Plant Pigments Protect Against Vision Loss
LIFE EXTENSION®
TWO-PER-DAY
MULTIVITAMIN

Compared to Centrum®
Two-Per-Day Provides:

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Two-Per-Day Multivitamin Capsules
Item #02314 • 120 capsules (two-month supply)
1 bottle $18 • 4 bottles $16 each

Two-Per-Day Multivitamin Tablets
Item #02315 • 120 tablets (two-month supply)
1 bottle $17.25 • 4 bottles $15.50 each

Each bottle provides a two-month supply.

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

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When a new lifesaving therapy is announced, few calculate how many died in the waiting room. Millions of Americans may have perished because of a 37-year delay in just one drug becoming available.

Higher selenium levels linked to improved breast cancer survival; calcium and vitamin D reverse fracture risk in vegan women; Mediterranean diet improves memory and reverses markers for Alzheimer’s.
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Neuro-Mag® Magnesium L-Threonate was specifically formulated by MIT scientists to be uniquely absorbable by brain and nerve cells.

The number of synapses that connect brain cells decline with aging.

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

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

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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.

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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.

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

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

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

Lambert Titus K. Parker, MD, 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.

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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.

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

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

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

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

Ronald L. Shuler, BS, DDS, CCN, LN, is involved in immunoncology for the prevention and treatment of cancer, human growth hormone secretagogues, and osteoporosis. He is board-certified in anti-aging medicine.
Sandra C. Kaufmann, MD, is a fellowship-trained and board-certified pediatric anesthesiologist as well as the Chief of Anesthesia at the Joe DiMaggio Children’s Hospital in Hollywood, Florida. She is the founder of The Kaufmann Anti-Aging Institute and the author of the book The Kaufmann Protocol: Why we Age and How to Stop it (2018). Her expertise is in the practical application of anti-aging research.

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

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

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

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

Steven B. Harris, MD, 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 ground-breaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction effects in animals and humans.

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

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

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

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

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

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

Xiaoxi Wei, PhD, is a chemist, expert in supramolecular assembly and development of synthetic transmembrane nanopores with distinguished selectivity via biomimetic nanoscience. She has expertise in ion channel function and characterization. She founded X-Therma Inc., a company developing a radical new highway towards non-toxic, hyper-effective antifreeze agents to fight unwanted ice formation in regenerative medicine and reduce mechanical icing.
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Patented turmeric and fenugreek blend (500 mg) results in 45 times greater bioavailability of free curcuminoids.

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Item #02324
500 mg curcumin + gingerol, 30 softgels
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When a new lifesaving therapy is announced, few people calculate how many died in the waiting room.

Delays in introducing better drugs extend beyond the FDA’s bureaucratic quagmire.

Pharmaceutical companies spend years negotiating their financial “cut” of a medical discovery and patent ownership.

More years slip by as the owners seek funding for clinical trials and negotiate future marketing rights.

As these delays accumulate, a staggering number of Americans needlessly suffer and die.

Even worse are promising compounds that don’t garner financial backing. These therapies fall off the radar screen and are sometimes lost forever.

A recent study on the mortality risk-reducing effects of metformin enabled our scientific team to conduct a startling calculation.¹

More than eight million Americans may have died because of the 37-year delay in this one drug becoming available.

Although there is significant uncertainty with this estimate, it’s more than all Americans killed in all wars since the inception of this country!

I’ve written books exposing flaws in today’s drug-development process that was long ago rendered obsolete.

This article summarizes the loss of life that theoretically may have occurred because type II diabetics were denied access to metformin and how these tragedies can be prevented.

I also discuss cancer treatments using “off-label” drugs that are demonstrating remarkable survival improvements.
In 1995 I was given an ultimatum by the FDA. Either I stop educating *Life Extension*® readers about lower cost drugs from other countries or I would face criminal charges and years in prison.

I respectfully declined to accept the FDA’s censorship dictate that would deny *Life Extension*® readers access to lifesaving medications.

Having just defeated the FDA in a nine-year legal battle, I was confident the public would continue to support our efforts to accelerate the availability of more advanced medications.

To put the situation into context, the Internet was in its infancy in the mid-1990s. Americans could not readily find pharmacies in other countries to send them medications.

By censoring *Life Extension*® magazine, as the FDA attempted, few Americans would know about better ways to treat their disease.

This included drugs like metformin for type II diabetics and ribavirin as an adjunctive hepatitis C medication.

**Censored Drugs Now Widely Prescribed**

Back in the 1980s-1990s, *Life Extension*® fought a multi-decade battle with the FDA to force the approval of an antiviral drug called ribavirin.

When ribavirin was combined with interferon-alpha, treatment outcomes in hepatitis C patients markedly improved. Today’s hepatitis C drugs (like Sovaldi®) are curing over 95% of patients.

Yet, when drugs like Sovaldi® were approved in 2013-2014, most still relied on co-administration of ribavirin.

More recent hepatitis C protocols are combining Sovaldi® with newer drugs (in lieu of ribavirin) to better eradicate hepatitis C.

We have no financial interest in ribavirin. We identified its efficacy in the early 1980s and relayed this information to our supporters.

**Why Metformin Was Delayed So Long**

Metformin was first discovered in 1922 but fell by the wayside as doctors saw more immediate results prescribing insulin or insulin-boosting drugs (in the sulfonylurea class).

**Sulfonylurea drugs** stimulate insulin release from the pancreas. This results in a temporary drop in blood sugar (glucose).

**Insulin injections** immediately reduce glucose, which is needed in advanced stages of type II diabetes, and by type I diabetics who make little or no insulin themselves.

The problem with this approach is it inadequately addresses the underlying causes of type II diabetes which include beta-cell dysfunction and insulin resistance.
Metformin functions via several mechanisms to combat high blood sugar including activating the AMPK enzyme, favorably altering the gut microbiota, and improving insulin sensitivity in the liver and peripheral muscle cells.2,3

A chemical cousin of metformin called phenformin inflicted a lethal condition called lactic acidosis in some people. This caused doctors to fear drugs in this class, especially with the quick-fix effects of sulfonylurea drugs or insulin injections.

What puzzled us back in the 1990s, however, was that metformin had been approved in England in 1958, Canada in 1972, and much of the world shortly thereafter.

Lactic acidosis was not occurring unless people had significant preexisting kidney, liver, heart, and/or lung failure.

Catastrophic Loss of Life

Metformin became widely available to Americans in late 1995 at relatively high prices (sold under the trade-name Glucophage®). In 2019, a study was published that tabulated the reductions in cardiovascular mortality in type II diabetics who use metformin.4

We at Life Extension® took these data along with data on diabetes prevalence from the CDC and NHANES III, death rates from the National Institutes of Health, American Diabetes Association and NHANES III, as well as studies assessing the impact of metformin on mortality.

The calculations include a range of possible values, based on the estimate that between 1958 and 1995, there may have been between 1.35 to 28.8 million people with diabetes who died in the United States, of whom 880,000 to 18.7 million died due to diabetes-related cardiovascular disease.

Obviously, there is a large degree of uncertainty with such a series of calculations and estimates from the published literature, but assuming that 100% of people with diabetes had taken metformin beginning in 1958, we can crudely estimate that 405,200 to 8.6 million people might have been spared premature death had metformin been approved in 1958 instead of 1995.

More specifically, we estimate that 175,600 to 3.7 million people might have been spared death from diabetes-related cardiovascular disease.

These two PowerPoint slides are from live presentations where I advocate for faster access to lifesaving medications:

Catastrophic Loss of Life

A 2019 study tabulated reductions in cardiovascular mortality in type II diabetics using metformin.1

Life Extension® calculated how many cardiovascular deaths may have occurred in response to metformin’s 37-year delay.

This exceeds the death toll of all wars America has ever fought.

Even More Lives Lost!

Reductions in cardiovascular deaths from JAMA (2019) study1 were added to overall mortality data from CDC, National Institutes of Health, American Diabetes Association and NHANES III.

The following total excess deaths were estimated:

Almost 4 million American diabetics may have died because of the delay in this one drug (metformin) becoming available.

As many as 8.6 million American diabetics may have prematurely died from metformin’s 37-year delay.2
This is only one example of a broken system that continues to deny Americans rapid access to lifesaving therapies.

One can debate the absolute numbers of total deaths that occurred because of metformin’s delay. But even at the lower end of our calculations, a staggering number of American type II diabetics perished prematurely.

Metformin also Reduces Cancer Risk

When attacking the delays in approval of lifesaving medications as I’ve done for the past 41 years, I use published, peer-reviewed references that provide objective information for accuracy.

As it relates to the delay in approving metformin, however, the death toll (up to 8.6 million Americans) extends beyond classic diabetic complications.

That’s because metformin also reduces cancer risk in type II diabetics.

A study conducted at MD Anderson found that type II diabetics prescribed metformin had a 62% reduced risk of pancreatic cancer. This malignancy is more prevalent in diabetics and kills over 48,000 Americans each year.

Based upon published data, and if all the cancer deaths that metformin could have prevented are assumed, the total mortality resulting over this 37-year delay period means up to 8.6 million American lives might have been spared if metformin was approved sooner.

These needless deaths are intolerable. The solution is introducing aggressive free market reforms to the obsolete drug development process that plagues us today.

Consequences of Denial

Politicians are debating a lot of topics right now, but the most important problem facing Americans is not being discussed.

Once you or a loved one is diagnosed with a serious disease, all other issues become irrelevant. Your overriding concern is whether there is a cure available.

That’s why it’s imperative that free market reforms are enacted that place the FDA in an advisory role that allows rapid medical progress unimpeded by central government bureaucrats.

Back in 2012, the former FDA Commissioner wrote a scathing editorial against the agency (FDA) from which he had resigned.
Several doctors responded with complimentary letters and emphasized even more deregulation of FDA control is needed to bring about cures for today’s killer diseases.22

Some of these letters exposed how dysfunction and unpredictability at the FDA are precluding vital early-stage scientific research.

Despite these exposés from FDA insiders, most Americans remain in a state of denial about the lethal consequences of today’s antiquated regulatory structure.

This denial turns into harsh reality when one is diagnosed with an illness for which there is no current cure.

Pleas of Former FDA Commissioner Ignored

An increasing number of respected individuals concur that delaying lifesaving therapies can no longer be tolerated. This includes former FDA Commissioner Andrew von Eschenbach.

Dr. von Eschenbach was a director of the National Cancer Institute and later served as FDA Commissioner from 2005 to 2009.

Back in 2012, he authored an editorial published in The Wall Street Journal that was critical of the FDA’s ability to evaluate and approve new lifesaving therapies.7

The editorial began with Dr. von Eschenbach stating:

“We stand on the cusp of a revolution in health care. Advances in molecular medicine will allow us to develop powerful new treatments that can cure or even prevent diseases like Alzheimer’s and cancer.”7

“What’s missing,” according to Dr. von Eschenbach, “is a modernized Food and Drug Administration that can rapidly and efficiently bring new discoveries to patients.”7

Dr. von Eschenbach cited then-current FDA Commissioner Margaret Hamburg’s concession before Congress that, “The FDA is relying on 20th century regulatory science to evaluate 21st century medical products.”7

The most compelling arguments Dr. von Eschenbach made for meaningful reform were:

“The FDA should approve drugs based on safety and leave efficacy testing for post-market studies. Congress can ensure that the FDA serves as a bridge—not a barrier—to cutting-edge technologies.”

Said differently, once a potentially effective therapy has been cleared for safety, it should be made immediately available to people who may otherwise suffer and die.

While the FDA has expedited some procedures like “fast-tracking” certain drugs to terminal patients, the bureaucratic barriers continue to result in horrific delays.

Pancreatic cancer patients, for example, shouldn’t have to wait for years for FDA-required efficacy studies. They need rapid access to new therapies that offer some hope of saving their lives.

What’s scary about Dr. von Eschenbach’s criticisms are that they were made back in 2012. Yet relatively little has been done to rectify the most lethal threat to the lives of aging Americans, i.e. long delays in introducing lifesaving therapies.
Our 41-Year Battle to Reform Drug Approval

We at Life Extension continue our relentless campaign to alert policy makers and the public about the urgent need to accelerate the introduction of new therapies.

This goes beyond relegating the FDA to an advisory role, away from its current arbitrary power.

The entire drug development process, from start to finish, requires radical change.

Medical innovations need rapid testing on patients who are fully apprised of risks and potential benefits, without costly bureaucratic interference.

Unlike other issues, failure to effect meaningful reforms will continue the needless carnage of human suffering and death.

This is a priority matter that politicians should be debating today!

The box on page 15 reveals marked survival improvements in brain tumor patients treated with combinations of “off-label” drugs that include metformin.

For 41 consecutive years, we at Life Extension® advocated for multipronged treatments for lethal diseases. The scientific literature continues to validate this approach across a spectrum of degenerative disorders.

For longer life,

William Faloon, Co-Founder
Life Extension Buyers Club

Why Didn’t John McCain Act Up?

John McCain died from a glioblastoma brain tumor in August 2018.

Nine years prior, Ted Kennedy also died from glioblastoma.

Both senators cordially worked together for decades on Capitol Hill.

John McCain attended Ted Kennedy’s funeral and gave a eulogy.

My question is how could John McCain witness Ted Kennedy in a “box” without Senator McCain using his enormous legislative power to ensure the same did not happen to him?

I know my thinking process differs from most others, but when anyone I know develops a serious medical disorder, I instinctively spend hours searching the medical literature seeking a better way to treat it.

In some cases, I help launch and fund clinical trials to see if a potential treatment yields real-world results.

Effective Brain Cancer Treatments

After John McCain’s death, Scientific American published an insightful essay as to why glioblastoma is such a difficult malignancy to treat.8

Omitted from the Scientific American report, however, were a plethora of potentially effective therapies that have encountered outlandish delays.

These include a roughly 10-year delay in advancing genetically modified poliovirus that has demonstrated impressive responses in some glioblastoma patients.9 We described this therapy in the September 2015 issue of Life Extension® magazine.10

Even more omissions relate to adjuvant therapies about which Life Extension® previously published. Some of these include:

Valganciclovir: Treatment of glioblastoma patients with valganciclovir produced an unheard-of median overall survival of 56.4 months (4.7 years).11

Note: Ted Kennedy lived only 15 months and John McCain about 14 months after their
glioblastoma diagnosis. I don’t know if they tried valganciclovir, but there were good data to support it. The clinical trial showed glioblastoma patients treated with valganciclovir lived almost four times longer than Senators Kennedy and McCain.

Not only has valganciclovir been shown to extend survival in glioblastoma patients, but it may be considered along with other complementary therapies that could improve outcomes even more!

Metformin: In glioblastoma patients, survival time without evidence of disease worsening was longer in diabetics receiving metformin (10 months) than in other diabetics (less than five months) and nondiabetics (less than seven months).¹²

Note: As of mid-2021, there were five clinical trials (two phase II and three phase I) registered with ClinicalTrials.gov that address the potential benefits of metformin in people with glioblastoma (ClinicalTrials.gov 2021). Results of these trials will help establish the value of metformin as an adjuvant therapy for glioblastoma. If I had glioblastoma, however, I would not wait for these clinical trials to complete—I’d initiate metformin immediately. (I’ve been using metformin as a preventative since around year 2000).

Cimetidine: A 2017 study on seven glioblastoma patients found that, when combined with the chemo drug temozolomide, a cocktail of drugs that included cimetidine, lithium, olanzapine, and valproate led to longer-than-expected survival.¹³

Note: Multi-drug therapy is the most rational approach to inducing complete responses, yet a study like this, using four different off-label medications is uncommon. More of these kinds of multi-drug studies are needed.

Dichloroacetate: An open-label phase I trial on 15 adults with grade III or IV gliomas or brain metastases from other cancers found that dichloroacetate treatment was feasible and well tolerated.¹⁴

Antidepressants: Fluoxetine (Prozac), a common antidepressant drug, has been shown to selectively kill glioblastoma cells in laboratory experiments.¹⁵

Additionally, fluoxetine may make glioblastoma cells more sensitive to temozolomide.¹⁶ Other antidepressant drugs, such as imipramine (Tofranil) and amitriptyline (Elavil), have been shown to stop glioblastoma stem cells from producing more stem cells.¹⁷

Natural interventions, such as vitamin D, quercetin, selenium, and melatonin are being explored, with intriguing preliminary results.¹⁸–²¹

Encouraging findings about a new multi-drug (off-label) cocktail treatment for glioblastoma appear at the end of this editorial.

To review Life Extension’s glioblastoma protocol, log on to: https://www.lifeextension.com/glioblastoma.
How I Am Fighting Back

I’ve written hundreds of articles that meticulously describe how misguided FDA policies are the leading causes of disability and death. Many of these articles are compiled into the following three books:

- The first exposé book is titled: FDA: Fraud, Deception, Abuse (2009) • Item # 33816
  Retail price $20
  Your price $15
  (only a few copies left)

- My second rendering is titled: Pharmocracy (2011) • Item # 33835
  Retail price $24
  Your price $9.60
  Four copies only $8 per book

  Item # 34133
  Retail price $20
  Your price $15
  Four copies only $9 per book

In response to today’s healthcare price conundrum, Pharmocracy II documents why conventional medicine costs so much, and provides practical solutions that Congress (not influenced by pharmaceutical lobbyists) can implement to help resolve this nation’s worsening healthcare cost crisis.

Pharmocracy II advocates for a free-market approach that can spare Medicare and other government entitlement programs from insolvency, while improving the health of all Americans.

This book provides a rational basis for removing the compulsory aspect of healthcare regulation and allowing free-market forces to compete against government-sanctioned medicine.

More importantly, Pharmocracy II empowers the citizenry to inundate Congress with a unified demand to tear down corrupt regulations that are bankrupting the United States and suppressing cures for killer diseases.

The cover price for Pharmocracy II is $20. Your price is $15. Please consider buying four or more copies at only $9 each, to send to your representatives and two senators to educate them about misguided and corrupt government policies that are causing needless loss of human life.

Any of these books can be ordered by calling 1-800-544-4440 (24 hours/7 days).
Life Extension® has long advocated for combination use of “off-label” drugs that have specific anti-cancer mechanisms. We have suggested these off-label drugs be considered alongside certain conventional treatments. (The FDA did not concur!)

A group called Care Oncology Clinic was established in London, England in 2013. They study the clinical delivery of repurposed (off-label) drugs to target cancer metabolism.

Using a combination-drug approach that included metformin, doxycycline, mebendazole, and atorvastatin, they were able to dramatically improve survival as summarized below:23

Retrospective analysis was done of 95 patients with advanced (stage IV) glioblastoma who were prescribed an adjuvant off-label drug protocol alongside standard care.

Median survival for patients receiving off-label protocol alongside maximal standard care was 27.1 months, compared to 14.8 months for historic controls not receiving the off-label drug combination.

Two-year overall survival for patients receiving the off-label drug protocol alongside maximal care was 55.8%. This is more than double the two-year survival rate (26.3%) for standard care glioblastoma patients.

The protocol of off-label drugs was well-tolerated by most patients.

Recall that Senators John McCain and Ted Kennedy lived only 14-15 months after diagnosis, whereas patients treated with these off-label drugs survived about one year longer on average.

It is important to note that these positive results are preliminary and require further higher quality evidence.

To learn more about the Care Oncology Clinic of London, please visit https://careoncology.com/
References


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Higher Selenium Levels Could Improve Breast Cancer Survival

Higher selenium blood levels are associated with improved breast cancer survival rates.*

The 10-year survival rate was 65.1% in women with the lowest selenium blood level.

The 10-year survival rate in women with the highest selenium blood levels was 86.7%.

Editor’s Note: A previous study found that higher selenium levels were linked to improved five-year survival rates in women with breast cancer. The current study included 10-year survival rates in 538 women from the prior study.

Calcium and Vitamin D Lower Fracture Risk in Vegan Women

A study published in the American Journal of Clinical Nutrition found that supplementation with calcium and vitamin D reduces fracture risk in vegan women, who have a higher risk of fracture than non-vegetarian women.*

Female vegans had a 53% higher risk of experiencing a hip fracture than non-vegetarians.

Vegan women who supplemented with calcium and vitamin D reduced their hip fracture risk to that of non-vegetarians.

Editor’s Note: Following a vegan diet may fail to provide adequate nutrients associated with greater bone mineral density, such as calcium, vitamin D, zinc, and omega-3 fatty acids, thereby increasing fracture risk.

Mediterranean Diet Protects Against Memory Loss and Dementia

A Mediterranean-style diet could protect against memory loss and dementia, a study published in the journal *Neurology* reported.*

The 512 participants, with an average age of 70, completed food frequency questionnaires. They were then given MRI brain scans to determine brain volume, and neurological tests to examine their cognitive abilities and biomarkers for beta amyloid and tau proteins that characterize Alzheimer’s disease.

People who ate an unhealthy diet had higher markers of amyloid beta and tau proteins in their cerebrospinal fluid, compared to those who followed a Mediterranean-style diet.

The unhealthy-diet eaters also performed worse on memory tests than those who ate healthy food.

**Editor’s Note:** Participants who did not eat a healthy, Mediterranean-style diet were also found to have a smaller hippocampus volume (the area of the brain responsible for thinking and memory) than those who did. The hippocampus is known to atrophy (shrink) in those with Alzheimer’s disease.

* *Neurology.* 2021;96(24):e2920-e32.
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<thead>
<tr>
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<tr>
<td>1 bottle <strong>$10.50</strong> • 4 bottles <strong>$9</strong> each</td>
</tr>
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PHAGES REGAIN MAINSTREAM RECOGNITION

BY MICHAEL DOWNEY
Bacteriophages were once recognized as powerful, life-saving weapons against infection.\(^1\)

Called phages for short, they are tiny DNA or RNA packages wrapped in protein that attack specific bacteria. They are harmless to humans and all other life forms.

Phage therapy was pushed out of the way when antibiotics were introduced.\(^1\)

As the threat of antibiotic-resistant infections grows,\(^2\) the medical establishment has begun to refocus on the potential of phage therapy.\(^3\)

Mainstream media is paying attention too: The benefits and history of phages were recently explored in a feature in The New Yorker magazine.\(^4\)

Scientists have found, in a laboratory study, that phages can help beneficial probiotic bacteria thrive and grow. This happens even in the presence of competitive bacteria that would otherwise suppress them.\(^5\)

This may be related to the ability of specific phages to "seek and destroy." This means they can be selected to help protect against undesirable or disease-causing bacteria.\(^6\)

A combination of phages with probiotics holds great promise to promote the health of the gut microbiome and to improve intestinal function.
Phages Promote Microbiome Health

Scientists have identified a blend of four phages that may help decrease intestinal populations of undesirable bacteria while supporting probiotics.

Antibiotics employ a mass-killing technique, destroying both good and bad bacteria. But phages target only specific bacteria.

This means the right phages can target undesired or unhealthful bacteria in the gut, helping to make room for the organisms we want to flourish. The end result is that the gut microbiome can be restored to a more healthy, balanced state.

Promoting Growth of Beneficial Probiotics

*E. coli* (*Escherichia coli*) is a normal part of our gut microbiome. Usually it is harmless, though some strains can cause diarrhea, urinary tract infections, pneumonia, and other illnesses, and also crowd out beneficial organisms.

To determine whether the four-phage blend could promote the growth of beneficial bacteria, researchers conducted a laboratory study.

*E. coli* was combined with various individual probiotic bacteria in test flasks that served as the control. In separate flasks, the four-phage blend was combined with *E. coli* and the probiotic bacteria.

The growth of the beneficial bacteria was measured. In the control flasks that contained *E. coli* but no phage blend, the probiotic bacteria grew very poorly. It appears that *E. coli* inhibited their growth—in other words, it outcompeted them.

In the flasks that also contained the phage blend, the probiotic bacteria thrived.

For instance, when the healthy probiotic bacteria *Bifidobacterium longum* was combined with *E. coli*, there was little growth of the probiotic.

But in the flasks that contained the phage blend, beneficial *B. longum* colonies multiplied over 20 times more than in the control flasks. The phages successfully promoted the growth of the beneficial probiotic.

When this study was repeated using the probiotic *Lactobacillus acidophilus*, similar results were obtained.

*L. acidophilus* growth was more than 10-fold higher in the flasks containing phage plus probiotic and *E. coli*.
The scientists tested the phage blend again with another probiotic, this time *Bifidobacterium bifidum*. The result in this case was more than 30-fold higher growth, in the presence of the phages.

**Phages in Mice**

Researchers next studied the effectiveness and safety of this phage cocktail in live animals.

Two groups of mice were given the beneficial probiotic *B. longum*, along with a disease-causing *E. coli* strain. One group also received a phage blend specifically designed to target *E. coli*.8

After just 24 hours, phage treatment decreased dangerous *E. coli* levels by about:8

- 10-fold in the small intestine,
- 100-fold in the large intestine, and
- 100-fold in fecal matter.

**WHAT YOU NEED TO KNOW**

A Probiotic-Phage Blend for Digestive Health

- **Bacteriophages**, or phages, target only specific bacteria. They are harmless to all other life forms, including humans.
- As antibiotic-resistant bacteria have become a growing threat, scientists are focusing on using phages to treat deadly infections.
- Scientists have now identified four phages that promote the growth of beneficial bacteria.
- This probiotic blend can help improve a wide range of digestive issues, including irritable bowel syndrome, diarrhea, bloating, and gas.
At the same time, phage treatment increased beneficial \textit{B. longum} levels by about: \textsuperscript{8}

- 100-fold in the small intestine,
- 100-fold in the large intestine, and
- 40-fold in fecal matter.

These results translated into clear benefits. The phage-treated mice had \textit{healthy digestive function}, compared to mice infected with \textit{E. coli}, and the phage was not associated with any harmful side effects.\textsuperscript{8}

The mice given only \textit{E. coli} and \textit{B. longum}—without added \textit{phages}—became constipated, and their intestines showed swelling, redness, and leaks.\textsuperscript{8}

Given these results, scientists have now added this same \textit{bacteriophage} blend to \textit{probiotics} for humans, to boost their effectiveness.

\begin{center}
\textbf{Super-Charging Probiotics}
\end{center}

Two qualities to look for when selecting the \textit{type} of \textit{probiotic bacteria} is to ensure:

1. They have been studied in different combinations and shown to help improve a variety of \textit{digestive symptoms},\textsuperscript{9-19} and

2. Some of the \textit{probiotic} species multiplied to a much greater extent when cultured along with a specific \textit{bacteriophage blend}.	extsuperscript{5}

\begin{center}
\textbf{Deadly for Bacteria, Safe for You}
\end{center}

\textbf{Bacteriophages} are found almost everywhere—from soil, hot springs, and the ocean depths, to the animal and human body.\textsuperscript{21}

They have been successfully and safely used in several \textit{human} clinical and therapeutic settings.\textsuperscript{22-24}

Together with \textit{probiotics}, which also have a long history of safe use, they hold promise as a powerful way to promote digestive health.
Specific probiotics have demonstrated the following benefits:

- **B. longum SP54, L. paracasei IMC502, and L. rhamnosus IMC501** provide antimicrobial effects against Candida (a fungus that can cause problems when it overgrows), *H. pylori* (a bacteria that can cause ulcers), and *E. coli*.16,18,20
- **B. lactis BLC1 and L. acidophilus LA1** relieve symptoms of ulcerative colitis (a disease that causes inflammation and ulcers in the colon)12 and ease lactose intolerance.19
- **B. breve Bbr8 and L. plantarum 14D** reduce symptoms of celiac disease, which can include diarrhea, bloating, and gas.9,11

In addition, these probiotic strains have been shown to improve irritable bowel syndrome.9,10,12-15 Scientists have combined seven probiotic strains with a four-phage blend. This combination holds promise for those with gastrointestinal issues and anyone searching for a way to improve digestive health.

**Summary**

**Bacteriophages**, or phages, destroy only specific bacteria. They are harmless to humans and all other life forms.

Phages were once used as a powerful weapon against deadly infections, but they were pushed aside when antibiotics were discovered.

As bacteria have developed a resistance to antibiotics, scientists have begun focusing on phage therapies again.

A four-phage blend has been shown to promote the growth of beneficial probiotic bacteria.

By combining these phages with seven specific probiotics, scientists have developed a potent way to target and improve an array of digestive issues.●

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

### References


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References

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PLANT PIGMENTS PROTECT AGAINST VISION LOSS

BY MICHAEL DOWNEY
A major cause of blindness in the United States is macular degeneration.¹

Up to 11 million Americans are afflicted with it.²

Scientists have identified plant pigments that accumulate in the eyes and protect macular density.³⁻⁵

**Lutein, zeaxanthin, meso-zeaxanthin** and **astaxanthin** can help protect against age-related macular degeneration.

People with the highest intake of lutein and zeaxanthin have a 41% lower risk of advanced macular degeneration.⁶

For people already afflicted, extracts of the spice **saffron** have been shown to improve visual function.⁷

One study in patients with early macular degeneration showed that 80% of those taking saffron daily for three months improved visual acuity on the Snellen eye chart (by one line) compared to baseline.⁸

An improvement by one line on the Snellen chart means someone whose visual acuity at a distance was 20/40 would be able to see with 20/30 vision after just three months of daily saffron use.

Several other compounds have been shown to help prevent and even partially restore the vision loss that occurs with age-related macular degeneration.
A Leading Cause of Blindness

Age-related macular degeneration is the leading cause of severe vision loss and blindness in people over age 60.9 Risk factors for age-related macular degeneration include:10

- Age
- Family history
- Genetics
- Tobacco use
- High blood pressure
- Cardiovascular disease
- Obesity
- Sun exposure
- Diet low in dark green leafy vegetables and omega-3 fatty acids

The progressive damage that occurs to the macula contributes to the characteristic gradual loss of central vision. Patients often complain that central vision becomes washed out, with a loss of detail. Straight lines may also appear wavy.10

Lutein and Zeaxanthin

Lutein and zeaxanthin are dietary carotenoids found in dark green leafy vegetables and colorful fruits.11 Within the body, they concentrate in several parts of the eye, including the macula.12-14 There, they absorb blue and ultraviolet light, preventing retina damage. They also quench free radicals, inhibiting their destructive impact on the cells of the retina.13-16

In one study of adults with age-related macular degeneration, taking 10 mg of lutein daily for one year increased macular pigment density by almost 40%, compared to baseline.17

Increased macular pigment ocular density means increased protection against ultraviolet and blue light. Scientists demonstrated that 48 weeks of taking daily lutein alone or lutein combined with zeaxanthin produced significant increases in electroretinogram signals.18 This is a measure of the power of light-sensitive cells to produce electrical impulses after stimulation by light.19

In a series of large clinical studies, researchers documented that oral intake of lutein and/or zeaxanthin can:6,17,18,20-22

- Improve retinal function,
- Increase the ability to see contrasting colors and shapes, and
- Improve visual acuity (the ability to see sharply at a distance).

Macular Degeneration

Lutein- and Zeaxanthin-rich Foods

<table>
<thead>
<tr>
<th>Kale</th>
<th>Spinach</th>
<th>Collards</th>
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<tbody>
<tr>
<td>Corn</td>
<td>Turnip Greens</td>
<td>Green Peas</td>
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<td>Green Bean</td>
<td>Broccoli</td>
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One study of over 102,000 people aged 50 and older took more than 20 years to complete. It found that those with the highest intake of lutein and zeaxanthin had a remarkable 41% lower risk of advanced macular degeneration.6

**Meso-Zeaxanthin**

*Meso-zeaxanthin* is a yellow carotenoid derived from lutein. It is known to be produced in the eye itself, and a small amount may occur in certain foods.23

Individuals with macular degeneration have 30% less *meso-zeaxanthin* in their macula than those with good eye health.24 One reason for this deficiency of *meso-zeaxanthin* is lack of ingested lutein. Another explanation for the missing *meso-zeaxanthin* observed in macular degeneration is inability to adequately convert lutein to *meso-zeaxanthin*.

*Meso-zeaxanthin*, when taken orally, increases protective macular pigment levels.25

**Astaxanthin**

*Astaxanthin* is a reddish carotenoid found in marine algae and some seafood.26,27

In preclinical studies, it protects the cells of the retina from being damaged by physical and oxidative stress.26-28

For example, *astaxanthin* may protect eye cells from UV-induced, free-radical damage by suppressing activation of an inflammatory protein, nuclear factor-kappa B (NF-κB).29

In experimental studies, astaxanthin prevented the vision-damaging effects of wet macular degeneration that occurs when blood vessels leak fluid into the retina. One rodent study showed it prevented cell damage related to increased pressure in the eye, which is the underlying problem in glaucoma.30

Astaxanthin’s eye-protecting ability may be especially beneficial for people with diabetes. Diabetic retinopathy occurs when high levels of blood sugar damage the retina over time, leading to vision problems. Among those who have had diabetes for over a decade, 80% suffer from this condition.26

In animal studies, astaxanthin targets the retina and prevents the early nerve-cell death that is caused by excess blood sugar.26

Research has found that 6 mg of astaxanthin daily helped promote visual sharpness and eye health.31

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**WHAT YOU NEED TO KNOW**

**Powerful Protection for the Eyes**

- Age-related vision loss is extremely common and may lead to eventual blindness.
- Lutein, zeaxanthin, *meso-zeaxanthin*, astaxanthin, saffron, and alpha-carotene have been identified as key nutrients that can protect the eyes and slow the progression of age-related macular degeneration.
- *Cyanidin-3-glucoside*, found in certain dark berries, enhances night vision.
Saffron

Clinical studies demonstrate that saffron, a spice derived from the crocus flower, improves various visual functions.32 Saffron has been studied for an array of neurodegenerative eye diseases, including:33,34

- Age-related macular degeneration, and
- Diabetic retinopathy.

Saffron may provide these benefits thanks to its anti-inflammatory, antioxidant, and neuroprotective properties, along with its ability to help prevent cell death.35

In one clinical study, 20 mg of saffron enhanced visual function in patients with mild to moderate age-related macular degeneration, including those already taking lutein and zeaxanthin. Compared to those taking a placebo, participants who took saffron alone improved on a standard vision-measuring eye chart by .69 letters. Those already taking lutein or zeaxanthin improved by .73 letters.7

In another study, 20 mg of saffron daily improved the light-sensing abilities of retinal cells for patients with early age-related macular degeneration. After three months, these subjects were able to read one entire additional line on an eye chart, while those taking a placebo did not improve.8

This means that someone whose visual acuity at a distance was 20/40 would be able to see with 20/30 vision after just three months of saffron use.

To test longer-term benefits, scientists gave 20 mg of saffron daily to patients with early macular degeneration for an average of 14 months. Retinal sensitivity was improved for the entire period, and average visual acuity improved by an astounding two lines on an eye chart.36 This showed that longer saffron use produces greater improvement.36

Alpha-Carotene

Alpha-carotene, a carotenoid and vitamin A precursor found in pumpkins and carrots, protects retinal cells from light-induced oxidative damage.

One study analyzed 63,443 women and 38,603 men, aged 50 and older. It found that those with the highest dietary intake of alpha-carotene had a 31% reduced risk of developing advanced age-related macular degeneration, compared to those with the lowest consumption.6 This yellow-orange carotenoid has even been shown to provide protection for smokers. In one study of 1,414 men aged 65 and over, smokers with the highest alpha-carotene intake were found to have a significantly reduced risk of developing age-related macular degeneration.37
Cyanidin-3-Glucoside

Cyanidin-3-glucoside (C3G) is a flavonoid found in many dark-colored berries.38,39

Recent research on human cells suggests that cyanidin-3-glucoside may protect epithelial (surface) cells in the cornea (the eye’s protective outer layer) against damaging effects of bacterial activity and inflammation.40

C3G may also reduce oxidative damage from light and free radicals in retinal pigment epithelium cells.41

While these investigations are preliminary, cyanidin-3-glucoside may offer support to macular degeneration patients.

Many of these afflicted individuals experience difficulties when performing activities at night and under low light, such as driving or reading at night.42

The retina’s rod cells are the eye’s most sensitive cells, allowing us to see in very dim light. Loss of rod cells is associated with night blindness or reduced vision in low light.43

Cyanidin-3-glucoside has been shown to enhance the quality and function of rhodopsin, a light-sensitive protein found in the rod cells of the retina. It also boosts the ability of rhodopsin to regenerate.39,44-46

One study of healthy volunteers showed that a berry extract containing cyanidin-3-glucoside improved night vision, allowing aging individuals to see better in darkness. This improvement was noticeable after just 30 minutes.47

Taken in combination, C3G and other eye-protecting nutrients may provide the most complete range of benefits for preventing age-related vision loss.

Summary

Loss of visual acuity and night blindness are major threats to aging adults.

Extensive evidence demonstrates that the carotenoids lutein, zeaxanthin, meso-zeaxanthin, and astaxanthin protect the eye and help prevent vision loss as a result of macular degeneration, and possibly other conditions as well.

In addition, the spice saffron protects against early macular degeneration, while alpha-carotene helps protect against advanced macular degeneration.

The flavonoid cyanidin-3-glucoside can enhance night vision in as little as 30 minutes.

In combination, these seven nutrients can provide comprehensive vision protection. •

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up study of saffron supplementation in early age-related macular de-
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> Lutein, trans-zeaxanthin, and meso-zeaxanthin help maintain structural integrity of the macula and retina.\(^1\)\(^5\)

> Cyanidin-3-glucoside assists with night vision.\(^6\)\(^-\)\(^8\)

> Saffron has been shown to help support vision as demonstrated by doctor’s eye exams.\(^1\)

> Alpha-carotene further helps support macular density.\(^1\)

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

References

MacuGuard® Comprehensive Ocular Support Formula

- Item #01992 • 60 softgels

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MacuGuard® Comprehensive Ocular Support + Astaxanthin

- Item #01993 • 60 softgels

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(Each bottle lasts for two months.)

MacuGuard® Ocular Support is available with or without astaxanthin.

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REFUEL YOUR IMMUNE SYSTEM

BY MICHAEL DOWNEY
With age, **immune function** markedly declines along with the body’s natural defenses.¹

Until a method to fully reverse this degenerative process is validated, the following nutrients can help support a healthy immune response:

- Vitamin C
- Quercetin
- Vitamin D
- Zinc
- Probiotic *Lactobacillus rhamnosus CRL1505*
- *S. cerevisiae* fermentate

Taking these **daily** may help defend against infectious agents.
**Vitamin C**

The activity of many immune cells is closely related to their vitamin C content.

This is especially true for phagocytes, the cells that engulf and destroy bacteria and other infecting organisms, and T-cells, which regulate and direct other immune cells.²

Studies show that some immune functions can be improved by taking vitamin C.³,⁴

For example, vitamin C deficiency is associated in some studies with increased frequency and duration of colds.⁴

In a human clinical study, oral intake of vitamin C has been shown to reduce the duration of colds by an average of 9.4%. It may also help prevent viral respiratory tract infections and reduce their severity.⁵

Evidence from basic research shows that vitamin C promotes a healthy immune system by:

- Enhancing the function and promoting the growth, maturation, and survival of immune cells that fight infection,⁶,⁷

- Increasing levels of interferons, the “warning signals” produced by the body that trigger protective immune mechanisms,⁸

- Neutralizing excess free radicals caused by infections, limiting oxidative damage and reducing severity of illness,⁹

- Aiding in the production of the structural protein collagen, which allows our skin and the linings of our respiratory and digestive tracts to maintain a protective barrier against infection,¹⁰

- Lowering levels of histamine, a pro-inflammatory compound¹¹ that plays a role in infections,¹² and causes symptoms of allergy,¹³,¹⁴ and

- As indicated by preclinical studies, vitamin C plays a role in reducing excess levels of other pro-inflammatory compounds, countering inflammation caused by infection and injury, and promoting tissue healing.

The human body cannot produce or effectively store vitamin C. What that means is, in order to maintain optimal immunity, it’s a great idea to replenish your supply through daily supplementation.

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**Quercetin**

Research has shown that the plant flavonoid quercetin can support a prompt immune response to common colds and other upper respiratory tract infections. These studies found that adults taking quercetin were less likely to develop these illnesses.

One study found that only 5% of people taking quercetin got sick during a two-week period (after three days of intense workouts), while 45% of those taking a placebo developed colds.¹⁹

In another study of physically fit middle-aged and older adults, daily quercetin intake reduced the number of sick days taken for colds by 31% and reduced the severity of symptoms by 36%.²⁰

Quercetin may also be effective against bacterial infections.

In animal studies, it’s been shown to decrease the infection rate and inflammatory response to Helicobacter pylori, the cause of many ulcers and some potential cancers of the stomach.²¹,²²

Quercetin also reduced inflammatory responses and strengthened host defenses against Salmonella bacteria in a cell-based model of infection.²³

Salmonella bacteria cause roughly 26,500 hospitalizations in the U.S. every year and are especially dangerous in older adults.²⁴

Evidence from epidemiological studies shows that people with the highest quercetin intake have reduced risk for many different deadly cancers, including lung, colon, and gastric cancers.²⁵-²⁷

It can be difficult for the body to absorb quercetin.²⁸

Researchers solved this problem by integrating it into a phytosome, a type of fatty substance that serves as a carrier. This makes it up to 50 times more bioavailable (absorbable) than standard quercetin.²⁹
**Vitamin D**

*Vitamin D* fortifies the **immune system**, helping to protect the body from infections, and lessening their severity. It may do this by:30-34

- Interfering with the ability of viruses to **replicate**,
- Supporting and helping to repair cellular linings in the body, including **lung airways**,
- Boosting production of proteins that are protective against **infection**, and
- Helping to prevent the immune system from producing excess **pro-inflammatory** compounds in the lungs.

Meta-analyses of clinical trials have shown that vitamin D protects against **respiratory tract infections.**35,36

In addition, *low* vitamin D levels are associated with **higher** rates of many **chronic diseases**, including cardiovascular disease, cognitive decline, and cancer.37

---

**Support a Healthy Immune System**

- In order to live long, healthy lives, we need our **immune system** to function at peak form on a daily basis. Several nutrients can help do that.

- **Vitamin C** helps increase levels of antibody-producing cells (lymphocytes), boosts function of infection-engulfing neutrophils, and helps NK (natural killer) cell activity.56,57

- **Quercetin** reduces inflammatory immune cells, cuts histamine levels, relaxes airway smooth muscle, inhibits replication and infectivity of cold-causing viruses, and reduces senescent cells and their pro-inflammatory signaling.58-60

- **Vitamin D** interferes with virus replication and modulates the immune response via receptors on various immune cell types, thus supporting antimicrobial defenses while limiting inflammatory signaling.61

- **Zinc** is key to maintaining the integrity of the immune system. It helps with the normal development and function of natural killer cells, lymphocytes, neutrophils, and macrophages.62

- A probiotic strain, *Lactobacillus rhamnosus CRL1505*, significantly boosts levels of secretory IgA—critical antibodies that target both viral and bacterial invaders in the upper respiratory tract—thus providing a security system against cold and flu viruses within mucosal membranes.44,45,47,48

- *S. cerevisiae fermentate* supports NK (natural killer) cell activity, production of secretory IgA, a balanced response to environmental allergens, and defense against colds.50-55
**Zinc**

Zinc deficiency is quite common in the elderly. It is thought to result from reduced zinc consumption and absorption in older individuals. This may compromise the function of the immune system and contribute to atherosclerosis, cancer, neurological disorders, autoimmune diseases, and other age-related conditions.

The decline in immune function that happens with aging has been associated with both disease and death. By restoring zinc levels, aging adults may be able to partially slow immune function decline and protect against chronic inflammation.

Oral intake of zinc in the elderly has been shown to boost the stress response of white blood cells, providing an immune system anti-aging mechanism.

**Probiotic L. rhamnosus CRL1505**

The immune system makes proteins called antibodies that fight bacteria, viruses, and toxins.

One of the most common antibodies, called secretory IgA (immunoglobulin A), is found in mucosal membranes.

IgA acts as the body's built-in security system within mucosal membranes that line the nose and upper respiratory tract.

Having adequate IgA levels is critical because these antibodies target both viral and bacterial invaders in the upper respiratory tract. This IgA activity can prevent cold and flu viruses from gaining a foothold and wreaking havoc on the respiratory tract.

Scientists studying the beneficial live microorganisms known as probiotics identified a specific bacterial strain that, in a preclinical model, significantly increased levels of secretory IgA.

Originally isolated from goat's milk in northwestern Argentina, the bacterium *Lactobacillus rhamnosus CRL1505* has been shown in preclinical studies to help inhibit viruses and bacteria that can cause:

- Common colds,
- Influenza,
- Bronchitis, and
- Pneumonia.

In a clinical trial, one group of healthy male and female children consumed a yogurt drink five days a week that contained 100 million CFU (colony-forming units) of *L. rhamnosus CRL1505*. A second group consumed a drink that did not contain the probiotic.

The children ranged in age from two to five years, a population that is particularly susceptible to respiratory infections.

Over six months, compared to the placebo group, the children in the probiotic group had:

- 61% fewer cases of tonsillitis and pharyngitis (a throat infection),
- 55% fewer cases of cold or flu,
- 49% fewer infections,
- 46% fewer cases of fever, and
- 33% less need for antibiotic use.

Daily intake of *L. rhamnosus CRL1505* can provide protection against viral and bacterial infections.

**S. cerevisiae fermentate Fights Allergies and Provides Immune Benefits**

The immune effects of *S. cerevisiae fermentate* were discovered by accident.

A company in Cedar Rapids, Iowa, had been producing a specialized yeast culture when it became apparent that its factory workers—who were exposed...
to the yeast daily, through inhalation—were taking far fewer sick days than its office workers.49

*S. cerevisiae fermentate* helps promote the body’s immune response when it encounters environmental allergens, like pollen.

At least six placebo-controlled clinical trials have validated its ability to protect against allergies and colds.50-55

In one study, subjects took either 500 mg of *S. cerevisiae fermentate* daily or a placebo for five weeks during the beginning of allergy season.50

Subjects in the placebo group did not see a change to their seasonal allergies.

The group supplementing with the *S. cerevisiae fermentate* saw improvements. Half of the treated male volunteers reported a complete absence of allergy symptoms, which returned within two weeks once they stopped taking the yeast fermentate.

In two other studies, subjects receiving *S. cerevisiae fermentate* reported shorter duration of symptoms and better response to immune challenge, compared to those taking a placebo.53,54

*S. cerevisiae fermentate* appears to work by promoting natural killer cell activity as well as the production of secretory IgA—two key players in our body’s immune defenses.50,51

In one study, subjects taking 500 mg of *S. cerevisiae fermentate* daily for eight weeks experienced an increase in secretory IgA.50

A placebo-controlled, double-blind study found that yeast fermentate increased markers of natural killer cell activity—after just a single 500 mg dose.51

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


2. Strohle A, Wolters M, Hahn A. Micronutrients at the interface between inflammation and infection—ascorbic acid and calciferol: part 1, general overview with a focus on ascorbic acid. *Inflamm Allergy Drug Targets*. 2011 Feb;10(1):54-63.


Eye Pressure Support with Mirtogenol® is designed to support blood flow in tiny vessels of the eyes, helping to promote healthy fluid pressure.

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Enzymatically Active Vitamins

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

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

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Caution: Temporary flushing, itching, rash, or gastric disturbances may occur.

GRAB ‘N GO!

Daily Immune Support for $1 a Day!

Everything you need for daily immune support in one easy-to-grab, travel-ready packet.

- **Vitamin C 1,000 mg with Bio-Quercetin Phytosome**: promotes antibody-producing cells.¹
- **Vitamin D3 5,000 IU (125 mcg)**: supports antimicrobial defenses.
- **Zinc 50 mg**: promotes normal development of NK cells.²
- **Probiotic *L. rhamnosus* CRL1505 and *S. cerevisiae* fermentate**: promotes secretory IgA antibodies.³⁻⁵

Take one pack daily to help promote a healthy, balanced, year-round immune response.

For full product description and to order IMMUNE PACKS WITH VITAMIN C & D, ZINC, AND PROBIOTIC, call 1-800-544-4440 or visit www.LifeExtension.com

References

1. Available at: https://lpi.oregonstate.edu/mic/vitamins/vitamin-C. Accessed June 24, 2021.
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With age, levels of most hormones in our body decline. That’s not true for cortisol.

In several studies, cortisol concentrations have been found to increase after midlife.\textsuperscript{1,2}

Stress also elevates cortisol levels.\textsuperscript{1,3}

Higher cortisol in older adults is linked to increased risk of chronic disease and mortality.\textsuperscript{1}

Chronically elevated cortisol also damages the skin and hair.\textsuperscript{4,5}

Scientists have identified plant extracts that can safely help lower cortisol.\textsuperscript{6,7}

This can provide support for the skin and hair.

In one study, 72\% of participants who took a lychee-green tea extract blend had a noticeable decrease in fine lines, and reported improvements in hair growth and thickness.\textsuperscript{8}
Enzymes that control cortisol activity are also found in the skin and hair follicles.\textsuperscript{11,13} One key enzyme is 11-beta-hydroxysteroid dehydrogenase-1 (11-beta-HSD1). It converts inactive cortisol to active cortisol.\textsuperscript{14}

**Rapid Skin Aging**

Higher cortisol levels have been found in aging skin.\textsuperscript{15} With aging and obesity, the enzyme 11-beta-HSD1 increases.\textsuperscript{14} This leads to more activation of cortisol in cells.\textsuperscript{15} In addition, ultraviolet light affects cortisol activity in the skin.\textsuperscript{9} The sun’s UV rays increase the enzyme 11-beta-HSD1.\textsuperscript{14} These actions result in increased skin cortisol levels.\textsuperscript{13}

Elevated cortisol contributes to thinning skin, a decreased ability to make new skin cells, and inhibition of collagen synthesis.\textsuperscript{13,15} This makes it more difficult to heal cuts and sores.\textsuperscript{4,14}

Increased cortisol also promotes inflammation and the production of damaging reactive oxygen species (ROS).\textsuperscript{16}

Higher ROS levels can contribute to an increase in wrinkles, dark coloration under the eyes, and age spots.\textsuperscript{16}
Chromically elevated cortisol also impairs the skin’s barrier function.⁴

The skin barrier helps keep moisture and nutrients in, while guarding against toxins, pathogens, physical damage, and allergens.¹⁷

A disrupted skin barrier can result in dry, flaky skin.⁹ That may lead to an increased susceptibility to infections and a greater likelihood of becoming sensitized to allergens.⁹

The Skin Microbiome

Every square centimeter of the body’s skin harbors millions of microbes, primarily bacteria.¹⁸

This skin microbiota plays a key role in maintaining barrier function and helps prevent the overgrowth of harmful microbes.¹⁸

Cortisol can disrupt the makeup of the skin microbiome,¹⁹ leading to disease promotion by harmful skin bacteria.¹⁸

For example, cortisol can increase susceptibility to skin infection by group A Streptococcus pyogenes.¹⁹ These bacteria can cause cellulitis, a serious infection characterized by swollen, red, and painful skin.²⁰

Cortisol can also worsen the inflammation triggered by Propionibacterium acnes, one of the main types of bacteria that cause acne.¹⁸

WHAT YOU NEED TO KNOW

Plant Extracts Reduce Cortisol for Skin and Hair Health

- Higher average cortisol concentrations, often due to aging or chronic stress, can have damaging effects on skin and hair.
- Increased cortisol levels can contribute to signs of skin aging, including wrinkles, thinning skin, age spots, and slower healing of sores.
- Elevated cortisol can also disrupt the skin barrier and the skin microbiome, contributing to dry skin, acne, skin infections, and eczema.
- Excessive hair loss, thinning hair, and dry scalp are also linked to higher cortisol levels.
- In clinical trials, lychee-green tea extracts significantly lower cortisol levels. In one pilot study, taking 100 mg of this blend twice daily reduced fine lines, wrinkles, and age spots.
- Bark extracts from magnolia and phellodendron trees also significantly lower cortisol levels in clinical trials. This could help promote youthful skin and hair.
- Combining a lychee-green tea blend with magnolia-phellodendron extracts may help optimize the benefits for hair and skin health.
ELEVATED CORTISOL AGES SKIN AND HAIR

Unique Lychee Polyphenols

Lychee is a tropical fruit rich in polyphenols that help reduce cortisol levels.25

To allow better absorption of the polyphenols in lychee, scientists developed a proprietary blend of low-molecular-size extracts from lychee fruit and green tea. This enables the beneficial compounds to be absorbed three to four times more readily than regular lychee polyphenols.26

Damaged Hair

When we think of hair loss, we think of baldness in men. But in midlife, women may also experience significant changes in the texture and growth of their hair, including thinning.21

Both short-term and chronic stress, which trigger increased cortisol secretion, can promote hair loss.5,21

High cortisol levels reduce the synthesis and accelerate the breakdown of hyaluronic acid and proteoglycans in the scalp by about 40%. This deters the normal activity of hair follicles and can lead to hair loss.5

Aging makes this even worse. The synthesis of proteoglycans, which are vital to hair growth, generally decreases as a person ages.5

Research shows that exposing human skin in culture to low cortisol levels stimulated the synthesis of hyaluronic acid and proteoglycans and slowed their breakdown by about 25%.5 That may support hair growth and health.

Lowering Cortisol with Lychee-Green Tea

Human studies of a lychee-green tea extract blend have shown it can reduce cortisol.22

Scientists gave 100 mg of lychee-green tea blend or a placebo once daily to 19 sedentary but healthy young men. After a month, the lychee group had significantly lower blood cortisol levels at rest and after an exercise challenge, compared to the placebo group.22

In another study, 13 healthy young men took 100 mg of lychee-green tea blend half an hour before dipping their legs into hot water (a stressor). Their blood cortisol afterward was significantly lower than in the placebo group.5

The men’s levels of two inflammatory cytokines, IL-1beta and IL-6, were also significantly lower after taking the lychee-green tea blend, compared to placebo. These cytokines increase in response to stress and trigger cortisol release.6
Healthier Skin and Hair

This lychee-green tea blend has been tested directly for skin benefits.

In a pilot study, a group of sedentary men took a lychee-green tea extract blend daily.

After three months:³

- 72.7% had a decrease in fine lines,
- 18.2% had a decrease in deep wrinkles, and
- Participants consistently had a lighter and brighter complexion, including fading of freckles and age spots, as well as less skin redness.

In addition, 54.5% of those taking the blend had decreased blood levels of C-reactive protein, a marker of inflammation.

Three participants taking the lychee-green tea blend also reported an increase in hair thickness and new hair growth along their hairline.⁸

Bark Extracts Reduce Cortisol

Extracts from the bark of magnolia and phellodendron trees have been tested for their ability to lower stress and cortisol.

Both tree barks have been used in traditional herbal Chinese medicine since ancient times.⁷,²³,²⁴

In one study, 56 men and women with moderate stress took 250 mg of the combined bark extracts twice daily for a month. They had an 18% reduction in daily salivary cortisol, compared to a placebo group.⁷

The bark extract group also had an 11% reduction in overall stress and a 13% decrease in tension, based on questionnaires.⁷

By helping lower cortisol, magnolia-phellodendron bark extracts could support healthy skin and hair. Taking these extracts in combination with a lychee-green tea blend may maximize benefits for skin and hair health.

Summary

Higher levels of cortisol can contribute to visible signs of aging skin and hair.

Reducing cortisol levels may help deter wrinkles, fine lines, and skin spots, as well as protect the microbial balance of the skin.

Lowering cortisol may also help support a healthy scalp and hair growth, while inhibiting hair loss.

Lychee-green tea and magnolia-phellodendron can help maintain healthy cortisol levels. •

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

References


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You know you’re still a kid deep down, so why not stay forever young at the cellular level?

**N-Acetyl-L-Cysteine** helps protect your cells from free radical damage so your immune system, respiratory health and liver function will stay youthful.

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

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Stress releases the hormone cortisol throughout the body. Maintaining healthy cortisol levels promotes healthy immune function.*

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A European Solution for MENOPAUSE SYMPTOMS

BY MARSHA MCCULLOCH, RD
Hot flashes are one of the dreaded miseries women experience as they go through menopause.\(^1\)

These “heat waves” are one of 11 common menopausal symptoms.

Sleep difficulties, mood swings and irritability, and vaginal dryness are also prevalent problems.\(^2\)

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

A standardized Siberian rhubarb is used in Europe as an alternative. It has been shown to improve all 11 common menopausal symptoms.

Human studies show that this Siberian rhubarb extract can reduce overall symptom severity up to 83\%.\(^3\)
A European Solution

Most of the symptoms of menopause are caused by a drop in levels of the hormone estrogen. Estrogen binds to receptor sites on cell membranes to activate beneficial and sometimes detrimental cellular processes, including excess proliferation. Activating the ER-beta receptor promotes beneficial effects on skin, brain, bone, cardiovascular, and other tissues. This can support menopausal symptom relief. Activating the ER-alpha receptor, on the other hand, can produce undesirable growth in some tissues, including initiating and promoting cancer. Increased activity of the ER-alpha receptor is believed to cause many of the ill effects of conventional hormone-replacement therapy for menopausal symptoms.9

For nearly three decades, German practitioners have been recommending a standardized extract from the roots of the Siberian rhubarb plant to safely treat these symptoms.7 In preclinical studies, these plant compounds have shown greater affinity for the beneficial estrogen receptor-beta (ER-beta) than for potentially detrimental estrogen receptor-alpha (ER-alpha).8 Siberian rhubarb extract didn’t activate ER-alpha.6 The ability of Siberian rhubarb extract to selectively activate ER-beta but not ER-alpha is a key reason for its safety.10

Proven in Human Studies

In a double-blind clinical trial, 109 symptomatic perimenopausal women took 4 mg of Siberian rhubarb extract or a placebo daily for three months. Within one month, the Siberian rhubarb extract group had a significant reduction in the number and severity of hot flashes. By nearly three months, they had a 54% overall improvement in the severity of menopause symptoms, based on the Menopause Rating Scale.11 These results were confirmed in a similarly designed clinical trial of 112 perimenopausal women, which produced similar results, including an 83% reduction in the median number and severity of daily hot flashes.12 After completing the first trial, the scientists continued to follow the women taking Siberian rhubarb extract for up to two years.3
WHAT YOU NEED TO KNOW

Natural and Effective Menopause Relief

- **Menopause** is marked by 11 common symptoms, including **hot flashes**, sleep difficulty, joint and muscle pain, mood disturbances, sexual problems, bladder issues, vaginal dryness, and more.

- Multiple human studies show that **Siberian rhubarb root extract** provides relief from **all 11 symptoms** on the Menopause Rating Scale and reduces overall symptom severity by up to **83%**.

- Siberian rhubarb extract has been widely used in Germany for **decades** and has an **excellent safety profile**, based on extensive clinical, preclinical, and lab studies.

The women had a remarkable **83% reduction** in the severity of menopause symptoms within the first year. This improvement was **maintained** during the second year of follow-up.³

In an open-label observational study, 252 symptomatic perimenopausal or postmenopausal women also took **4 mg** of **Siberian rhubarb extract** daily. After six months, **56%** reported **major improvements** and **13%** reported complete recovery from their symptoms.¹³

The largest improvements in symptom severity were for hot flashes, sleep problems, and irritability.¹³

In all these studies, Siberian rhubarb extract produced significant improvement in **every one** of the **11 symptoms** on the Menopause Rating Scale.³,¹¹-¹³

**Ending Hot Flashes**

**Hot flashes** and night sweats affect up to **50%** of perimenopausal and up to **85%** of postmenopausal women.¹⁴,¹⁵

Hot flashes typically continue for **five to seven years**. Some women deal with them for **15 years or more**.¹

When 56 perimenopausal women took **4 mg** of **Siberian rhubarb extract** daily for three months, the median number of hot flashes dropped from **12** to just **two** per day. That’s an astonishing **83% reduction**.¹²

The **placebo** group had a median **8% increase** in the number of hot flashes.¹²

That means Siberian rhubarb performed **better** than **conventional hormone replacement therapy**, which decreases the frequency of hot flashes by about **75%**.¹⁶

**Easing Heart Discomfort**

Hot flashes are more than just a nuisance. They are linked with an increased risk of **atherosclerosis** (the buildup of plaque in arteries) and **cardiovascular disease**.¹⁷,¹⁸

Hot flashes are also associated with **inflammation** and poor function of **endothelial cells**, which line blood vessels and promote proper expansion and blood flow.¹⁸

In addition, falling **estrogen** levels appear to be associated with the heart **palpitations** experienced by many during menopause.¹⁹-²¹
In vitro research indicates that the rhaponticin in Siberian rhubarb extract has anti-inflammatory properties. It may inhibit enzymes that produce inflammatory cytokines in endothelial cells.  

In placebo-controlled studies, **Siberian rhubarb extract** reduced heart complaints by as much as 60%, on average, in about three months.  

Improving Sleep  
Sleep problems, including difficulty falling asleep or staying asleep, tend to peak around the final transition to menopause.  

Several menopause-related factors can contribute to sleep issues, including hormonal changes, hot flashes, and night sweats.  

Clinical studies have shown that taking **Siberian rhubarb extract** daily decreases the severity of sleep problems by 60%-69% in perimenopausal women.  

A review was done of 17 placebo-controlled trials that tested botanical products for the relief of menopause symptoms. **Siberian rhubarb extract** was one of the few remedies that improved sleep.  

Relief for Mood Disturbances  
Shifting hormone levels during perimenopause are associated with a variety of mood disorders, including **depression**, **irritability**, and **anxiety**.  

In a placebo-controlled trial in 109 perimenopausal women, the majority initially reported feelings of **depression**, including being “in low spirits mostly” or “up and down in spirits a lot.”  

After taking **Siberian rhubarb** daily for three months, 59% of the women reported being “in good spirits mostly,” and 9% reported being “in very good spirits mostly.”  

In the same study, the women taking Siberian rhubarb had a 66% decline in **anxiety** scores on a recognized anxiety scale.  

Research suggests **irritability** is the main mood challenge for women during perimenopause.  

In an open-label observational study lasting six months, women who took 4 mg of Siberian rhubarb extract daily had large reductions in feelings of **irritability**.  

Siberian rhubarb may improve mood in several ways. Both **estrogen** and **progesterone** have mood-improving properties. Their protective effects wane in menopause as hormone levels drop.  

Animal research suggests that ER-beta receptors play a role in mediating anxiety. **Siberian rhubarb extract** may help by activating the ER-beta receptors.  

In addition, decreasing hot flashes and improving sleep can help improve mood as a side benefit.  

No More Exhaustion  
Roughly 72%-84% of menopausal women experience **physical** and **mental exhaustion**.  

These feelings are accompanied by a general decrease in physical and mental performance and concentration, as well as impaired memory, a decrease in concentration, and an increase in forgetfulness.  

When perimenopausal women took **Siberian rhubarb extract**, they had an average 57% improvement in physical and mental exhaustion after just three months.  

After taking Siberian rhubarb daily for a year, their feelings of exhaustion had improved by an average 73%. This level of improvement was maintained for a second year of follow-up.  

Siberian rhubarb may achieve these results by interacting with **ER-beta receptors** in the brain, which are involved in memory and cognition.
Toxicity research in animals found no uterus-stimulating effects or other signs of harm, even when Siberian rhubarb extract was given for three months, in a daily dose approximately 14,000 times higher than the typical human dosage equivalent.\textsuperscript{35} Siberian rhubarb extract has been shown to be a safe, effective way to treat a range of symptoms associated with menopause.

### Summary

Most women approaching or going through menopause suffer from symptoms like hot flashes, sleep disturbances, and mood changes. \textbf{Siberian rhubarb extract} has been shown to be a clinically effective, safe, and convenient non-hormonal option for both perimenopausal and postmenopausal women.

Multiple human studies show that 4 mg of Siberian rhubarb extract taken daily significantly improves all top 11 menopausal symptoms, including hot flashes, sleep problems, depression and irritability, heart and joint discomfort, sexual problems, and vaginal dryness.

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

### Not All Extracts Are the Same

Based on studies presented, women who decide on a non-hormonal approach to menopausal symptoms should consider extracts of a \textit{clinically studied form} of Siberian Rhubarb standardized to more than 54% rhaponticin and more than 27% desoxyrhaponticin.
A EUROPEAN SOLUTION FOR MENOPAUSE SYMPTOMS

References

YOUR BONE HEALTH ... NOW BOOSTED

Bone Restore with Vitamin K2 combines skeletal-strengthening nutrients in one highly absorbable formula.

Item #01727 - 120 capsules
1 bottle $18
4 bottles $16.50 each

Caution: Those taking the anticoagulant drug Coumadin® (warfarin) should use Bone Restore without vitamin K2.

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For full product description and to order Bone Restore with Vitamin K2, call 1-800-544-4440 or visit 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.
Discovered in New Zealand yogurt, this unique probiotic formula contains 17.2 billion CFU† of *Bifidobacterium lactis* HN019.

This probiotic has been clinically studied to help maintain a healthy colonic transit time, combat occasional constipation, and support bowel regularity.¹

One capsule daily of this new FLORASSIST® Daily Bowel Regularity formula can help promote healthy, daily movement through the colon.

For full product description and to order FLORASSIST® DAILY BOWEL REGULARITY, call 1-800-544-4440 or visit www.LifeExtension.com

† Colony Forming Units at time of manufacture.

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.
COMPREHENSIVE menopause relief

Menopause 731™ contains ERr 731®, a proprietary extract of Siberian rhubarb.

In clinical studies ERr 731® provides hormone-free relief for all 11 menopause discomforts on the Menopause Rating Scale, including:

- Hot flashes
- Night sweats
- Irritability
- Sleep disturbances
- Exhaustion
- Sexual function
- Joint discomfort
- Bladder problems
- Vaginal dryness

Item #02204
30 enteric-coated vegetarian tablets

1 bottle $18 • 4 bottles $16 each

For full product description and to order Menopause 731™, call 1-800-544-4440 or visit www.LifeExtension.com

ERr 731® is a registered trademark of Chemisch-Pharmazeutische Fabrik Göppingen Carl Müller Apotheke GmbH & Co.

Caution: Do not take if you have, or have a history of, estrogen-dependent tumors.

ESTROGEN FREE

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Magnesium is a critically important mineral, yet most Americans do not obtain enough from their diet.

Magnesium helps:

- Keep heart rhythm steady.
- Promote normal blood pressure.
- Maintain normal muscle and nerve function.
- Support a healthy immune system.
- Keep bones strong.
- Maintain blood sugar levels already within normal range.

The recommended intake of magnesium to maintain vascular health is 500 mg or more a day.

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

References

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

TRAACS® is a registered trademark of Albion Laboratories, Inc.
The patient was running out of options.

She was suffering from a more aggressive type of chronic lymphocytic leukemia (unmutated IGHV gene).¹

Conventional chemotherapy had been unsuccessful. Her prognosis was grim.

Clinician scientists with the Maharaj Institute of Immune Regenerative Medicine in Florida turned to one of the most promising new treatments in the war against cancer: immunotherapy.

By treating her with an immune system stimulant combined with personalized, targeted cancer therapy, these clinicians were able to halt the patient’s cancer in its tracks.¹

The ability to achieve complete remission with zero evidence of cancer remaining in the blood may represent a new treatment model for chronic lymphocytic leukemia and many other cancers.
Immunotherapy treatments are constantly being tested and approved. Physicians at the Maharaj Institute of Immune Regenerative Medicine, located in Boynton Beach, Fla., turned to one to treat a leukemia patient who had failed to respond to other therapies.1

A Novel Approach to CLL

The patient was a 56-year-old woman with unmutated IGHV-CLL—a more aggressive type.

She was initially treated with a standard drug that targets leukemia. After suffering a severe adverse reaction, she had to terminate treatment. The cancer appeared to go into remission. But about a year after stopping treatment, it was back.

The clinicians at the Maharaj Institute decided to use immunotherapy to stimulate the immune system to better fight against the cancer.
They opted to use a synthetic form of interleukin-2 (IL-2).

IL-2 is a signaling protein produced in the body which regulates aspects of immune function. It is essential for the growth and activation of various immune cells, including natural killer cells.9

Once activated by IL-2, NK cell function gets a boost. These immune cells are more easily able to recognize threats, dramatically improving their ability to kill tumors and other abnormal cells.9-11

**How the Treatment Worked**

The patient was started on the interleukin-2 combined with the cancer drug lenalidomide—at a much lower dose than usual, to minimize side effects.

After several cycles of this therapy, the number of cancer cells in the patient’s blood decreased. But the cancer did not go into complete remission.

After some time, the physicians decided to try a different cancer drug along with the IL-2 treatment. Several cycles of IL-2 and low-dose venetoclax were initiated.

Although venetoclax can be associated with severe side effects at standard doses, at low doses it is well tolerated. The patient did not have any significant negative effects during this treatment.

Prior studies have suggested that even at low doses, venetoclax can induce the death of CLL cancer cells.12,13 In this case, the IL-2 appeared to boost the effectiveness of the treatment, stimulating the patient’s immune system to fight the cancer while also killing cancer cells.

The number of cancer cells in the blood dropped dramatically with this new therapy. Six months after treatment began, tests could find no evidence of cancer in the blood. The patient was in complete remission.

The therapy was discontinued, but follow-up testing three months and nine months later showed that the patient was still in remission, with zero evidence of cancer detected.

Adding a low-dose cancer drug like venetoclax appears to create a potent combination that kills cancer cells and repairs the immune system defects caused by the cancer.

**Summary**

Current treatments for chronic lymphocytic leukemia, the most common form of leukemia in adults, do not cure the disease and can cause serious side effects.
Cancer experts at the Maharaj Institute of Immune Regenerative Medicine used a novel approach that aims to improve the effectiveness of treatment while reducing the risk of serious side effects.

A woman with an aggressive form of CLL was treated with a combination of immunotherapy (with a form of the immune-stimulating protein IL-2) and a low dose of the cancer drug venetoclax.

The result was complete remission of the cancer with no signs of recurrence nine months after stopping treatment.

This preliminary report gives hope that this new treatment protocol can greatly improve the care of patients with chronic lymphocytic leukemia as well as other cancers.

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

Important Notice

Since LifeExtension® began publishing in 1980, we’ve reported on novel therapies to treat lethal diseases, many that eventually obtain approval in the United States and/or other countries.

A significant obstacle in patients gaining access to these therapies is that until the therapies receive FDA approval for the patient’s specific indications, private insurance and Medicare typically do not pay for them.

We sometimes have readers who are angry that a novel treatment protocol we write about is not affordable to them because their insurance will not cover it.

While we greatly regret this, our hands are tied.

On the upside, our publication enlightens patients about potentially more effective therapies, and these people often report back to us about the success or failure of such treatments.

References

BROAD-SPECTRUM IMMUNE SUPPORT

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

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

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1 bottle $45 • 2 bottles $40 each
(Two-Month Supply)
Contains milk.
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Topically applied coenzyme Q10 and two plant stem-cell extracts have been shown to improve the outer appearance of aged skin in human study subjects.

The new CoQ10 and Stem Cell Rejuvenation Cream promotes cellular rejuvenation throughout the skin’s multi-layers.

One study found topically applied CoQ10 alone reduced the appearance of wrinkle depth by 27% compared to control.*


Not Tested On Animals.

For full product description and to order CoQ10 and Stem Cell Rejuvenation Cream, call 1-800-544-4440 or visit www.LifeExtension.com
ONCE-DAILY HEALTH BOOSTER

WITH TOCOTRIENOLS!

• Mixed tocotrienols to support arterial health, cellular apoptosis, and normal lipid profiles.

• Broad-spectrum Vitamin K with four vitamin K2 subtypes (MK-4, MK-6, MK-7, MK-9) plus vitamin K1 to keep calcium in bones and out of arteries.

• Macuguard® including zeaxanthin, lutein, and meso-zeaxanthin to support macular density.

• Lycopene to maintain healthy cell division.

• Chlorophyllin to protect against environmental DNA damage.

• Saffron to support visual health.

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

Item #02291 • 60 softgels

1 bottle $45
4 bottles $40 each
(Two-month supply)

The same nutrients sold separately would cost 2-3 times more money!

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

Lyc-O-Mato® is a registered trademark of Lycored, Corp. LuteinPlus® and Mz® are registered trademarks of NutriProducts LTD., UK, licensed under U.S. patent 8,623,428.

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

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

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Ceratiq® is a registered joint-trademark of PLT Health Solutions and Arco, Robertet Group, France.

Contains wheat. Gluten free.

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Dr. Thierry Hertoghe is one of the world’s leading experts and practitioners of hormone replacement therapy for longevity and disease prevention.

In this exclusive two-part interview, Dr. Hertoghe, president of the International Hormone Society and the World Society of Anti-Aging Medicine, tells Life Extension® how hormone therapy can help fight disease and promote longevity.

There are roughly 50 different hormones produced in the human body, controlling a wide range of functions.

In the previous interview, published in our last issue, Dr. Hertoghe spoke to Life Extension® about how hormone replacement therapy can help prevent disease and promote longevity. In this follow-up, he discusses specific hormones, and the role nutrition plays, as well.
LE: Which hormones do you feel are the most important?

Dr. Hertoghe: Melatonin is one of my favorite hormones. It does much more than just improve sleep. High melatonin doses (10 mg to 30 mg a day) can be safely applied in the first days after a stroke or heart attack and may markedly reduce the damage to the brain and heart and considerably improve recovery. Melatonin can also have profound anti-inflammatory effects and improve resistance against viral and bacterial infections. Melatonin also has a role in protecting against radiation, including electromagnetic and ultraviolet radiation. It reduces blood pressure and can calm excessive anxiety, especially at night, substantially decreasing anxious thoughts and restless legs.

Melatonin has even been shown to have powerful anti-cancer effects and can be used as an important adjuvant treatment (alongside the primary treatment) in various types of cancer. One of the most surprising effects is in rejuvenating the skin when applied topically as a cream. It improves the skin coloring, reduces pigment spots, and thickens the skin.

DHEA is the most abundant hormone in our blood. One often overlooked but important role it plays in the body is to protect us against any side effects of cortisol. Cortisol is our most essential hormone—if we stop producing it, we die within 24 hours! But it is so powerful that we need to have equivalent amounts of protective DHEA in our body to block any adverse effects of cortisol. When given alone, DHEA improves mood and quality of life and reduces anxiety. Particularly in women, DHEA may also improve muscle tone—especially in the abdomen—while mildly reducing fat mass and increasing bone mass.

Testosterone is another one of my favorite hormones. I recently wrote a book on testosterone therapy for men called Testosterone, the Therapy for Real Gentlemen. It is, in my experience, an amazing treatment not only for men, but also for women. Testosterone usually increases energy levels all day long. It particularly reduces sports fatigue, making men and women more resistant to exhaustion from physical exercise and activities. It can improve mood and reduce anxiety. Testosterone also improves the bones and is one of my treatments for acute stroke and to protect the heart.

LE: What do you have to be careful about when prescribing hormones?

Dr. Hertoghe: Balancing hormones means being careful not to give too much of one hormone, while assuring that enough of another hormone is given so that the treatment works safely and efficiently. The right balance is often achieved, in consultation with a physician, after a period of trial and error.

Take, for example, balancing the female hormones. Women need estrogens to protect their brain from Alzheimer’s disease, their heart and arteries from atherosclerosis, and their bones from osteoporosis. But if the estrogen hormone estradiol becomes predominant, women suffer from fluid retention, particularly on the breasts and abdomen. They may develop breast and ovarian cysts and uterine fibroids, and ultimately cancer in these areas. In contrast, the other main female hormone, progesterone, protects against estradiol predominance. A woman may safely take estrogens and obtain blood levels that equal those of healthy young women if she also takes sufficient amounts of natural progesterone.

Similarly, testosterone is one of the best treatments to protect the heart. But it may excessively convert to the potent estrogen estradiol, which at high levels has deleterious effects on the heart and arteries by blocking testosterone receptors. High estrogen levels also enlarge the prostate. For this reason, men who receive testosterone should regularly have their estrogen levels checked. Whenever these levels excessively increase, it might be necessary to add a natural or synthetic aromatase blocker, which blocks excessive conversion of testosterone to estradiol, to ensure safety for the heart, arteries, and prostate.
specific peptide therapies (small amino acid chains with restorative properties) such as follistatin, which strongly improves muscle tone and volume. I think that telomerase activators, which reverse the shortening of our telomeres (the ends of our chromosomes that shorten at each cell division) also have a place in the future. In general, we will see much more focus on prevention of disease and aging, not just treating symptoms.

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

Dr. Thierry Hertoghe practices medicine at his clinic in Brussels, Belgium, where he specializes in using hormone treatments and nutritional therapies to fight disease, optimize health, and promote longevity. He is president of the International Hormone Society and the World Society of Anti-Aging Medicine.
RESTORE YOUTHFUL GUT BALANCE

With Strawberry Flavored FLORASSIST® Prebiotic Chewable

• With age, our bifidobacteria levels decline to as little as 5%, creating gut imbalance.¹

• Increasing bifidobacteria levels enhances digestion and carbohydrate metabolism.

• Strawberry flavored FLORASSIST® Prebiotic Chewable helps restore healthy bifidobacteria levels in as little as 14 days using XOS prebiotic.²

• 1,000 mg of XOS (xylooligosaccharides) per prebiotic chewable.

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

References

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Most Complete Omega-3
FISH OIL FORMULA

Super Omega-3 provides higher EPA/DHA potencies PLUS components found in Mediterranean-style diets.

This advanced formula provides:

1. **EPA/DHA Fish Oil**  
   (ultra pure/highly concentrated)

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   (to inhibit LDL oxidation)

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   (to extend stability of DHA in the blood)

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   (protects against lipid peroxidation)

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   (a source of EPA/DHA)

For full product description and to order Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin, call 1-800-544-4440 or visit www.LifeExtension.com

Item #01988 • 120 softgels

1 bottle $33.75
4 bottles $31.50 each

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Don’t Weight Around

Maintain Optimal Hormone Levels

7-Keto® is a metabolite of DHEA ideal for weight management.

Maintaining youthful DHEA levels can help support immune function, circulatory health, mood, libido, and more.

DHEA Complete delivers 7-Keto® DHEA (100 mg) and regular DHEA (25 mg), plus extracts from curcumin, green tea, and whole red grapes.

Caution: Consult a physician or licensed qualified health care professional before using this product if you have, or have a family history of breast cancer, prostate cancer, or other hormone-sensitive diseases.

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

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

7-Keto® brand is a registered trademark of InterHealth N.I. U.S. Patent 7,199,116.
Salmon is truly deserving of the term superfood. Studies show that eating salmon can help prevent heart disease and age-related memory loss, and key compounds in salmon could also help you live longer.

Eating salmon on a regular basis has been shown to improve risk markers of cardiovascular disease.1

Consuming more fatty fish, like salmon, has also been associated with a reduced risk of impaired cognitive function in middle-aged adults.2

Salmon contains numerous compounds that likely contribute to its health benefits.

For example, it is one of the best food sources of beneficial omega-3 fatty acids (second only to chia seeds). Diets high in omega-3 fatty acids have been linked to a reduced risk of cardiac and sudden death, and a reduced risk of all-cause mortality.3

Astaxanthin, the carotenoid that gives salmon its signature pink color, helps reduce the risk of heart disease by reducing the oxidation of LDL cholesterol and increasing HDL (good) cholesterol.4

Salmon can be pan-seared, baked, or poached. It pairs well with side dishes like asparagus, roasted broccoli, and lemon-herb couscous.

As with other foods, cooking at lower temperatures protects the proteins in the food against damage that injure your body’s proteins via a toxic process known as glycation.

References
## ACTIVE LIFESTYLE & FITNESS

| 01529 | Creatine Capsules         |
| 02318 | Keto Brain and Body Boost |
| 02020 | Super Carnosine           |
| 02023 | Tart Cherry with CherryPURE® |
| 02146 | Wellness Bar–Chocolate Brownie |
| 02147 | Wellness Bar–Cookie Dough  |
| 02246 | Wellness Code® Advanced Whey Protein Isolate Vanilla |
| 02221 | Wellness Code® Muscle Strength & Restore Formula |
| 02148 | Wellness Code® Plant Protein Complete & Amino Acid Complex |
| 02246 | Wellness Code® Whey Protein Concentrate Chocolate |
| 02221 | Wellness Code® Whey Protein Concentrate Vanilla |
| 02243 | Wellness Code® Whey Protein Isolate Chocolate |
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## AMINO ACIDS

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

## BLOOD PRESSURE & VASCULAR SUPPORT

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

## BONE HEALTH

| 01726 | Bone Restore                            |
| 02123 | Bone Restore Chewable Tablet            |
| 02416 | Bone Restore Elite with Super Potent K2  |
| 01727 | Bone Restore with Vitamin K2            |
| 01725 | Bone Strength Collagen Formula          |
| 00313 | Bone-Up™                                |
| 01963 | Calcium Citrate with Vitamin D          |
| 01506 | Dr. Strum’s Intensive Bone Formula      |
| 02417 | Mega Vitamin K2                         |
| 01476 | Strontium Caps                          |
| 02422 | Vegan Vitamin D3                        |

## BRAIN HEALTH

| 01524 | Acetyl-L-Carnitine                      |
| 01974 | Acetyl-L-Carnitine Arginate             |
| 02419 | B12 Elite                               |
| 02321 | Cognitex® Basics                        |
| 02396 | Cognitex® Elite                         |
| 02397 | Cognitex® Elite Pregnenolone            |
| 01540 | DMAE Bitartrate                         |
| 02006 | Dopa-Mind™                              |
| 02413 | Dopamine Advantage                      |
| 02212 | Focus Tea™                               |
| 01658 | Ginkgo Biloba Certified Extract™        |
| 01527 | Huperzine A                             |
| 00020 | Lecithin                                |
| 02101 | Memory Protect                          |
| 00709 | Migra-Eeze™                             |
| 01603 | Neuro-Mag™ Magnesium L-Threonate Caps    |
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| 00888 | Optimized Ashwagandha                   |
| 01676 | PS (Phosphatidylserine) Caps             |
| 02406 | Quick Brain Nootropic                    |
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| 01359 | Cho-Less™                               |
| 01910 | CHOL-Support™                           |
| 01030 | Red Yeast Rice                          |
| 01304 | Theaflavins Standardized Extract        |
| 00372 | Vitamin B3 Niacin Caps                   |

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

## ENERGY MANAGEMENT

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

## EYE HEALTH

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

## FISH OIL & OMEGAS

| 02311 | Clearly EPA/DHA Fish Oil                 |
| 01937 | Mega EPA/DHA                             |
| 02218 | Mega GLA Sesame Lignans                  |
| 01983 | Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract |
| 01988 | Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin |
| 01982 | Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 softgels |
01985  Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 enteric coated softgels
01984  Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 enteric coated softgels
01986  Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 240 softgels
01812  Provinal® Purified Omega-7
01640  Vegetarian DHA

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

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

HEART HEALTH
01066  Aspirin (Enteric Coated)
01842  BioActive Folate & Vitamin B12 Caps
01700  Cardio Peak™
02121  Homocysteine Resist
02018  Optimized Carnitine
01949  Super-Absorbable CoQ10 Ubiquinone with δ-Limonene • 50 mg, 60 softgels
01951  Super-Absorbable CoQ10 Ubiquinone with δ-Limonene • 100 mg, 60 softgels
01929  Super Ubiquinol CoQ10
01427  Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 30 softgels
01425  Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 120 softgels
01437  Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 60 softgels
01426  Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 60 softgels
01431  Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 200 mg, 30 softgels
01733  Super Ubiquinol CoQ10 with PQQ
01859  TMG Liquid Capsules
00349  TMG Powder

HORMONE BALANCE
00454  DHEA • 15 mg, 100 capsules
00335  DHEA • 25 mg, 100 capsules
00882  DHEA • 50 mg, 60 capsules
00607  DHEA • 25 mg, 100 vegetarian dissolve in mouth tablets
01689  DHEA • 100 mg, 60 veg capsules
02368  Optimized Broccoli and Cruciferous Blend
00302  Pregnenolone • 50 mg, 100 capsules
00789  Pregnenolone • 100 mg, 100 capsules
01468  Triple Action Cruciferous Vegetable Extract
01469  Triple Action Cruciferous Vegetable Extract and Resveratrol

IMMUNE SUPPORT
02411  5 Day Elderberry Immune
00681  AHCC®
02302  Bio-Quercetin®
02410  Black Elderberry + Vitamin C
01961  Enhanced Zinc Lozenges
01704  Immune Modulator with Tinofend®
02425  Immune Packs with Vitamin C & D, Zinc and Probiotic

00955  Immune Protect with PARACTIN®
02005  Immune Senescence Protection Formula™
00316  Kyolic® Garlic Formula 102
00789  Kyolic® Reserve
01681  Lactoferrin (Apolactoferrin) Caps
02426  Mushroom Immune with Beta Glucans
01903  NK Cell Activator™
01394  Optimized Garlic
01309  Optimized Quercetin
01811  Peony Immune
00525  ProBoost Thymic Protein A
01708  Reishi Extract Mushroom Complex
01906  Standardized Cistanche
13685  Ten Mushroom Formula®
01097  Ultra Soy Extract
01561  Zinc Lozenges

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

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

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

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

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<tr>
<th>Code</th>
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<tr>
<td>00457</td>
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<td>AppleWise</td>
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<td>02414</td>
<td>Bio-Fisetin</td>
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<td>01214</td>
<td>Blueberry Extract</td>
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<td>01438</td>
<td>Blueberry Extract and Pomegranate</td>
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<td>02270</td>
<td>DNA Protection Formula</td>
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<td>02405</td>
<td>Endocannabinoid System Booster</td>
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<td>02119</td>
<td>GEROPROTECT® Ageless Cell™</td>
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<td>02415</td>
<td>GEROPROTECT® Autophagy Renew</td>
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<td>02133</td>
<td>GEROPROTECT® Ageless Cell™</td>
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<td>02401</td>
<td>GEROPROTECT® Autophagy Renew</td>
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<td>02211</td>
<td>Grapeseed Extract</td>
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<tr>
<td>00954</td>
<td>Mega Green Tea Extract (decaffeinated)</td>
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<tr>
<td>00953</td>
<td>Mega Green Tea Extract (lightly caffeinated)</td>
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<tr>
<td>01513</td>
<td>Optimized Fucoidan with Maritech® 926</td>
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<td>02230</td>
<td>Optimized Resveratrol</td>
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<td>01637</td>
<td>Pycnogenol® French Maritime Pine Bark Extract</td>
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<td>01208</td>
<td>Super R-Lipoic Acid</td>
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<td>X-R Shield</td>
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<td>Male Vascular Sexual Support</td>
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<td>Mega Lycopene Extract</td>
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<td>02306</td>
<td>Men's Bladder Control</td>
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<td>01789</td>
<td>PalmettoGuard® Saw Palmetto and Beta-Sitosterol</td>
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<td>01790</td>
<td>PalmettoGuard® Saw Palmetto/Nettle Root Formula</td>
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<td>Pomi-T®</td>
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<td>01373</td>
<td>Prelox® Enhanced Sex for Men</td>
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<td>01940</td>
<td>Super MiraForte with Standardized Lignans</td>
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### MINERALS

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

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<tr>
<td>00577</td>
<td>Potassium Iodide</td>
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<td>00657</td>
<td>Solarshield® Sunglasses</td>
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### MOOD & STRESS MANAGEMENT

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<td>02312</td>
<td>Cortisol-Stress Balance</td>
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<td>00987</td>
<td>Enhanced Stress Relief</td>
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<td>01074</td>
<td>5 HTP</td>
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<td>01683</td>
<td>L-Theanine</td>
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<td>02175</td>
<td>SAMe (5'-Adenosyl-Methionine) 200 mg, 30 enteric coated vegetarian tablets</td>
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<td>02176</td>
<td>SAMe (5'-Adenosyl-Methionine) 400 mg, 30 enteric coated vegetarian tablets</td>
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<td>02174</td>
<td>SAMe (5'-Adenosyl-Methionine) 400 mg, 60 enteric coated vegetarian tablets</td>
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### MULTIVITAMINS

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<tr>
<td>02199</td>
<td>Children's Formula Life Extension Mix™</td>
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<td>02498</td>
<td>Comprehensive Nutrient Packs ADVANCED</td>
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<tr>
<td>02354</td>
<td>Life Extension Mix™ Capsules</td>
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<td>02364</td>
<td>Life Extension Mix™ Capsules without Copper</td>
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<td>02356</td>
<td>Life Extension Mix™ Powder</td>
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<td>02355</td>
<td>Life Extension Mix™ Tablets</td>
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<td>02357</td>
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<td>02292</td>
<td>Once-Daily Health Booster • 30 softgels</td>
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<td>02291</td>
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<td>02313</td>
<td>One Per-Day Tablets</td>
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<td>02317</td>
<td>Two Per-Day Capsules • 60 capsules</td>
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<td>02314</td>
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<tr>
<td>02316</td>
<td>Two Per-Day Tablets • 60 tablets</td>
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<td>02315</td>
<td>Two Per-Day Tablets • 120 tablets</td>
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### NERVE & COMFORT SUPPORT

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<tr>
<td>02202</td>
<td>ComfortMAX™</td>
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<td>02303</td>
<td>PEA Discomfort Relief</td>
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### PERSONAL CARE

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<tr>
<td>01006</td>
<td>Biosil™ 5 mg, 30 veg capsules</td>
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<td>01007</td>
<td>Biosil™ 1 fl oz</td>
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<tr>
<td>00321</td>
<td>Dr. Proctor's Advanced Hair Formula</td>
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<td>00320</td>
<td>Dr. Proctor's Shampoo</td>
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<td>02322</td>
<td>Hair, Skin &amp; Nails Collagen Plus Formula</td>
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<td>01278</td>
<td>Life Extension Toothpaste</td>
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<td>00408</td>
<td>Venotone</td>
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<td>00409</td>
<td>Xyliwhite Mouthwash</td>
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<td>02304</td>
<td>Youthful Collagen</td>
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<td>02252</td>
<td>Youthful Legs</td>
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### PET CARE

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<tr>
<td>01932</td>
<td>Cat Mix</td>
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<td>01931</td>
<td>Dog Mix</td>
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### PROBIOTICS

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<tr>
<td>01622</td>
<td>Bifido GI Balance</td>
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<td>01825</td>
<td>FLORASSIST® Balance</td>
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<td>02421</td>
<td>FLORASSIST® Daily Bowel Regularity</td>
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<td>02125</td>
<td>FLORASSIST® GI with Phage Technology</td>
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<td>01821</td>
<td>FLORASSIST® Heart Health</td>
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<td>02250</td>
<td>FLORASSIST® Mood Improve</td>
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<td>02208</td>
<td>FLORASSIST® Immune &amp; Nasal Defense</td>
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<td>02120</td>
<td>FLORASSIST® Oral Hygiene</td>
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<td>02203</td>
<td>FLORASSIST® Prebiotic</td>
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<td>01920</td>
<td>FLORASSIST® Throat Health</td>
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<td>FLORASSIST® Winter Immune Support</td>
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<td>52142</td>
<td>Jarro-Dophilus® for Women</td>
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<td>00056</td>
<td>Jarro-Dophilus EPS® 60 veg capsules</td>
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<td>Jarro-Dophilus EPS® 120 veg capsules</td>
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<td>01038</td>
<td>Theralac® Probiotics</td>
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<td>01389</td>
<td>TruFlora® Probiotics</td>
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### SKIN CARE

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<td>80157</td>
<td>Advanced Anti-Glycation Peptide Serum</td>
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<td>Advanced Growth Factor Serum</td>
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<td>80154</td>
<td>Advanced Lightening Cream</td>
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<td>Advanced Peptide Hand Therapy</td>
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<td>80175</td>
<td>Advanced Probiotic-Fermented Eye Serum</td>
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<td>80177</td>
<td>Advanced Retinol Serum</td>
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<td>80152</td>
<td>Advanced Triple Peptide Serum</td>
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<td>Advanced Under Eye Serum with Stem Cells</td>
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<td>All-Purpose Soothing Relief Cream</td>
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<td>Amber Self MicroDermAbrasion</td>
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<td>80118</td>
<td>Anti-Aging Mask</td>
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<td>80151</td>
<td>Anti-Aging Rejuvenating Face Cream</td>
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<tr>
<td>80153</td>
<td>Anti-Aging Rejuvenating Scalp Serum</td>
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PRODUCTS

80179  Brightening Peptide Serum
80176  Collagen Boosting Peptide Cream
80156  Collagen Boosting Peptide Serum
02408  Collagen Peptides for Skin & Joints
80180 CoQ10 and Stem Cell Rejuvenation Cream
80169  Cucumber Hydra Peptide Eye Cream
02423 Daily Skin Defense
80156  Collagen Boosting Peptide Serum
02408 Collagen Peptides for Skin & Joints
80180 CoQ10 and Stem Cell Rejuvenation Cream
80169  Cucumber Hydra Peptide Eye Cream
02423 Daily Skin Defense

SLEEP

00658  7-Keto® DHEA Metabolite - 25 mg, 100 capsules
02479  7-Keto® DHEA Metabolite - 100 mg, 60 veg capsules
01509  Advanced Anti-Adipocyte Formula
01807  Advanced Appetite Suppress
02207  AMPK Metabolic Activator
01492  Calorie Control Complex with Phase 3™ and African Mango
02478 DHEA Complete
01738  Garcinia HCA
01292  Integra-Lean®
01908  Mediterranean Trim with Sinetrol™ - XPur
01432  Optimized Saffron
00818  Super CLA Blend with Sesame Lignans
01902  Waist-Line Control™
02151  Wellness Code® Appetite Control

VITAMINS

01533  Ascorbyl Palmitate
00920  Benfotiamine with Thiamine
00664  Beta-Carotene
01945  BioActive Complete B-Complex
00110  Biotin
00084  Buffered Vitamin C Powder
02229  Fast-C® and Bio-Quercetin Phytosome
02075  Gamma E Mixed Tocopherol Enhanced with Sesame Lignans
02070  Gamma E Mixed Tocopherol & Tocotrienols
01913  High Potency Optimized Folate
01674  Inositol Caps
02244  Liquid Vitamin D3 • 50 mcg (2000 IU)
02232  Liquid Vitamin D3 (Mint) • 50 mcg (2000 IU)
01936  Low-Dose Vitamin K2
00065  MK-7
00373  No Flush Niacin
01939  Optimized Folate (L-Methylfolate)
01217  Pyridoxal 5’-Phosphate Caps
01400  Super Absorbable Tocotrienols
02334  Super K
02335  Super K Elite
01863  Super Vitamin E
02028  Vitamin B5 (Pantothenic Acid)
01535  Vitamin B6
01536  Vitamin B12 Methylcobalamin
01537  Vitamin B12 Methylcobalamin • 1 mg, 60 veg lozenges
02228  Vitamin C and Bio-Quercetin Phytosome • 60 veg tablets
02227  Vitamin C and Bio-Quercetin Phytosome • 250 veg tablets
01753  Vitamin D3 • 25 mcg (1000 IU), 90 softgels
01751  Vitamin D3 • 25 mcg (1000 IU), 250 softgels
01718  Vitamin D3 • 175 mcg (7000 IU), 60 softgels
01758  Vitamin D3 with Sea-Iodine™
02040  Vitamins D and K with Sea-Iodine™

WEIGHT MANAGEMENT & BODY COMPOSITION

00658  7-Keto® DHEA Metabolite - 25 mg, 100 capsules
02479  7-Keto® DHEA Metabolite - 100 mg, 60 veg capsules
01509  Advanced Anti-Adipocyte Formula
01807  Advanced Appetite Suppress
02207  AMPK Metabolic Activator
01492  Calorie Control Complex with Phase 3™ and African Mango
02478 DHEA Complete
01738  Garcinia HCA
01292  Integra-Lean®
01908  Mediterranean Trim with Sinetrol™ - XPur
01432  Optimized Saffron
00818  Super CLA Blend with Sesame Lignans
01902  Waist-Line Control™
02151  Wellness Code® Appetite Control

WOMEN’S HEALTH

01942  Breast Health Formula
01626  Enhanced Sex for Women 50+
01894  Estrogen for Women
01064  Femmenessence MacaPause®
02204  Menopause 731™
02319  Prenatal Advantage
01441  Progesta-Care®
01649  Super-Absorbable Soy Isoflavones
Restore Youthful Cellular Energy with

PQQ (pyrroloquinoline quinone) activates genes involved in the production of cellular energy.1-5

Studies show PQQ supports heart health and cognitive function, complementing CoQ10.6,7

In fact, just 20 mg per day of PQQ plus CoQ10 promotes memory and attention in aging individuals.8

This formulation contains 20 mg of PQQ per capsule, which is the recommended daily dose.

For full product description and to order PQQ or any other PQQ-containing formulas, call 1-800-544-4440 or visit www.LifeExtension.com

References

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

When every second counts, you need to make sure energy levels are up for any task. **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™** can help.

Formulated with a highly absorbable form of CoQ10 and a patented delivery system, our best-selling CoQ10 formula promotes your heart health and your body’s youthful cellular energy production, so you can get the job done.

For full product description and to order **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™**, call 1-800-544-4440 or visit [www.LifeExtension.com](http://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.*
7  LETHAL DELAYS
More than eight million people may have perished because a lifesaving drug was delayed for 37 years.

26  REDUCE HARMFUL INTESTINAL BACTERIA
Bacteriophages (phages), along with probiotics, target and destroy harmful bacteria.

36  PREVENT AGE-RELATED VISION LOSS
Several plant pigments have been shown to lower the risk of macular degeneration.

46  REFUEL HEALTHY IMMUNE FUNCTION
Supporting a healthy immune response requires fundamental nutrition.

56  EXCESS CORTISOL DAMAGES SKIN AND HAIR
Plant extracts lower high cortisol levels that can lead to hair loss and wrinkled skin.

66  MENOPAUSAL RELIEF WITHOUT HORMONES
Menopausal symptoms were significantly reduced using a standardized rhubarb root extract.