	**RAINFOREST BLEND DECAFFEINATED ROAST GROUND COFFEE** 12 oz. bag	14.00	10.50				
01208	**R-LIPOIC ACID** (Super) • 240 mg, 60 veg. caps	49.00	36.75	33.75			
00070	**RNA CAPSULES** • 500 mg, 100 caps	17.95	13.46	12.12			
	S						
01432	**SAFFRON W/SATIEREAL®** (Optimized) • 60 veg. caps	36.00	27.00	24.00			
01935	**SAMe** (S-ADENOSYL-METHIONINE) 200 mg, 30 enteric coated tablets	25.00	18.75	16.50			

SUBTOTAL OF COLUMN 9

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
01933	**SAMe** (S-ADENOSYL-METHIONINE) 400 mg, 30 enteric coated tablets	36.00	27.00	24.00			
01934	**SAMe** (S-ADENOSYL-METHIONINE) 400 mg, 60 enteric coated tablets	66.00	49.50	45.00			
01740	**SEA-IODINE™** • 1,000 mcg, 60 veg. caps	8.00	6.00	5.40			
01879	**SE-METHYL L-SELENOCYSTEINE** • 200 mcg, 90 veg. caps	11.00	8.25	7.50			
00318	**SERRAFLAZYME** • 100 tablets	18.00	13.50	12.00			
01938	**SHADE FACTOR™** • 120 veg. caps	44.00	33.00	30.00			
02110	**SHADE FACTOR™ SUNSCREEN LOTION** • 4 fl. oz	20.00	15.00	13.00			
02118	**SHADE FACTOR™ SUNSCREEN SPRAY** • 6 fl. oz	22.00	16.50	14.25			
01884	**SILYMARIN** • 100 mg, 90 veg. caps	14.00	10.50	9.50			
01249	**SINUS CLEANSER** • 4 oz. bottle	25.00	18.75				
02129	**SKIN CARE COLLECTION ANTI-AGING SERUM** • 1.75 fl. oz	60.00	45.00	37.50			
02132	**SKIN CARE COLLECTION BODY LOTION** • 6 oz	28.00	21.00	18.00			
02130	**SKIN CARE COLLECTION DAY CREAM** • 1.65 oz	50.00	37.50	33.00			
02131	**SKIN CARE COLLECTION NIGHT CREAM** • 1.65 oz	39.00	29.25	27.00			
01596	**SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT®** 30 liquid veg. caps	25.00	18.75	17.25			
01445	**SLEEP MELATONIN** (Quiet) • 5 mg, 60 veg. caps	18.00	13.50	12.00			
00961	**SODZYME® w/GLISODIN® & WOLFBERRY** • 90 veg. caps	28.00	21.00	18.00			
00657	**SOLARSHIELD® SUNGLASSES** • Smoke color	12.99	9.74	8.63			
01097	**SOY EXTRACT (ULTRA)** • 150 veg. caps	76.00	57.00	50.00			
01649	**SOY ISOFLAVONES (SUPER ABSORBABLE)** • 60 veg. caps	28.00	21.00	18.75			
00432	**STEVIA™** (Better) • 100 packets, 1 gram each	9.95	7.46				
00438	**STEVIA™ ORGANIC LIQUID SWEETENER** (Better) • 2 oz	11.00	8.25				
00987	**STRESS RELIEF** (Enhanced) • 30 veg. caps	28.00	21.00	18.00			
01476	**STRONTIUM** • 750 mg, 90 veg. caps	20.00	15.00	13.50			
01778	**SUPER SELENIUM COMPLEX** • 200 mcg, 100 veg. caps	14.00	10.50	9.00	8.25		
	T						
02023	**TART CHERRY W/CHERRYPURE®** 60 veg. caps	20.00	15.00	14.00			
01827	**TAURINE** • 1,000 mg, 90 veg. caps	13.00	9.75	9.00			
01918	**TEAR SUPPORT w/MAQUIBRIGHT®** • 60 mg, 30 veg. caps	18.00	13.50	12.00			
00133	**L-TAURINE POWDER** • 300 grams	20.00	15.00	12.66			
*13685	**TEN MUSHROOM FORMULA®** • 120 veg. caps	41.95	35.66				
01304	**THEAFLAVIN STANDARDIZED EXTRACT** • 30 veg. caps	18.00	13.50	12.00			
01683	**(L) THEANINE** • 100 mg, 60 veg. caps	24.00	18.00	15.38			
***01038	**THERALAC® PROBIOTICS** • 30 caps	47.95	35.96				
00668	**THYROID FORMULA** (Metabolic Advantage™) • 100 caps	21.95	16.46				
00349	**TMG POWDER** • 50 grams	14.00	10.50	8.25			
01859	**TMG** • 500 mg, 60 liquid veg. caps	13.00	9.75	9.00			
01400	**TOCOTRIENOLS** (Super-absorbable) • 60 softgels	30.00	22.50	21.00			
01278	**TOOTHPASTE** • 4 oz (Mint) tube	9.50	7.13	6.50			
01917	**TRANQUIL TRACT™** • 60 veg. caps	52.00	39.00	34.50			
01468	**TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT** 60 veg. caps	24.00	18.00	16.50			
01469	**TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT w/RESVERATROL** • 60 veg. caps	32.00	24.00	22.20			

SUBTOTAL OF COLUMN 10

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
02003	**TRIPLE ACTION THYROID** • 60 veg. caps	36.00	27.00	24.00			
01803	**TRI SUGAR SHIELD®** • 60 veg. caps	36.00	27.00	24.00			
01386	**TRUFIBER™** • 180 grams	32.95	24.71				
01389	**TRUFLORA® PROBIOTICS** • 32 veg. caps	42.95	32.21				
01722	**L-TRYPTOPHAN** • 500 mg, 90 veg. caps	33.00	24.75	22.50			
01721	**TRYPTOPHAN PLUS** (Optimized) • 90 veg. caps	32.00	24.00	21.75			
02216	**TWO-PER-DAY** • 60 tablets	12.00	9.00	7.50			
02215	**TWO-PER-DAY** • 120 tablets	21.00	15.75	14.00			
02217	**TWO-PER-DAY** • 60 caps	12.00	9.00	8.00			
02214	**TWO-PER-DAY** • 120 caps	24.00	18.00	16.00			
00326	**L-TYROSINE** • 500 mg, 100 tablets	13.50	10.13				
	U, V						
01921	**URIC ACID CONTROL** • 60 veg. caps	24.00	18.00	16.50			
00213	**VANADYL SULFATE** • 7.5 mg, 100 veg. tablets	15.00	11.25	9.38			
02102	**VENOFLOW™** • 30 veg. caps	52.00	39.00	36.00			
00408	**VENOTONE** • 60 caps	18.95	14.21	12.00			
01327	**VINPOCETINE** • 10 mg, 100 veg. tablets	18.00	13.50	10.50			
00372	**VITAMIN B3 NIACIN** • 500 mg, 100 caps	7.65	5.74	4.99			
02028	**VITAMIN B5** • 500 mg, 100 veg. caps (Pantothenic Acid)	14.00	10.50	9.50			
01535	**VITAMIN B6** • 250 mg, 100 veg. caps	12.50	9.38	8.25			
00361	**VITAMIN B12** • 500 mcg, 100 lozenges	8.75	6.56	5.44			
01634	**VITAMIN C w/DIHYDROQUERCETIN** 1,000 mg, 60 veg. tablets	10.00	7.50	6.75			
00927	**VITAMIN C w/DIHYDROQUERCETIN** 1,000 mg, 250 veg. tablets	30.00	22.50	20.00			
00084	**VITAMIN C POWDER** (BUFFERED)• 454 grams	28.00	21.00	19.00			
01736	**VITAMIN C-MAGNESIUM CRYSTALS** (EFFERVESCENT) 180 grams	20.00	15.00	13.50			
01732	**VITAMIN D3** • 2,000 IU, 1 fl. oz, Mint flavor	28.00	21.00	18.75			
01753	**VITAMIN D3** • 1,000 IU, 90 softgels	7.00	5.25	4.50			
01751	**VITAMIN D3** • 1,000 IU, 250 softgels	12.50	9.38	8.44			
01713	**VITAMIN D3** • 5,000 IU, 60 softgels	10.00	7.50	6.50			
01718	**VITAMIN D3** • 7,000 IU, 60 softgels	14.00	10.50	9.45			
01758	**VITAMIN D3 W/SEA-IODINE™** • 5,000 IU, 60 caps	14.00	10.50	9.38			
00864	**VITAMIN D3 LIQUID** • 2,000 IU, 1 fl. oz	28.00	21.00	18.75			
02040	**VITAMINS D AND K W/SEA-IODINE™** • 60 caps	24.00	18.00	16.50			
01863	**VITAMIN E** (Super) • 400 IU, 90 softgels	28.00	21.00	19.50	18.00		
01936	**VITAMIN K2** (Low dose) • 45 mcg, 90 softgels	18.00	13.50	12.00			
	W						
01902	**WAIST-LINE CONTROL™** • 120 veg. caps	42.00	31.50	28.50			
	X, Y						
01919	**X-R SHIELD** • 90 veg. caps	15.00	11.25	9.75			
00409	**XYLIWHITE™ MOUTHWASH** • 16 oz	10.00	7.50				
	Z						
01813	**ZINC HIGH POTENCY** • 50 mg, 90 veg. caps	7.95	5.96	5.25			
01561	**ZINC LOZENGES** • 60 veg. lozenges	9.00	6.75	6.00			
01961	**ZINC LOZENGES** (Enhanced) • 30 veg. lozenges	12.00	9.00	6.00			
**01051	**ZYFLAMEND® WHOLE BODY** • 120 liquid veg. caps	72.95	54.71				

SUBTOTAL OF COLUMN 11

ITEM No.	PRODUCT	Retail Each $	YOUR PRICE 1 Unit Each	4 Unit Each	10 Unit Each	QTY	Total
	BOOKS						
33998	**THE RIGHT TO TRY** by Darcy Olsen • 2016	26.99	20.24				
33877	**THE TRUTH ABOUT MEN AND SEX** by Abraham Morgentaler, MD, FACS • 2015	16.99	12.74				
33875	**DOCTORED: THE DISILLUSIONMENT OF AN AMERICAN PHYSICIAN** • by Sandeep Jauhar • 2015	26.00	19.50				
33874	**MISSING MICROBES** • by Martin J. Blaser, MD • 2014	28.00	21.00				
33873	**EATING ON THE WILD SIDE** • by Jo Robinson • 2014	16.00	12.00				
DPT05	**DISEASE PREVENTION AND TREATMENT, FIFTH EDITION** (Hardcover) • 2014	69.95	39.95	36.00			
33865	**THE RESTORATION OF THE HUMAN BODY [IN 7 PARTS]** by Sergey A. Dzugan, MD, PhD • 2014	29.95	22.46				
33862	**I'M TOO YOUNG FOR THIS** • by Suzanne Somers • 2013	26.00	19.50				
33835	**PHARMOCRACY** • by William Faloon • 2011	24.00	9.60	8.00			
33838	**YOUR GUIDE TO HEALTHY SKIN THE NATURAL WAY** by Gary Goldfaden, MD • 2012	26.00	15.00				
33815	**KNOCKOUT** • by Suzanne Somers • 2009	25.99	17.00				
34132	**TWO'S COMPANY: FIFTY YEAR ROMANCE** by Suzanne Somers • 2017	26.00	19.50				

SUBTOTAL OF COLUMN 12

* These products are not 25% off retail price.

** Due to license restrictions, this product is not for sale to customers outside of the USA.

*** Due to license restrictions, this product is not for sale to Canada.

† Due to license restrictions, this product is not for sale to customers outside of the USA and Canada.

†† These products are not 25% off retail price. Due to license restrictions this product is not for sale to custumers outside of the USA.

LifeExtension®

ORDER SUBTOTALS

SUBTOTAL COLUMN 1	
SUBTOTAL COLUMN 2	
SUBTOTAL COLUMN 3	
SUBTOTAL COLUMN 4	
SUBTOTAL COLUMN 5	
SUBTOTAL COLUMN 6	
SUBTOTAL COLUMN 7	
SUBTOTAL COLUMN 8	
SUBTOTAL COLUMN 9	
SUBTOTAL COLUMN 10	
SUBTOTAL COLUMN 11	
SUBTOTAL COLUMN 12	

ORDER TOTALS

SUBTOTAL OF COLUMNS 1 - 12	
†† Customers enrolled in Premier receive free unlimited standard delivery in the U.S., excluding U.S. territories, and do not have to pay the $5.50 postage and handling fee.	
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)	
SHIPPING — UPS OVERNIGHT add $16, UPS 2nd DAY AIR add $7. For Puerto Rico, US Virgin Islands, add $7. CANADA UPS EXPRESS Flat 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

BILL TO ADDRESS

NAME E-MAIL

ADDRESS

CITY/STATE/ZIP-POSTAL CODE COUNTRY

PHONE FAX

VISA/MASTERCARD/AMEX/DISCOVER #

EXP. DATE

SIGNATURE

SHIP TO ADDRESS

NAME E-MAIL

ADDRESS

CITY/STATE/ZIP-POSTAL CODE

COUNTRY

PHONE FAX

SIGNATURE

Prices subject to change without notice.
Please notify Life Extension of any address change.

POOR DIGESTION?

Enhanced Super Digestive Enzymes provides specific ***enzymes*** required to support the natural reactions that break down food proteins, fats, carbohydrates, and other nutrients.

NON GMO PROJECT VERIFIED

ITEM # 02021 • 60 vegetarian capsules • Retail price $22 • **Your price $16.50** • 4 bottles $15 each

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

LifeExtension®
LE PUBLICATIONS, INC.
PO BOX 407198
FORT LAUDERDALE, FLORIDA 33340-7198

WHAT'S INSIDE

Visit us at **www.LifeExtension.com**

LifeExtension® Magazine