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In 2010, there were more than 160 published studies on curcumin. Every week, scientists discover new benefits of curcumin, such as reducing inflammation and promoting healthy DNA function.

Unfortunately, not all forms of curcumin are readily absorbed into the bloodstream. As a result, you may not be achieving peak blood levels of this vital nutrient.

Super Bio-Curcumin® is absorbed up to seven times more than regular curcumin.1,2

The graphs on this page illustrate that just one 400 mg capsule of Super Bio-Curcumin® can provide curcumin levels equivalent to ingesting 2,500–2,800 mg of other curcumin supplements.

Additionally, Super Bio-Curcumin® can stay in the bloodstream almost twice as long as other curcumin supplements.

Life Extension®’s Super Bio-Curcumin® contains the newly patented BCM-95® turmeric compound. A bottle containing 60 Super Bio-Curcumin® with BCM-95® capsules retails for $35. If a member buys four bottles, the price is reduced to just $24 per bottle. Each bottle will last most members two months.

Contains rice.

References:

To order Super Bio-Curcumin® with BCM-95®, call 1-800-544-4440 or visit www.LifeExtension.com

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ACCELERATING AGE REVERSAL RESEARCH
Most experts will tell you it’s impossible to restore youthful health in elderly individuals with advanced degenerative diseases. Yet a team of Harvard-affiliated scientists has shown it’s possible to do this in an age-accelerated animal model. Here we describe several new projects the Life Extension Foundation® has launched to accelerate age-reversal research.

IN THE NEWS
Vitamin E linked to longevity; magnesium lowers diabetes risk; omega-3 essential for healthy mood; and much more.

WELLNESS PROFILE
Looking to get in shape? Considering a personal trainer? Then expert trainer Lorenzo Price has a simple answer for you: “Do it.” In this illuminating profile, Price explores the pitfalls facing anyone looking to get fit—and lays out his simple, direct, no-nonsense approach to helping anyone make their specific fitness goals a reality.

ACCELERATING AGE REVERSAL RESEARCH
Most experts will tell you it’s impossible to restore youthful health in elderly individuals with advanced degenerative diseases. Yet a team of Harvard-affiliated scientists has shown it’s possible to do this in an age-accelerated animal model. Here we describe several new projects the Life Extension Foundation® has launched to accelerate age-reversal research.
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**John Crisler, DO,** a board-certified pediatrician and general practitioner in Chicago, IL, focusing on allergies, bronchial asthma, and immunodeficiency.

**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.

**John Crisler, DO,** is an osteopathic physician and president of The All Things Male Center for Men’s Health in Lansing, MI. Dr. Crisler is a distinguished leader in the field of anti-aging medicine for his new, advanced testosterone replacement therapy protocols that have changed the way physicians all over the world treat their patients.

**William Davis, MD,** is medical director of Millwaukee Heart Scan and developer of the web-based initiative Track Your Plaque, the only heart disease prevention program that uses the new CT heart scans to detect, track, and control coronary plaque.

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

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

**Patrick M. Fratellone, MD,** is the founder and executive medical director of Fratellone Associates. He completed his Internal Medicine and Cardiology Fellowship at Lenox Hill Hospital in 1994, before becoming the medical director for the Atkins Center for Complementary Medicine. He completed his Integrative Medicine Fellowship at the University of Arizona in 2005 under the directorship of Andrew Weil, MD. He is also a full clinical professor at the University of Iowa College of Medicine.

**Gustavo Tovar Baez, MD,** operates the Life Extension Clinic in Caracas, Venezuela. He is the first plastic surgeon in Caracas to specialize in anti-aging medicine.

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

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

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

**Roberto Marasi, MD,** is a psychiatrist in Brescia and in Piacenza, Italy. He is involved in anti-aging strategies and weight management. His interests include the treatment of complex lipid disorders, and stress management. He is a diplomate in the American Board on Anti-Aging Medicine.

**Allan Rashford, MD** is a board-certified orthopedic surgeon trained at the University of Iowa Medical School and did his internship, continuing education courses for health professionals on a wide variety of health topics.

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

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**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. Dr. Morrow is an accomplished clinician, medical researcher, author, and lecturer.

**Herbert Pardell, DO, FAAIM,** practices internal medicine at the Emerald Hills Medical Center in Hollywood, FL, and specializes in anti-aging, chelation, hormone replacement, and complementary medicine. He is a medical director of the Life Extension Foundation.

**Lambert Titus K. Parker, MD,** practices internal medicine at the Integrative Longevity Institute of Virginia in Virginia Beach, VA.

**Ross Pelton, RPh, PhD, CCN,** is director of nutrition and anti-aging research for Intramedicine, Inc. He has authored six books and teaches continuing education courses for health professionals on a wide variety of health topics.

**Patrick Quillin, PhD, RD, CNS,** is a clinical nutritionist in Carlsbad, CA, and formerly served as vice president of nutrition for Cancer Treatment Centers of America, where he was a consultant to the National Institutes of Health. He has written 15 books on health, including *Beating Cancer with Nutrition.*

**Allan Rashford, MD** is a member of the Vitamin C Foundation and the American Academy of Physical Medicine and Rehabilitation and is on the medical staffs of Sunrise Hospital, Desert Springs Hospital, Valley Hospital, and Mountain View Hospital, all in Las Vegas, NV.

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

**Charles E. Williamson, MD,** a board member of the Vitamin C Foundation and the American Preventive Medical Association, among many other groups.
That Can Save Your Life and of over 100 research papers and is clinical achieving total health (PATH medical and the PATH cancer research corporation that studies mixtures of cancer therapy, cancer and natural medicine. He conducted his postdoctoral training at stanford university department of statistics. He is currently president of New Earth BioMed, a nonprofit cancer research corporation that studies mixtures of natural products.

Eric R. Braverman, MD, is director of the Place for achieving total health (PATH Medical and the PATH foundation) in new york city. Dr. Braverman received his BA from brandeis university summa cum laude/ Phi Beta Kappa and his MD from new York university medical school with honors. He is the author of younger you (2006) and Younger thinner you (2009) and of over 100 research papers and is clinical assistant professor of integrative medicine in the Department of neurosurgery at Cornell Weill Medical College, as well as a lecturer on mild cognitive decline.

Frank Eichorn, MD, is a urologist specializing in prostate cancer since 10 years. He has a private practice in Bad Reichenhall, Germany and is prostate cancer consultant at the urologische klinik Castrignius, Planegg, Munich. In his integrative approach to prostate cancer he is working together with an international network of experts to improve treatment outcome for prostate cancer patients with special focus on natural and translational medicine.

Deborah F. Harding, MD is founder of the Harding anti-aging center. She is triple board-certified in internal medicine, sleep disorder medicine, and anti-aging medicine. She also earned the cenegenics certification in age management medicine. She is a faculty member of the new university of Central Florida Medical school.

Steven B. Harris, MD, is president and director of research at critical care research, a company that grew out of 21st century medicine in rancho cucamonga, CA. Dr. Harris participates in groundbreaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction effects in animals and humans.

Stanley W. Jacob, MD, is gerlinger distinguished professor, Department of surgery, Oregon health and science university. He has authored 175 scientific articles and 15 books and holds 3 patents, including the initial patent on the therapeutic implications of dimethyl sulfoxide (DMSO).
Feeble bones severely hamper quality of life and put aging humans at risk for injury due to possible breaks or fractures. While most Life Extension® members take certain supplements to address this issue, we have combined critical bone boosting nutrients into one superior calcium formula called Bone Restore.

Bone Restore contains a broad spectrum of nourishment to support bone health. The formula includes highly absorbable forms of bone fortifying calcium and a potent, bioavailable form of boron, along with vitamin D3, magnesium, zinc, manganese, and silicon.

Bone Restore comes in fast-release capsules, making the minerals and other nutrients immediately available for absorption.

The retail price for 150 capsules of Bone Restore is $22.50. If a member buys four bottles, the price is reduced to just $14.63 per bottle.

Just five capsules of Bone Restore provide:

- Highly-Absorbable Calcium 1,200 mg (from dicalcium malate, calcium glycinate chelate, and fructoborate)
- Vitamin D3 1,000 IU
- Magnesium 340 mg
- Boron 3 mg (calcium fructoborate as patented FruiteX B® OsteoBoron®)
- Zinc 2 mg
- Manganese 1 mg
- Silicon 5 mg

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What We Are Doing To Reverse Your Biological Age

BY WILLIAM FALOON

Just imagine making it to age 80, but you have not taken care of yourself. You thus suffer from severe degenerative disorders and have only a short time left to live.

Instead of letting you die, a pioneering doctor implants a compound that lengthens the **telomeres** in your cells. Within 30 days, there is a systemic **reversal** of your age-related pathologies. Not only are you functioning like a much younger person, but you’re inquiring about birth control as your **sexuality** and **fertility** has also been restored.

With your **telomeres lengthened**, you now can expect to live longer in better health, with the wisdom to avoid the bad habits that caused you to degenerate in the past.

Most experts would argue that this is not possible. Yet a breakthrough discovery published in the **November 28, 2010**, online edition of the scientific journal *Nature* provides evidence that **age reversal** may become a reality.¹

This study was conducted using telomerase-deficient mice with artificially shortened life spans. The purpose was to see if the consequences of **accelerated aging** could be **reversed** in animals suffering from advanced degenerative pathologies.
There is evidence that fish oil, vitamin D, carnosine, multi-vitamins, and healthy lifestyle choices may slow the rate of telomere shortening. This helps explain why people who take care of themselves and use the proper supplements enjoy such profound health benefits.

What had not been proven, until now, is what happens if telomere length is substantially restored in already severely degenerated aged organisms.

In the Nature study, premature-aged mice developed degenerative problems such as shrinkage of organs, inability to produce sperm, and failure of their brains to produce new neurons or to maintain the structural integrity of the myelin sheath that protects existing neurons.

As these degenerated mice neared death, researchers induced the re-activation of the enzyme telomerase. In response to telomerase re-activation, the telomeres at the end of their chromosomes lengthened. After only 30 days, there was a reversal of the degenerative changes in every system the researchers tested. The brains of the treated mice not only started growing new neurons, but began to thicken the protective myelin sheath surrounding existing neurons. As one of the researchers was quoted, they were able to “reverse neurodegeneration.”

The treated mice produced new viable sperm, their spleen atrophy and intestinal damage were reversed, and even their sense of smell was restored (indicating restored olfactory function in their brains).

These mice initially were on the verge of dying, but went on to live a typical life span that was longer and healthier than could ever have been imagined considering the degenerative condition they were in at the beginning of the study. In humans, this would be like restoring the health and vigor of a sickly 80-year-old to that of a young adult!
The significance of the *Nature* study is that it tested the effects of *telomere lengthening* in an animal model analogous in many ways to disabled elderly humans. (There were also differences in this mouse model compared to aged humans.)

It is known from human cell culture studies that restoring telomere length results in unlimited cell division potential.\(^{13-15}\) What has not yet been demonstrated is the effect of *telomere lengthening* in normally aged animals with severe tissue degeneration.

In this landmark study by Harvard-affiliated researchers, aging-accelerated mice whose telomeres were lengthened demonstrated rapid *reversal* of degenerative pathologies. While this is not the same as normally aged animals, it is an unprecedented demonstration of systemic age-reversal in a whole animal (*in vivo*) model. In this study, the aged mice with lengthened telomeres displayed new brain cell growth, restored sexual function and fertility, regeneration in every tissue examined, and a dramatically *longer life span*.\(^{1}\)

The authors of the *Nature* study summarized their results by stating:

&ldquo;In conclusion, this unprecedented reversal of age-related decline in the central nervous system and other organs vital to adult mammalian health justify exploration of telomere rejuvenation strategies for age-associated diseases, particularly those driven by accumulating genotoxic stress.&rdquo;\(^{1}\)

Since the inception of the Life Extension Foundation four decades ago, we have endured harsh criticism from mainstream media and persecution by government agencies over our unwavering prediction that it will someday be possible to make older people young again.

Just last year, research we funded succeeded for the first time in *reversing* the aging of human cells in the laboratory—including restoring telomere length in some instances. The scientists transported aged human cells back in time to their original embryonic state, enabling them to differentiate into any cell the body might need to self-regenerate. This age-reversal study we funded was published in the peer-reviewed journal *Regenerative Medicine*.\(^{16}\)

The latest study published in *Nature* demonstrates that it is possible to take mammals in a severely degenerated condition and *systemically reverse* aging pathologies using only one mechanism, i.e. *telomere lengthening*.

**Life Extension Provides $2 Million for New Age-Reversal Project**

Based on our analysis of the current state of the art, we believe there are more effective methods to *restore* telomere length and *reverse* aging processes.

In December 2010, the Life Extension Foundation provided $2 million in funding to a company called *ReCyte Therapeutics* (a subsidiary of BioTime, Inc.) for a new series of studies.\(^{17}\) The first will be on a group of mice that will utilize several cell rejuvenation mechanisms (including *telomere lengthening*) in a real-world model of aging.

The initial goal of this research is to rejuvenate the *vascular systems* of these mice in a way that protects them against heart attack and stroke. The research will also be aimed at restoring youthful bone marrow function to reverse *immune senescence*, thus conferring protection against *cancer*, *infectious disease*, and *autoimmune disorders*.\(^{18-24}\)

If these age-reversing effects can be documented in this mouse model and other biological systems, our research funding will then be used to attempt to develop authentic rejuvenation therapies in *humans*. 
Seeking to Vastly Accelerate Aging Research

We live in a fascinating era. Throughout history there were no validated methods to slow human aging, let alone reverse it. Today, scientists are meticulously investigating methods to enable our aging bodies to grow younger. If they succeed, then we might be the last generation to succumb to aging and the horrific diseases that accompany it.

Long before the Nature study was published on November 28, 2010, I brought up a concept while meeting with scientists at a medical conference in December 2008. Everyone acknowledged that potential advances might enable us to reverse the aging process we are all suffering. The problem is that no coordinated plan existed amongst the various scientific disciplines to collectively harness this technology into a near-term reality.

I proposed that we emulate what the United States did during World War II to rapidly develop the atomic bomb. I reasoned that if we instill a sense of confidence and urgency, we can collectively implement a "Manhattan Project" aimed at finding ways to reverse the festering aging process.

Several volunteers followed up on my suggestion and put together a "Longevity Summit" that consisted of some of the world's top anti-aging researchers.

This longevity summit titled The Manhattan Beach Project was held November 13–15, 2009, in Manhattan Beach, CA. The expenses were high because we had to fly gerontology experts in from around the world and cover hotel fees and video recording. The Life Extension Foundation funded the entire cost, which amounted to around $60,000.

The first two days of this summit featured presentations by researchers who revealed their scientific roadmap for initiating and achieving age reversal. Some of these scientists had been quietly developing their technologies for many years.

The last day was a roundtable discussion among the wealthy attendees, the scientists, and some very creative minds. The purpose of this brainstorm session was to develop plans to fund these anti-aging research initiatives that our lives so heavily depend on.

The following consensus was reached:

1. In order to provide sufficient near-term funding to the most promising anti-aging research projects, about $100 million will need to be raised beyond what is already being spent by the Life Extension Foundation and wealthy individuals who are currently giving money to gerontology scientists.

2. There are enough interested individuals today who are cumulatively able to provide this level of funding with moderate personal investments.

3. A company should be formed to not only raise and allocate these funds, but to also raise public awareness that a credible effort is being made to gain control over human aging.

A New “Age-Reversal” Initiative

The first step in implementing the Manhattan Beach Project was to assemble a knowledgeable and experienced Board of Directors to assure that the new company would be competently managed.

The next challenge was lining up the initial seed financing to get this company off the ground. Initially, $2 million was raised, of which the Life Extension Foundation provided $500,000.

The primary motivation for people to be involved with this company is that the research it supports could lead to breakthroughs in the control of human aging that could enable them to live much longer.

What I hope will be different with this company than any other are the expectations of these people. While there is a chance that the development of patented...
anti-aging therapies could yield considerable profits, that was not the main reason we thought individuals might participate.

From the perspective of most Life Extension members, the development of validated methods that would enable humans to **grow biologically younger** is far more valuable than all the money in the world.

The company is set up to assist, both financially and technologically, companies that are engaged in research that may lead to the control of human aging.

Not all of these age-reversal initiatives will pan out. But if just one led to the development of a validated method to **reverse** the course of aging, then every participant (and mankind itself) would benefit.

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**Age Reversal Was Not Thought Possible**

When Life Extension was founded, most people did not believe that reversing human aging could ever happen.

We proved them wrong last year by showing that at least at the cellular level, it is possible to re-program genes to prompt human cells to go back in time. This discovery was announced in the June 2010 issue of Life Extension Magazine.²⁷

If one looks at the rapid technology advances we enjoy today, the probability of conquering aging can be easily analogized. Just think of the progress that has been made in other fields:

- From counting on fingers to supercomputers.
- Riding on horse and buggies to flying on jet planes.
- Waiting for the pony express to instant email.
- Stage plays to satellite TV.

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**Stair-Climbing Towards Biological Immortality**

With each biological discovery, the human species climbs one step further toward gaining complete control over its own life processes.

While recorded human history goes back about 10,000 years, the vast majority of scientific breakthroughs have only occurred over the past 100 years. For instance, it was not until 1953 that James Watson and Francis Crick identified the structure of DNA (for which they later won a Nobel Prize).

Prior to 1953, it would have been difficult to conceive that doctors might one day control human cellular processes as easily as computer operating systems are now engineered. Of course, back then, no one thought that computers would have ever advanced as far as they have already.

While it took 10,000 years for humans to figure out the structure of DNA (in 1953), it only required a little over 50 years to map out the entire human genome! Genes are the cell’s “operating system,” enabling young healthy cells to function flawlessly. Gene expression is unfavorably altered as we age, which is what ultimately causes us to degenerate and eventually die.

Research funded by Life Extension and others has identified specific genes that are adversely expressed as cells grow old. Once scientists perfect methods to control gene expression, we believe it will be possible to “engineer” DNA so that our cells will be biologically immortal and completely resistant to cancer. The reason we take supplements like vitamin D²⁸-³¹ and resveratrol³²-³⁴ is the favorable effect on gene expression these nutrients induce.

So from 1953, we have gone from uncovering the basic structure of DNA to developing sophisticated DNA gene expression assays. We are now at a stage of exerting partial control over some of the genes that cause us to age.

Based on this rapid progress, more “stairs have been climbed” in the scientific discipline of cellular engineering over the past 58 years than what mankind accomplished in the prior 10,000 years. It is this **velocity** of advancement that is enabling renowned scientists to predict that biological immortality is not only a possibility, but one that could occur in the lifetimes of some of those reading this article now!
One reason we are confident that age reversal is possible in our lifetime is the law of accelerating returns, which means that as scientists reach higher technological milestones, the accumulated knowledge base can be used to rapidly move up the scientific ladder.

At the Manhattan Beach Project summit in November 2009, a number of scenarios for slowing or reversing aging were presented by eminent scientific authorities. The consensus amongst the participants was that it may be possible to cure aging in our lifetime. This prediction was made before the landmark aging-reversal study was published in Nature just one year later (in November 2010).

We reasoned that if we could move up the next big anti-aging breakthrough by even a few years, this will mean the difference between life and death to many of those reading this article. That is why we view this matter with such a sense of urgency.

**Where We Stand Today**

The challenge we face is turning around public opinion to make aging research the number one priority. We need to overcome the denial about personal extinction that plagues the vast majority of the population. Once this is accomplished, I am certain the collective efforts of the scientific community will deal with aging as efficiently as hand-held computers function today.

*Life Extension* is currently evaluating several programs aimed at substantially increasing funding to scientists involved in age-reversal research. Your support through membership renewals and product purchases enables us to finance ongoing scientific projects while laying the groundwork for exponential expansion of this research in the not-too-distant future.

For longer life,

William Faloon

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**References**


Study after study confirms the vital importance of maintaining optimal levels of vitamin D for broad-spectrum health benefits. Research often indicates that a blood level of 50 ng/mL of 25-hydroxyvitamin D is ideal.

Because people have individual requirements, Life Extension® has created the largest selection of vitamin D supplements available to ensure that you achieve your vitamin D3 goals.

Keep in mind that you may already be getting 1,000-3,000 IU of vitamin D in your multi-nutrient formula.

**Vitamin D3 1,000 IU**

*250 capsules*

Retail: $12.50

Four-bottle Member Price: **$8.44 ea.**

Commercial companies offered only 400 IU vitamin D products when Life Extension long ago introduced this 1,000 IU version. For most people, this 1,000 IU potency is insufficient to attain optimal vitamin D blood levels. For smaller individuals who obtain 2,000-3,000 IU in their multi-nutrient formulas (and children), this potency of vitamin D may be suitable. 

Item # 00251

Please refer to website for allergen information.

**Vitamin D3 5,000 IU**

*60 capsules*

Retail: $11

Four-bottle Member Price: **$7.43 ea.**

For those obtaining 1,000-3,000 IU of vitamin D in their multi-nutrient formulas, this 5,000 IU potency is what most need to achieve optimal vitamin D blood levels. 

Item # 00713

Please refer to website for allergen information.

**Vitamin D3 5,000 IU with Sea-Iodine™**

*60 vegetarian capsules*

Retail: $14

Four-bottle Member Price: **$9.45 ea.**

Most people do not ingest enough vitamin D and iodine, especially those seeking to reduce their salt intake. Combining 5,000 IU of vitamin D3 and 1,000 mcg of iodine into one capsule makes taking these two nutrients economical and convenient. 

Item # 01372

Please refer to website for allergen information.

**Vitamin D3 7,000 IU**

*60 capsules*

Retail: $14

Four-bottle Member Price: **$9.45 ea.**

Some individuals (such as those weighing more than 180 pounds) may require higher potencies of vitamin D. When combined with 1,000-3,000 IU obtained from multi-nutrient formulas, this 7,000 IU vitamin D3 capsule should enable these individuals to attain 25-hydroxyvitamin D blood levels above the desired range of 50 ng/mL. 

Item # 01418

Please refer to website for allergen information.

**Vitamin D3 Liquid Emulsion 2,000 IU**

*1 ounce*

Retail: $28

Four-bottle Member Price: **$18.75 ea.**

For those rare individuals who have difficulty absorbing enough vitamin D3 from powdered capsules, this liquid emulsion of vitamin D can be used. 

Item # 00864

Please refer to website for allergen information.

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CAUTION: Individuals consuming more than 2,000 IU/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxyvitamin D measurement. Do not exceed 10,000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with hypercalcemia (high blood calcium levels). People with kidney disease, certain medical conditions (such as hyperparathyroidism or sarcoidosis), and those who use cardiac glycosides (digoxin) or thiazide diuretics should consult a physician before using supplemental vitamin D. * If you have a thyroid condition or are taking antithyroid medications, do not use without consulting your healthcare practitioner.

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.
Scientists have intensely focused on finding out how calorie restriction so radically extends life span.

In response to reduced calorie intake, beneficial “youth” genes are activated while detrimental “senescence” genes are disabled. These favorable gene expression changes play a critical role in the ability of calorie restriction to slow aging.

The incredible news is that a select group of nutrients has been discovered that trigger many of the same favorable mechanisms (including more youthful gene expression patterns) as caloric restriction.

Among the most promising caloric restriction mimics and enhancers are resveratrol, pterostilbene, quercetin, and grape seed polyphenols, along with black tea extract. These nutrients have been shown to generate many of the same effects in the body as caloric restriction, without significant dietary modification.1-8 In particular, they help “mimic” caloric restriction’s favorable impact on genes that influence the aging process.1-8

CR Mimetic Longevity Formula includes resveratrol, pterostilbene, quercetin, grape seed polyphenols, black tea extract, and fisetin to provide even broader-spectrum gene expression support in one nutritional compound. The suggested dose of two capsules each day of CR Mimetic Longevity Formula provides:

- Trans-Resveratrol 250 mg
- Trans-Pterostilbene 3 mg
- Quercetin 150 mg
- Black tea extract 300 mg
- Grape seed polyphenols 50 mg
- Fisetin 48 mg

A bottle containing 60 vegetarian capsules of CR Mimetic Longevity Formula retails for $39. If a member buys four bottles, the cost is reduced to $27 per bottle.

Activate Your Longevity Genes with CALORIE RESTRICTION MIMETIC LONGEVITY FORMULA

To order CR Mimetic Longevity Formula call 1-800-544-4440 or visit www.LifeExtension.com

Note: Those taking other resveratrol products may consider switching to CR Mimetic Longevity Formula.

REFERENCES

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.
Fish Oil Blend with Sesame Lignans and a MORE Concentrated Olive Fruit Extract

A Comprehensive Fatty Acid Formula

There’s no debating the power of omega-3 fatty acids. From support for heart health and brain function to help with inflammation, their broad-spectrum benefits have been firmly established in a wealth of studies.1-9

To ensure the purest, most stable, easy-to-tolerate fish oil supplement, Life Extension® SUPER OMEGA-3 EPA/DHA is molecularly distilled. This patented process ensures any pollutants are reduced to virtually undetectable levels. The result? Our fish oil enjoys a 5-star rating for purity, quality, and concentration from the International Fish Oil Standards program (IFOS)—the highest possible rating from the world’s premiere testing laboratory.

Sesame Lignans and Standardized Olive Fruit Extract for Enhanced Benefits

Fish oils (and other fatty acids) have a tendency to oxidize, rendering them nutritionally inferior. Scientific studies show that when added to fish oil, sesame lignans safeguard against oxidation and direct fatty acids toward pathways that help with inflammatory reactions.10

To further emulate the benefits of a Mediterranean diet, Super Omega-3 delivers standardized, high-potency olive fruit extract. Research shows that when combined with olive oil, fish oil supplements help with inflammation better than fish oil alone.11

Olive also contains the compounds hydroxytyrosol, tyrosol, and oleuropein. Together these nutrients counter the action of free radicals, delay aging in specialized skin cells, prevent undesirable LDL oxidation, and help maintain normal platelet activation.12-15

Super Omega-3 supplies the equivalent content of 6 ounces of extra virgin olive oil. Take two softgels twice daily with meals.

A bottle containing 120 softgels of Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract retails for $32. If a member buys four bottles, the price is reduced to just $21 per bottle. If 10 bottles are purchased, the cost is just $18.68 per bottle. Item #0148

Just four softgels of SUPER OMEGA-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract provide:

<table>
<thead>
<tr>
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<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA Pure+™ Extract</td>
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</tr>
<tr>
<td>(eicosapentaenoic acid)</td>
<td></td>
</tr>
<tr>
<td>DHA Pure+™ Extract</td>
<td>1000 mg</td>
</tr>
<tr>
<td>(docosahexaenoic acid)</td>
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</tr>
<tr>
<td>Olive Fruit Extract</td>
<td>600 mg</td>
</tr>
<tr>
<td>[std. to 6.5% polyphenols (39 mg), 1.73% hydroxytyrosol/tyrosol (10.4 mg), 0.5% verbascoside/oleuropein (3 mg)]</td>
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</tr>
<tr>
<td>Sesame Seed Lignan Extract</td>
<td>20 mg</td>
</tr>
</tbody>
</table>

For those with sensitive stomachs, Super Omega-3 is also available with enteric coating and retails for $34. If a member buys four bottles, the price is reduced to $23.25 per bottle. If 10 bottles are purchased, the cost is just $21 per bottle. Item #0148

To order the most advanced fish oil supplement, Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract (with or without enteric coating), call 1-800-544-4440 or visit www.LifeExtension.com

CAUTION: If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, consult your healthcare provider before taking this product. Contains fish (anchovy, mackerel), soybeans, and sesame.

References:

Supportive but not conclusive evidence shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease. IFOS™ certification mark is a registered trademark of Nutrasource Diagnostics, Inc. These products have been tested to the quality and purity standards of the IFOS™ program conducted at Nutrasource Diagnostics, Inc.
Assert **Control** over the Calories You Eat!

Would you spend hours at the beach *without* wearing sunglasses and sun protection lotion? The answer should be a resounding no!

Yet most aging individuals do little to protect their bodies against the *excess* calories they ingest each day.

Few of us realize the deadly impact that large meals inflict. For instance, chronic overeating results in our bloodstreams being bloated with *glucose*, *insulin*, and *triglycerides* long after a meal is finished. This occurs not only because we *absorbed* too many calories, but also from the age-associated impairment to our internal regulators of carbohydrate and fat metabolism. This helps explain why, with advancing age, we tend to accumulate unwanted body weight even as we try to cut down on food intake and exercise more.

The good news is that scientists have identified documented methods to *reduce* the toxic damage from excess calorie intake by taking the proper nutrients before heavy meals.

**Comprehensive Calorie Management**

The **Calorie Control Weight Management Formula** is designed to be taken before the *two* heaviest daily meals to help neutralize the dangers of caloric excess. The ingredients were chosen based on scientific findings that age-associated fat accumulation is at least partially caused by the loss of one’s metabolic capacity to utilize ingested calories. Each scoop of this good-tasting powdered drink mix contains:

1. A proprietary fiber called **LuraLean**<sup>®</sup> that swells in the stomach after ingestion with water to help reduce calorie consumption. LuraLean<sup>®</sup> binds to *bile acids* in the small intestine and helps transport them out of the body. These bile acids otherwise facilitate the digestion and assimilation of *dietary fat* into the bloodstream. LuraLean<sup>®</sup> also slows the rapid emptying of ingested food into the small intestine, thereby reducing the surge of *glucose* entering the bloodstream. LuraLean<sup>®</sup> works better than other fibers because its own enzymes have been removed, thus sparing it from degradation in the digestive tract. This enables LuraLean<sup>®</sup> to form a stable *viscous barrier* to help impede calorie absorption and maintain its sponge-like activity throughout the digestive tract. In placebo-controlled studies, LuraLean<sup>®</sup> has induced weight loss along with significant reductions in fasting lipid and post-meal *glucose/insulin* levels. Each scoop of this good-tasting powdered drink mix contains:

2. A white kidney bean extract called **Phaseolus vulgaris** that inhibits the *amylase* enzyme in the digestive tract. *Amylase* breaks down carbohydrates that are then absorbed into the bloodstream as *glucose*. *Phaseolus vulgaris* has produced weight loss and abdominal fat reductions, along with significant reductions of triglycerides, in placebo-controlled trials.

3. An African plant extract called **Irvingia gabonensis** that favorably regulates *leptin* to decrease appetite and facilitate triglyceride removal from adipocytes; inhibits *glycerol-3-phosphate dehydrogenase* to reduce fatty acid storage in adipocytes; and up-regulates *adiponectin* to facilitate insulin sensitivity. Irvingia has demonstrated favorable weight loss results in placebo-controlled trials.

4. A proprietary **green tea phytosome** that absorbs much better into the bloodstream to boost *resting metabolic rate*. In a controlled clinical study, this green tea phytosome induced *30.1 pounds* of weight loss on average in 90 days when combined with a reduced calorie diet.

**Life-Saving Importance of Taking Calorie Control Weight Management Formula Before Heavy Meals**

Once we accept the danger that each surplus calorie poses to our aging body, it becomes easy to understand the critical need to impede the absorption and effects of ingested foods by taking the **Calorie Control Weight Management** formula before the two heaviest meals of the day.

The retail price for a one month (60-serving) supply of **Calorie Control Weight Management** is $56. If a member buys four jars, the price is reduced to $36. If eight jars are purchased the member price is slashed to only $33 per jar.

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Contains soybeans, tree nuts, and corn.

LuraLean<sup>®</sup> is a registered trademark of AHD International LLC. This supplement should be taken in conjunction with a healthy diet and regular exercise. Results may vary.

CAUTION: Take at least two hours apart from medications. Because this product may lower blood glucose, consult with your healthcare provider before taking this product if you are taking blood glucose lowering medication. Consult your healthcare provider before taking this product if you have difficulty swallowing or have esophageal narrowing.

To order the Calorie Control Weight Management today, call 1-800-544-4440 or visit [www.LifeExtension.com/calorie-control](http://www.LifeExtension.com/calorie-control).

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.
As we age, destructive *glycation* processes run rampant throughout our bodies.

*Glycation* involves a reaction of proteins with sugars that creates a variety of aging conditions ranging from wrinkled skin to cell structure damage.

Studies have shown that *carnosine* can inhibit glycation, while guarding the nervous system against toxic heavy metals.

A new laboratory study corroborates earlier research showing that *carnosine* can extend life span*.

**Life Extension**’s *Super Carnosine Caps* provide 500 mg of L-carnosine per capsule—a dose 10 times more potent than most commercial brands. *Super Carnosine Caps* also contain *luteolin* and *benfotiamine* (lipid-soluble vitamin B1) to provide multifaceted protection against glycation and its deadly consequences.

The recommended daily dose of two capsules provides:

- **L-Carnosine**: 1000 mg
- **Benfotiamine**: 100 mg
- **Thiamine HCL**: 100 mg
- **Luteolin**: 8 mg

The retail price for a bottle of 90 500 mg *Super Carnosine Caps* is $66. If a member buys four bottles, the price is reduced to just $45 per bottle. Item # 01287

To order *Super Carnosine Caps*, call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)


Note: Those who take the *Mitochondrial Energy Optimizer* are already consuming 1,000 mg of L-carnosine, along with benfotiamine.

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

**Magnesium Supplements May Reduce Diabetes Risk**

Supplementing with magnesium may improve insulin sensitivity and reduce the risk of developing type 2 diabetes, according to new findings from German scientists.\(^1\) Diabetes affects an estimated 24 million Americans, or 8% of the population.\(^2\)

Fifty-two overweight, insulin resistant, non-diabetic individuals with normal serum magnesium levels were randomized to receive 345 mg of magnesium or placebo each day for 6 months. Magnesium supplements improved fasting blood glucose by about 7% and improved 2 out of 3 markers of insulin sensitivity. The supplemented group also displayed a trend toward improved blood pressure.\(^1,2\)

While magnesium occurs in dietary sources such as leafy green vegetables, grains, nuts, and milk, previous research indicates that many adults do not meet the RDA (320 mg/day for men and 420 mg/day for women).\(^2\) The researchers estimate that each 100 mg increase in magnesium intake may lower the risk of developing type 2 diabetes by 15%.\(^2\)

—E. Wagner, ND

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**Green Tea May Help Prevent Alzheimer’s Disease**

A research team from Newcastle University in the United Kingdom recently concluded that consuming green tea on a regular basis may provide protection against Alzheimer’s disease and other dementias.\(^*\)

“There are certain chemicals we know to be beneficial and we can identify foods which are rich in them, but what happens during the digestion process is crucial whether these foods are actually doing us any good,” Ed Okello of Newcastle says in a news release.

In the case of green tea, the beneficial compounds are called polyphenols, which, when ingested, are broken down to produce a concoction of compounds. These are the compounds that the researchers tested.

“What was really exciting about this study was that we found when green tea is digested by enzymes in the gut, the resulting chemicals are actually more effective against key triggers of Alzheimer’s development than the undigested form of the tea,” Okello said. “In addition to this, we also found the digested compounds had anti-cancer properties, significantly slowing down the growth of tumor cells which we were using in our experiments.”

—J. Finkel

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**IN THE NEWS**

**Vitamin D Insufficiency Linked to Autoimmune Lung Disease**

The journal *Chest* reports the finding of researchers at the University of Cincinnati of an increased incidence of vitamin D insufficiency in patients with connective tissue disease-related interstitial lung disease (ILD), an autoimmune condition characterized by lung fibrosis.* Dr. Kinder’s team compared serum 25-hydroxyvitamin D levels of 67 patients with connective tissue disease-related ILD to vitamin D levels measured in 51 patients with other forms of ILD. Insufficient levels of vitamin D were found in 79% of those with connective tissue disease-related ILD and deficiency was revealed in 52%, compared with 31% and 20% of those with other interstitial lung diseases.

“These findings suggest that there is a high prevalence of vitamin D deficiency in patients with ILD, particularly those with connective tissue disease,” Dr. Kinder stated. “One of the next steps is to see if supplementation will improve lung function for these patients.”

**Editor’s note:** Vitamin D insufficiency has been examined as a modifiable factor in a number of autoimmune disorders, including connective tissue diseases such as lupus, scleroderma, and rheumatoid arthritis. —D. Dye

* *Chest.* 2010 Aug 5.

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**Timing Important in Cancer Chemoprevention**

An article published in *Carcinogenesis* reports a protective benefit for vitamin E and selenium against esophageal cancer, particularly if administered early after exposure to a carcinogen.*

Scientists gave five groups of rats a diet that contained reduced amounts of vitamin E and selenium. All but one group were administered a carcinogen for 5 weeks. One of the carcinogen-treated groups received the diet supplemented with vitamin E and selenium for the first 10 weeks of the study, while a second group was supplemented between 11 and 25 weeks. A third group received a supplemented diet throughout the 25-week experiment.

Although a benefit for late supplementation was observed, rats that received diets containing sufficient vitamin E and selenium throughout the course of the study and those that received the vitamins for the first ten weeks had a significantly lower number of visible tumors and esophageal carcinomas compared with the other carcinogen-treated animals.

**Editor’s note:** The findings support the results of a clinical trial of supplementation with vitamin E and selenium which found a significant reduction in esophageal cancer deaths among younger participants, but not among older subjects who are likelier to have precancerous lesions.

—D. Dye

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**A Truly Healthy Glow**

Contrary to what the tanning industry might have people believe, the way to the most attractive glow is not via skin-damaging sun exposure, but may be had by consuming fruits and vegetables that are high in carotenoids.

In a study described in *Evolution and Human Behaviour*, Ian Stephen and colleagues at the University of St. Andrews in Scotland found that individuals with a greater intake of carotenoids due to fruit and vegetable consumption have an increased yellow skin tone consistent with enhanced carotenoid absorption.* When viewing photographs of Caucasian faces, volunteers judged the golden color associated with carotenoids as appearing healthier than tones typical of tanning. A preference for a yellow tone was also observed in research involving an African population.

“Most people think the best way to improve skin color is to get a suntan, but our research shows that eating lots of fruit and vegetables is actually more effective,” Dr. Stephen stated.

**Editor’s note:** Carotenoids, which include alpha- and beta-carotene and other antioxidant compounds, give red, orange, and yellow fruit their color, and also occur in green vegetables.

—D. Dye

* *Evol Hum Behav.* 2010 Dec 23.
Omega-3 Fatty Acids Essential for Healthy Mood

Low intake of omega-3 fatty acids has long been linked with psychiatric disturbances, though the exact mechanism has been unknown. Now, a group of French scientists has discovered that dietary deficiency of omega-3 fats in animals causes a loss of function in certain central nervous system receptors that are crucial for neurotransmission and a healthy mood.¹,²

In this study, scientists used a specific diet to mimic a lifelong imbalance of essential omega-3/omega-6 polyunsaturated fatty acids in mice. Reducing omega-3 levels reduced synaptic and behavioral function of the CB1R receptor in mice, which resulted in impaired emotional behavior.¹,²

These findings help explain the correlation between omega-3-deficient diets, which are widespread in the industrialized world, and mood disorders such as depression.

—E. Wagner, ND


Study Associates Vitamin E with Increased Life Span Among Specific Groups

The journal Age and Ageing describes the finding of an association between supplementing with vitamin E and longer life among older male smokers.³

The study involved 10,837 participants in the Alpha-Tocopherol Beta-Carotene Cancer Prevention Study which examined the effect of supplementation with these nutrients on the risk of lung cancer in Finnish male smokers aged 50–69 years upon enrollment. Participants received beta-carotene, vitamin E, both beta-carotene and vitamin E, or a placebo through April, 1993.

The current analysis was restricted to men who participated in follow-up past the age of 65. While supplementing with vitamin E appeared to have no effect on the life span of subjects between the ages of 65 to 70, mortality over follow-up was reduced by 24% when the subjects were 71 years of age or older compared to those who did not receive the vitamin.

Editor’s note: This effect was mainly due to fewer deaths among men who smoked less than a pack of cigarettes daily and whose vitamin C intake was above the median of the study’s participants, for whom vitamin E was associated with an increase in life span of two years.

—D. Dye


Greater Zinc Intake Associated with a Lower Risk of Death from Prostate Cancer

An article published in the American Journal of Clinical Nutrition reveals a protective effect for a higher dietary intake of zinc against mortality from cancer of the prostate.⁴

Researchers evaluated data from 525 men enrolled in a case-control study in Sweden. Participants were diagnosed with prostate cancer between January, 1989 and July, 1994. Responses to dietary questionnaires were analyzed for the intake of calories and zinc from food sources.

Over the 6.4 year average follow-up period there were 475 deaths, of which 218 were attributed to prostate cancer. Men whose intake of zinc was among the highest 25% of participants had a 36% lower adjusted risk of dying from prostate cancer compared with those whose intake was among the lowest fourth. For those whose tumors were localized, there was a 76% lower risk among those whose intake was highest.

Editor’s note: The authors of the report note that the results of previous research concerning a protective effect for zinc in the prevention of prostate cancer have been inconsistent, and suggest that zinc could play a greater role in determining outcome of the disease rather than in its development.

—D. Dye

IN THE NEWS

Heart Surgeries Trigger Strokes, Seizures

Loyola University Health System neurologists reported in a recent issue of the journal *Hospital Practice* that neurological complications like seizures and strokes account for “considerable morbidity and mortality” following cardiac procedures.* Delirium, pituitary gland problems, spinal cord or peripheral nerve injuries, and central nervous system infections are all issues that may also arise.

“Neurologic complications are always a risk with cardiac surgery, especially in older patients who have health problems,” Dr. Jose Biller, first author of the article and chairman of the Department of Neurology at Loyola University Chicago Stritch School of Medicine said.

While Biller said that despite the risks, cardiac surgeries generally are highly beneficial and life saving, “neurologic complications remain an important cause of morbidity, hospitalization time and mortality following cardiac surgery and interventional cardiac procedures.”

Editor’s Note: This is yet another reason why *Life Extension* readers should avoid cardiovascular disease.

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Belly Fat Puts Women at Risk for Osteoporosis

A recent study presented at the annual meeting of the Radiological Society of North America (RSNA) found that having too much internal abdominal fat may have a damaging effect on bone health.* This runs counter to the long-held belief that obese women were at lower risk for developing osteoporosis, stemming from the idea that excess body fat had a protective effect against bone loss.

Miriam A. Bredella, MD, a radiologist at Massachusetts General Hospital and assistant professor of radiology at Harvard Medical School, led a team of colleagues who set out to evaluate the abdominal, subcutaneous, visceral, and total fat, as well as bone marrow fat and bone mineral density, in 50 premenopausal women with a mean Body Mass Index of 30.

Their study revealed that women with more visceral fat had increased bone marrow fat and decreased bone mineral density.

“Our results showed that having a lot of belly fat is more detrimental to bone health than having more superficial fat or fat around the hips,” Dr. Bredella said. “It is important for the public to be aware that excess belly fat is a risk factor for bone loss, as well as heart disease and diabetes.”

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High Dietary Fat, Cholesterol Linked to Increased Breast Cancer Risk

Researchers at the Kimmel Cancer Center at Thomas Jefferson University recently found that elevated fat and cholesterol levels, which are common in the American diet, play a major role in the growth and spread of breast cancer.*

The research team was led by cancer biologist Philippe G. Frank, PhD, assistant professor in the Department of Stem Cell Biology and Regenerative Medicine at Jefferson. The team set out to determine the link between diet and breast cancer. Other current studies have shown an increase in breast cancer incidence in immigrant populations that relocate from a region of low incidence. This aligns with the staggering fact that the incidence rate of breast cancer is five times higher in Western countries than other developed countries.

The result of the study showed that mice fed a Western diet and predisposed to develop mammary tumors can develop larger tumors that are faster growing and metastasize more easily compared to animals eating a control diet.

Several biomarkers of tumor progression were examined to confirm the aggressive nature of the cancer in animals fed a high cholesterol diet.

“These data provide new evidence for an increase in cholesterol utilization by breast tumors and thus provides many new avenues for prevention, screening, and treatment,” Dr. Frank says.

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* Bone. 2010 Dec 30.

Since Life Extension® introduced CoQ10 in 1983, our scientists have continued to develop increased potency and absorbability. Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ contains PrimaVie® shilajit which doubles levels of CoQ10 in the mitochondria. Combining CoQ10 and shilajit produced a 56% increase in cellular energy production in the brain, and in muscle there was a 144% increase in cellular energy production.

Shilajit boosts CoQ10’s beneficial effects by stabilizing CoQ10 in the superior ubiquinol form, which prolongs its action at the cellular level. Additionally, shilajit facilitates the more efficient delivery of CoQ10 into the mitochondria, which results in enhanced cellular energy.

Shilajit helps the mitochondria convert fats and sugars into the body’s main source of energy, ATP (adenosine triphosphate).

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ Combining ubiquinol CoQ10 with shilajit generates a powerful synergy that supports more youthful cellular energy production than CoQ10 alone.

References:

PrimaVie® is a registered trademark of Natreon, Inc. Kaneka QH® is a registered trademark of Kaneka Corporation.

The retail price for 60 100 mg softgels of Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ is $62. If a member buys four bottles, the price is reduced to $42 per bottle. Item #01426

The retail price for 100 50 mg softgels of Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ is $58. If a member buys four bottles, the price is reduced to $39.75 per bottle. Item #01425

The retail price for 30 200 mg softgels of Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ is $62. If a member buys four bottles, the price is reduced to $42 per bottle. Item #01431

To order Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
Back in the early 1980s, Life Extension® was the first to introduce CoQ10 as a proven method to enhance mitochondrial energy production.

CoQ10 has since gained universal scientific recognition for its role in supporting cellular performance throughout the body.1-6

Today, a major advance in combating cellular aging called PQQ (pyrroloquinoline quinone) is being launched. In an unprecedented breakthrough, researchers have discovered that PQQ supports mitochondrial biogenesis—the spontaneous growth of new mitochondria in aging cells!7

Mitochondria are the cellular energy generators that supply virtually all the power your body requires for a healthy life span. An abundance of published studies underscores the critical importance of the mitochondria to overall health, especially as we age.8-14 Energy-intensive organs like the heart and brain are dense with mitochondria.

Until recently, the only natural ways for aging individuals to increase the number of mitochondria in their bodies were long-term calorie restriction or exhaustive physical activity—which are difficult or impractical for most people to implement.

PQQ offers a viable alternative.
The Ultimate Cell Rejuvenator

The enormous amount of energy generated within the mitochondria exposes them to constant free radical attack. The resulting mitochondrial decay is a hallmark of aging.

PQQ protects and augments delicate mitochondrial structures to promote youthful cellular function in three distinct ways:

- **Antioxidant power.** Like CoQ10, PQQ is a highly potent antioxidant. Its extraordinary molecular stability enables it to facilitate thousands of biochemical reactions in the mitochondria without breaking down, for maximum antioxidant and bioenergetic support.15

- **Favorably modulates gene expression.** PQQ activates genes that promote formation of new mitochondria—and beneficially interacts with genes directly involved in mitochondrial health. These same genes also support healthy body weight, normal fat and sugar metabolism, and youthful cellular proliferation.16

- **Mitochondrial defense.** Mitochondria possess their own DNA, distinct from the DNA contained in the nucleus. Unfortunately, compared to nuclear DNA, mitochondrial DNA is relatively unprotected. PQQ’s antioxidant potency and favorable gene expression profile act to support mitochondrial defense.

Vital Protection for the Aging Heart and Brain

PQQ is an essential nutrient, meaning your body cannot make it on its own. A growing body of research indicates that PQQ’s unique nutritional profile supports heart health and cognitive function—alone and in combination with CoQ10.17,18 This comes as no surprise, given how much energy these vital organs need.

Research shows that PQQ supports heart cell function in the presence of free radicals and promotes blood flow in heart muscle.19 When taken in combination with CoQ10, just 20 mg per day of PQQ has been shown to promote memory, attention, and cognition in maturing individuals.20

References


BioPQQ™ is a trademark of MGC (Japan)
Natural Sedative Restores Youthful Sleep

If you find yourself routinely struggling to fall asleep—or to stay asleep—you’re not alone. A staggering 30% of Americans suffer from chronic insomnia,1 while approximately 60 million experience problems falling asleep in a given year.2

In addition to its adverse impact on mood and quality of life, chronic insomnia can increase one’s risk for most degenerative diseases.3-10

In the search for natural ways to combat this health threat, researchers have isolated a set of nutritional compounds called bioactive milk peptides that promote sustained and restful sleep patterns while inducing a state of relaxation. > >
Bioactive Milk Peptides: A Natural Sedative?

For generations, mothers have given their children a warm glass of milk before bed as a way to help them fall asleep. As far back as 1934, this home remedy gained scientific validation when it was observed that people who ate milk and cornflakes were more likely to enjoy a full night of uninterrupted sleep.11

In 1997, pediatric researchers added to the evidence by demonstrating that newborns given an infant formula containing milk fell asleep not solely due to nursing and being held, but owing specifically to something in milk itself.12

In 2000,13 researchers identified what that “something” was. It turns out that nutrients found in cow’s milk called bioactive peptides (chains of amino acids) exert a sedative effect on the brain and induce sustained sleep patterns.

These bioactive milk peptides have since been shown to act on the brain’s GABA-A receptors,14 the same mechanism of action that makes the class of sedatives known as benzodiazepines so effective.15 The advantage of milk peptides, of course, is that they induce relaxation and sleep without the side effects associated with long-term benzodiazepine use.

In pre-clinical models, milk peptides15,16 markedly reduce anxiety and improve sleep in animals subjected to chronic stress.17

In human studies, a proprietary bioactive milk peptide compound used widely in Europe has been shown to effectively induce relaxation, leading not only to deeper, more restorative sleep, but also to substantial improvements across a wide range of stress markers.

Bioactive Milk Peptides: Reducing Stress, Restoring Sleep

When given this proprietary bioactive milk peptide compound, aging individuals suffering from stress-related symptoms and chronic insomnia consistently exhibit substantial reductions in biomarkers associated with the stress response. These stress response biomarkers include elevated cortisol, heart rate, and blood pressure, along with physical and psychological symptoms.

In a number of especially noteworthy published studies, the improvements in stress-related markers proved to be both significant and system-wide.

For example, a group of over 60 women suffering from a constellation of stress-related problems was given 150 mg per day of this bioactive milk peptide compound.18 Before treatment, they suffered from a broad range of symptoms, including digestive, cardiovascular, pulmonary, emotional, cognitive, and social disorders.

Compared to controls, after just 30 days, significant improvements were observed for the milk peptide group in symptoms related to digestion (65.6% improvement—21% greater improvement than the placebo group), cognitive function (62.5% improvement—16.3% over placebo), cardiovascular function (48.9%—9.9% over placebo) and social difficulty (40.2%—9.7% greater than placebo).18

Interestingly, for those women exhibiting symptoms of the highest intensity at the outset of the study, the 30-day improvements were dramatic.18

As evidenced in the table below, compared to the placebo group, these women saw their stress-related conditions slashed across the board, with improvement almost 30% higher in some symptom categories.18 Similarly compelling results have been observed in men.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Placebo Group</th>
<th>Milk Peptide Group</th>
<th>% Difference</th>
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<td>66.1</td>
<td>29.5</td>
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<tr>
<td>Social</td>
<td>22.5</td>
<td>36.7</td>
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</tbody>
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* Recorded in women with the highest intensities of symptom manifestation.
Cortisol Levels Slashed in Human Study

In a double-blind study involving over 40 healthy male subjects,19 two groups were subjected to psychological and physical stress tests, with cortisol concentrations, heart rate, and blood pressure levels measured at specific intervals.

Each of these three stress response markers were substantially lowered in the group taking the proprietary bioactive milk peptide compared to controls.19

Cortisol levels in the placebo group—measured before and after administration of stress testing—saw a net change of only -3.39%. This means that the harmful spike in cortisol typically caused by stressful situations was almost entirely unaffected in the group that did not receive treatment. By comparison, the milk peptide group experienced a net reduction in cortisol of -20.69%. In other words, the release of cortisol was kept under control by the milk peptides, limiting its detrimental effects.19

Natural Sedative Restores Youthful Sleep

- Over 30% of Americans suffer from chronic insomnia, while approximately 60 million experience problems falling asleep in a given year.
- The dire health consequences of sleep debt range from chronically elevated levels of cortisol (the stress hormone), insulin resistance, and increased fat storage to greater risk of mortality from all causes, including cancer and cardiovascular disease.
- A proprietary set of bioactive milk-derived peptides used widely in Europe has been identified that operate along the same neurological pathways as anti-anxiety drugs—without side effects.
- Published studies show they effectively combat the stress response, blunt elevations of cortisol, and relieve anxiety.
- Milk peptides decrease the amount of time it takes to fall asleep, improve sleep efficiency, and increase daytime wakefulness.
- By improving several aspects of healthy sleep, milk peptides may offer protection against the many health disorders associated with sleep deprivation.
Cardiovascular Benefits

The milk peptide group also experienced an almost 50% lower increase in heart rate when placed under stress than those in the placebo group.19

The same beneficial effects were observed in blood pressure readings in the milk peptide group after placement under experimental stress. Following the mental stress test, for example, systolic blood pressure increased 21.25% in the control group, but only 14.65% in the milk peptide group. Similarly, diastolic blood pressure readings increased 21.24%, compared to 15.26% in the peptide group.19

At the core of this proprietary milk peptide compound’s sedative effect is a demonstrated power to effectively blunt the stress response, a primary causative factor in chronic insomnia.

Stress, anxiety, and sleep deprivation share one crucial feature in common: each prompts your adrenal glands to secrete cortisol,23,24 the stress hormone. Since most people now encounter significant stress in their daily lives, chronic cortisol overexposure probably accounts to a great extent for the extraordinary prevalence of insomnia today.

As an evolutionary adaptation to temporary external dangers, cortisol enhances alertness, raises your heart rate, and increases blood pressure. It mobilizes energy toward handling a challenging situation and away from a relaxed, inattentive state. This may enable you to manage a sudden crisis effectively, but it also makes it difficult, if not impossible, to fall asleep. In this sense, cortisol release evolved as a temporary, stopgap measure, but our physiology is not structured to withstand sustained cortisol exposure.

Cortisol also boosts insulin levels.22 This in turn creates a metabolic environment that predisposes aging individuals to fat storage. Sleep deprivation also causes us to consume an average of 221 more calories the next day than we normally would.25

Interestingly, researchers have discovered that the adverse metabolic impact of even short-term cortisol elevations (increased blood sugar and higher insulin levels) is more pronounced in the evening than in the morning.26

Together with other similarly harmful effects, chronically elevated cortisol levels can set in motion a cascade of pathologic physiological processes that hastens the onset of virtually all degenerative diseases. This is no longer a matter of scientific conjecture: over the past two decades, insufficient or poor-quality sleep has been definitively linked to increased mortality from all causes.27-30

The proprietary milk peptide yielded positive outcomes in nearly all indicators measured, for both men and women.

The Key to Falling Asleep: Combating Cortisol and the Stress Response

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**Human Studies Verify Sleep Efficacy**

Recent studies validate milk peptides’ capacity to **restore** more restful sleep patterns while enhancing daytime performance and cognition.

In a placebo-controlled study of 165 healthy adults with a history of **insomnia**, participants were given **150 mg** of milk peptides or placebo each day for one month.

Changes in their ability to relax and fall asleep were evaluated using established diagnostic tools that measure **27 individual indicators** of sleep disorders and insomnia-related problems (including daytime cognition and overall function).20

The proprietary milk peptide yielded positive outcomes in **nearly all indicators measured**, for both men and women.20 Sleep quality, sleep efficiency, sleep disturbances, and daytime dysfunction were all improved, especially in individuals who suffered from moderate symptoms of anxiety or depression.

These results were confirmed by yet another clinical analysis of bioactive milk peptides in adults suffering from **pronounced sleep disturbances**.

Thirty-two healthy men and women suffering from insomnia during the preceding six months took a **150 mg capsule** of patented milk bioactive peptide one hour before bedtime—or placebo—for a month.21

After two weeks, the bioactive milk peptide group experienced a **50%** improvement in **sleep quality**. At four weeks, they needed **30%** less time to fall asleep and experienced improvements in daytime alertness and function.21

**Summary**

The dire health consequences of sleep deprivation range from elevated levels of cortisol (the stress hormone), insulin resistance, and increased fat storage to greater risk of mortality from all causes, including cancer and cardiovascular disease. In both animal and human studies, a proprietary set of **bioactive milk-derived peptides** used widely in **Europe** has been shown to effectively combat the stress response, blunt elevations of cortisol, and substantially eliminate stress-related symptoms across multiple systems of the body. The result is improved ability to relax and fall asleep. Using established diagnostic tools that measure sleep disorders and insomnia-related problems, this proprietary **milk peptide** yielded positive outcomes in **nearly all indicators measured**, for both men and women.20

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**References**

The Deadly Effects of Chronic Insomnia: An Unfolding Pandemic

When your body is chronically deprived of sleep, levels of the stress hormone cortisol tend to rise, especially at the end of the day.31 This, in turn, raises insulin levels. Insulin promotes a metabolic environment that encourages the storage of fat. Stress, anxiety, and mild depression are the most common causes of chronic insomnia.32-37 Together, these unwanted phenomena negatively affect circadian rhythms and modify both sleep duration and sleep quality.38

The range of data published during the last decade reveal a horrific, ever-growing epidemic of stress-related insomnia in the US. According to a published 2001 scientific poll, 38% of American adults reported obtaining 8 hours of sleep; by 2009, that number had decreased to only 28%.39

People suffering from chronic sleep debt can expect to experience adverse physiological changes in blood pressure, endocrine function, glucose and lipid metabolism, and sympathetic and parasympathetic nervous system balance. In contrast, studies show that sleeping 7 to 8 hours each night reduces mortality from all causes,40 including automobile accidents due to drowsiness (drowsy driving causes more than 100,000 crashes a year, resulting in 40,000 injuries and 1,550 deaths.).41

In addition to dermatological disorders, sleep studies have linked chronic insomnia to the following conditions:

- Anxiety and depression32,33,35
- Cancer3,42,43
- Impaired cognitive function (concentration and memory loss)44-46
- Metabolic syndrome4,47
- Cardiovascular disease48-51
- Diabetes6,52
- Impaired insulin action53,54
- Impaired glucose control55,56
- Increased body mass index (BMI)5,57
- Elevated C-reactive protein levels5,58
- Elevated evening cortisol levels5,59
- Hypertension10,60
How Chronic Insomnia Destroys Skin Health

Most of us have witnessed the adverse cosmetic impact on the face caused by just one night of sleep deprivation.

A person may look a decade older in response to stress-induced changes in facial tissues that often accompany insomnia.

Few people are aware, however, that chronic insomnia inflicts significant damage to skin tissues that range from premature aging\(^1,2\) to disorders like eczema, psoriasis, and atopic dermatitis\(^3-6\).

As you will read, there are natural approaches that can help you get a full night’s sleep and enjoy refreshed, healthy-looking skin. > >
HOW CHRONIC INSOMNIA DESTROYS SKIN HEALTH

Recent studies validate milk peptides’ capacity to restore more restful sleep patterns while enhancing daytime performance and cognition.

To maintain healthy, youthful-looking skin, most experts recommend you get at least 7 to 8 hours of restful sleep each night. In today’s hectic, stressed-out world, that’s difficult for most people to do, with a heavy toll taken on skin health and overall health as a result.

Numerous studies have established that stress-induced sleep debt (insomnia) can dramatically impair skin function and integrity. In addition to inducing such inflammatory skin conditions as eczema and psoriasis, sleep deprivation can exacerbate both allergic and irritant contact dermatitis.

Regrettably, many victims of these sleep debt–related health conditions don’t take the right action to treat them because they (and their doctors) don’t recognize the real source of their problem.

Poor sleep quality often accompanies normal aging. Fortunately, scientists have identified some of the underlying mechanisms that interfere with healthy sleep patterns as humans mature.

For instance, insufficient or poor-quality sleep has been associated with elevated stress-hormone (cortisol) levels and increased mortality from all causes.

A decline in the body’s melatonin production is a well-known underlying factor for sleep problems in older adults. This is often accompanied by other health conditions. Numerous studies have established that stress-induced sleep debt (insomnia) can dramatically impair skin function and integrity.

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Insidious Link Between Sleep Debt and Skin Aging

Numerous studies have established that stress-induced insomnia can dramatically impair skin function and precipitate numerous skin disorders. Sleep researchers have found that animals subjected to prolonged sleep deprivation develop ulcerous lesions on their legs and suffer increased risk of bacterial invasion through the skin owing to a breakdown in skin membrane integrity.23-27

In humans, sleep debt and stress have been definitively linked to skin disorders—so much so that an entire sub-speciality of dermatology has developed over the past two decades called psychodermatology. It emerged after an abundance of published studies revealed that many skin conditions respond well to antidepressants and anti-anxiety medications, in addition to traditional dermatologic interventions.28-30

Scientists attribute the link between chronic insomnia and skin disorders to the immunomodulatory or immune-altering effects induced by the release of excess glucocorticoids triggered by sleep debt and stress. As the name suggests, this class of hormones regulates the metabolism of glucose. Every cell in the human body possesses receptors for glucocorticoids. Glucocorticoids also happen to play a central role in immune function. (Cortisol is the most important of the glucocorticoids.)

Excess glucocorticoid production has been shown to negatively affect nearly every tissue in the body and accelerate the aging process.31

In terms of skin health, the sequence of events involved in the formation of collagen is highly dependent on the immune-balancing processes initiated during restful nights of sleep. As the major structural component of your skin (and other bodily tissues), collagen protects against UV damage and bacterial infection, maintains your skin’s elasticity, seals in moisture, and preserves its youthful, healthy appearance.

This nighttime balancing process is disrupted in the presence of excess glucocorticoids (cortisol in particular). Sleeplessness ultimately has a cumulative immunosuppressant effect. Of particular significance for skin health are reduced levels of interleukin-1 (IL-1) observed in insomnia sufferers. At healthy levels, this protein triggers increased white blood cell production in response to foreign invaders and plays a central role in the production of collagen. When levels of IL-1 are too low, collagen formation deteriorates.

This is how chronic insomnia can cause skin disorders related to immune dysfunction. In addition...
to inducing such inflammatory skin conditions as eczema and psoriasis, sleep deprivation has been shown to exacerbate both allergic and irritant contact dermatitis.

As you learned in the previous article, bioactive milk peptides significantly reduce stress-induced elevations in cortisol and have been demonstrated in human clinical studies to promote sustained and restful sleep patterns. They operate along the same neurological pathways as benzodiazepines without the side effects associated with long-term benzodiazepine use.

Nutrients to Enhance Skin Health While You Sleep

Studies have shown that Indian gooseberry and ashwagandha—medicinal herbs used for thousands of years by Ayurvedic practitioners—promote healthy skin function and appearance.

Indian gooseberry has been shown to exert broad-spectrum antioxidant activity in the skin and to protect the skin from the damaging effects of free radicals. For these reasons, Indian gooseberry has been used variously for dermal wound healing, skin carcinogenesis protection, preventing photoaging, and in general-purpose skin care products.

In one study, a proprietary combination containing Indian gooseberry and ashwagandha extracts demonstrated a 54% inhibition of enzymes that break down collagen and an 86% inhibition of those that break down hyaluronic acid, the skin’s natural moisturizer. This proprietary combination was shown to prevent free-radical damage to the skin and to rejuvenate skin cells by increasing circulation of oxygen and nutrients through a reduction in stress hormones known to exert destructive effects on the skin.

Ashwagandha has also been shown to protect the skin against the effects of stress, especially in stress-related health conditions. In a randomized, double-blind, placebo-controlled trial, 98 chronically stressed adults were assigned to receive a patented standardized extract of ashwagandha for 60 days. Study participants received either 125 mg once or twice a day, 250 mg twice a day, or a placebo.

All groups taking ashwagandha saw significant reductions in their stress and anxiety levels and blood pressure. The group receiving 125 mg once a day had a 62% reduction in anxiety compared to those taking the placebo, with anxiety scores declining even further in the group taking 250 mg twice daily. The group receiving the daily dose of 125 mg showed a 14.5% reduction in cortisol levels and a 13.2% increase in DHEA, with the group taking 250 mg twice a day reporting significantly greater benefits.

All treatment groups taking ashwagandha experienced a decline in blood levels of C-reactive protein (CRP), a marker of inflammation in the body. The study’s authors concluded that the “Daily use of Withania somnifera [ashwagandha] would benefit people suffering from the effects of stress and anxiety without any adverse effects.”

The Sleep Hormone

Melatonin is the primary sleep hormone produced nocturnally by the pineal gland in a process driven by a “biological clock” located in the suprachiasmatic nucleus. Melatonin promotes sleep in humans by acting as an endogenous regulator of the sleep-wake cycle.

The body’s own melatonin levels decrease with age, presumably due to a decline in circadian rhythmic functions or to a gradual decline in function of the pineal gland. It is widely accepted that internally produced melatonin promotes sleep and stabilizes the human sleep-wake cycle. Thus, a decline in melatonin levels due to aging may contribute to the common complaint of poor sleep quality seen in the elderly. This suggests the possibility of improving sleep in
aging people suffering from insomnia by appropriately timed treatment with melatonin.

Controlled-release melatonin, a formulation that releases melatonin gradually in the gastrointestinal tract following oral administration, has proven effective for the short-term treatment of adults aged 55 years and older who suffer from primary insomnia.\(^53\)\(^{-57}\)

It is considered effective enough that controlled-release melatonin has been licensed since June 2007 in Europe and in other countries for the short-term treatment of primary insomnia.\(^58\)

**Summary**

Over 30% of Americans suffer from chronic insomnia, while approximately 60 million experience problems falling asleep in a given year. Few people understand the profoundly negative effect of chronic insomnia on skin health.

Scientists have uncovered how excess cortisol and certain immune-signaling imbalances can negatively impact both sleep and skin health. By attacking these underlying factors, bioactive milk peptides and other nutrients may protect against various skin disorders, preserve youthful skin appearance, and facilitate more refreshing sleep patterns.

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

**References**


HOW CHRONIC INSOMNIA DESTROYS SKIN HEALTH


According to the National Institutes of Health, magnesium is required for more than 300 biochemical reactions in the body. Magnesium “helps maintain normal muscle and nerve function, keeps heart rhythm steady, supports a healthy immune system, and keeps bones strong. Magnesium also helps maintain blood sugar levels already within normal range, promotes normal blood pressure, and is known to be involved in energy metabolism and protein synthesis.”¹,²

With so many of our body’s critical functions dependent upon magnesium, supplementation can help ensure that you obtain healthy levels of this vital mineral. The recommended intake of magnesium to maintain vascular health is 500 mg or more a day. With Life Extension®’s Magnesium Capsules you can easily obtain 500 mg of elemental magnesium in each capsule.

The retail price of a bottle containing 100 500 mg Magnesium Capsules is $9.50. If a member buys four bottles, the price is reduced to just $6 per bottle.

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

References:

To order Magnesium Capsules, call 1-800-544-4440 or visit www.LifeExtension.com
Three Proven Ways to Restore Relaxation and Restful Sleep
To combat the profound impact of chronic sleep debt on health and youthful appearance, Life Extension® now offers Enhanced Natural Sleep® with Dual-Action Melatonin. This new formula brings together three clinically validated, natural compounds that have been shown to support healthy, restful sleep, promote healthy response to stress, while targeting sleep debt-related factors associated with skin aging. The three ingredients are:

1. Bioactive Milk Peptides (Lactium®), a cutting-edge nutrient complex consisting of patented bioactive peptides found naturally in milk. Used widely in Europe to promote sustained and restful sleep patterns, published studies reveal that these bioactive milk peptides also promote relaxation, help with stress, and support daytime cognition. A group of 60 women reporting a variety of sleep-related difficulties experienced as much as 65.6% improvement in their symptoms with 150 mg per day of these bioactive milk peptides. In another study, the same 150 mg dose induced substantial improvements across 27 markers of sleep quality and stress response in 165 healthy adults. And in a third study, a group of healthy men and women taking 150 mg per day of these bioactive milk peptides for one month experienced a 50% improvement in sleep quality after two weeks and needed 30% less time to fall asleep after 4 weeks.

The consequences of sleep deprivation go far beyond the miseries of fatigue and diminished performance. Decades of clinical research document that a good night’s rest supports nearly all systems of the body, including:

- Skin health and youthful appearance
- Healthy collagen formation
- Insulin levels already within normal range
- Healthy body weight
- Glucose levels already within normal range
- Blood pressure already within normal range
- Healthy cell division
- Cardiovascular health
- Good mood

Scientists attribute sleep-related difficulties to the unprecedented levels of stress most of us endure in today’s fast-paced world.

To add insult to injury, sleep quality and duration decline as we grow older—at a time when we need the health benefits of a good night’s rest more than ever.

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.
2. Melatonin (very low dose). Melatonin levels naturally decline with age and adversely affect sleep patterns in many people. Both immediate and time-release melatonin has been shown to support restful sleep. So much so that time-release melatonin has been licensed since June 2007 in Europe and other countries for the short-term treatment of sleep disorders.31

3. Sendara™. A proprietary nutrient complex consisting of ashwagandha and Indian gooseberry extracts. Prized in traditional cultures for their ability to promote healthy skin function and appearance, these plant-based compounds have since gained substantial clinical validation. Indian gooseberry provides broad-spectrum antioxidant support and has been used to preserve youthful skin health and appearance in many skin care products.32-35 Ashwagandha promotes a healthy response to stress, comparing to placebo with just 125 mg per day in one clinical study.36

If you find you don't sleep well with melatonin—or are already taking one of Life Extension®'s standalone melatonin formulas at a different dose that works for you—we also offer Enhanced Natural Sleep® without Melatonin. The suggested daily serving of one capsule supplies:

<table>
<thead>
<tr>
<th>Bioactive milk peptides (Lactium®)</th>
<th>150 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sendara™</td>
<td>200 mg</td>
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A bottle containing 30 capsules of Enhanced Natural Sleep® without Melatonin retails for $20. If a member buys four bottles, the price is only $13.50 per bottle.

To help you deal with the stress of everyday life, you may also choose Bioactive Milk Peptides in standalone form, for daytime use to help with stress or before bedtime to support relaxation. Each capsule contains 150 mg of the same patented formula Europeans have used for years to help with sleep and stress-related issues.

A bottle containing 30 capsules of Bioactive Milk Peptides retails for $18. If a member buys four bottles, the price is only $12 per bottle.

Customized Formulas for Optimal Sleep and Stress Support

Enhanced Natural Sleep® with Dual-Action Melatonin should be taken 30-60 minutes before bedtime to help with sleep. The suggested daily serving size of just one capsule supplies:

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</tr>
</thead>
<tbody>
<tr>
<td>Melatonin (immediate release)</td>
<td>750 mcg</td>
</tr>
<tr>
<td>Melatonin (time-release)</td>
<td>750 mcg</td>
</tr>
<tr>
<td>Sendara™</td>
<td>200 mg</td>
</tr>
</tbody>
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A bottle containing 30 capsules of Enhanced Natural Sleep® with Dual-Action Melatonin retails for $22. If a member buys four bottles, the price is reduced to just $15 per bottle.

To order any of these ADVANCED SLEEP AND STRESS RELIEF FORMULAS, call 1-800-544-4440 or visit www.LifeExtension.com

References

FOR YOUNGER-LOOKING SKIN

RejuveneX® FACTOR

Expertly Formulated With Advanced Anti-Aging Ingredients

RejuveneX® Factor incorporates nutrients with proven therapeutic value, resulting in more noticeable skin firmness and elasticity, smoother skin tone, and vibrant texture and volume:

• POMEGRANATE demonstrates some of the most potent antioxidant properties of any plant.¹
• MATRIXYL™ 3000 restores youthful tone and texture by nourishing collagen and reducing sagginess.
• CERAMIDE-2, together with Ceraphyl® NGA, helps prevent dehydration even when the moisture level in your skin diminishes with age.²
• GRAPE SEED EXTRACT contains powerful phenolic compounds that help promote the elasticity, flexibility, youthfulness, and health of your skin.³

RejuveneX® Factor is formulated with the QuSome® advanced efficacy delivery system that enables these ingredients to penetrate the skin’s lower layers for greater nourishment and extended protection.

More Active Ingredients Than Other Anti-Aging Skin Creams

With 25 active ingredients, RejuveneX® Factor is the world’s most nutritionally complete skin care formula. RejuveneX® Factor contains multiple antioxidants and other ingredients that have been scientifically documented to keep skin youthful, including:

• GREEN AND WHITE TEA EXTRACTS help keep your skin looking youthful by providing protection against oxidative stress.

These antioxidants help combat the visible aging effects associated with glycation—reducing visible signs of aging by as much as 75%.⁴
• VITAMIN C in ascorbyl phosphate form quenches skin-damaging free radicals and nourishes the skin’s collagen strands.
• HYALURONIC ACID to help the skin retain moisture.
• ALPHA LIPOIC ACID, a potent and versatile antioxidant that helps reduce the appearance of premature wrinkling of the skin and improve skin texture.
• BETA-GLUCAN, which has been shown to penetrate deep into the skin and deliver significant skin benefits as a long-lasting, film-forming moisturizer, is essential to retaining youthful-looking skin. Beta-glucan’s ability to penetrate the epidermis to reach the dermis (the layer where wrinkles form) makes this ingredient essential for any skin care regimen. It has also been shown to increase skin firmness and nourish collagen.
• VITAMIN A improves the appearance of wrinkles associated with natural aging.
• VITAMIN E in both alpha and gamma tocopherol forms helps protect against environmentally induced oxidation in the skin’s outer layer.
• RNA (ribonucleic acid) is critical for healthy skin rejuvenation.

A 1.7-fl.oz. (50-mL) pump of RejuveneX® Factor retails for $65. If a Life Extension® member buys four bottles, the price is reduced to just $41.25 per bottle.

RejuveneX® is formulated with ingredients shown to dramatically improve the appearance of dry, creased, or damaged skin.

To order RejuveneX® Factor, call 1-800-544-4440, or visit www.LifeExtension.com

References:
When tryptophan is ingested as a food or supplement, it is naturally degraded by specialized enzymes in the body. The problem is that activity of one of these enzymes increases with age, thereby denying the brain the tryptophan it needs to produce adequate serotonin. The result of the excess degradation of tryptophan can be seen in serotonin-associated troubles, such as:

1) Poor sleep quality
2) Emotional mood and stress
3) Weight gain and appetite
4) Loss of feeling of well-being

The degradation of tryptophan in the body can be inhibited with the intelligent use of other nutrients. For instance, the amino acid lysine competes with tryptophan in the same oxidative degradation pathway. This means that in the presence of sufficient lysine, less tryptophan is broken down through oxidation.

The primary tryptophan-degrading enzyme is overactivated by inflammatory cytokines. The most comprehensive way to suppress the inflammatory factors that cause the enzymatic degradation of tryptophan is to take the proper dose of niacinamide along with extracts from ginger, hops, and rosemary. A patent-pending formula called Optimized TryptoPure® Plus has been developed that provides lysine, niacinamide, hops, ginger, and rosemary extracts to protect tryptophan against excessive degradation in our aging bodies, thus sparing it for conversion into serotonin in the brain.

Life Extension®’s Optimized TryptoPure® Plus formula contains tryptophan that is certified pure enough to be used as an active ingredient in pharmaceutical products. This pharmaceutical-pure tryptophan costs more than other tryptophan raw material as it undergoes significantly more rigorous manufacturing processes to safeguard purity.

Each three-capsule serving provides 1,000 mg of certified pure tryptophan, along with the doses of lysine, niacinamide, and ginger-hops-rosemary extracts needed to protect this precious tryptophan from unwanted degradation in the body. While some people may take two to three capsules all at once before bedtime, others may choose to take one capsule on an empty stomach before each meal.

A bottle containing 90 capsules retails for $40. If a member purchases four bottles, the price is reduced to $27 per bottle.
Novel Method to Reverse Age-Related Skin Imperfections

Microdermabrasion is one of the top non-surgical skin restoration procedures for men and women.¹

This medically administered exfoliation technique has been shown to dramatically reduce the appearance of acne scars, wrinkles, and fine lines.²

Unfortunately, its high cost, along with the significant health risks the procedure poses in some cases, makes microdermabrasion an unattractive option for many people.

In this article, you will learn of a cutting-edge exfoliant alternative for at-home use. This novel topical application capitalizes on the unique properties of organic amber crystals to restore your skin’s natural radiance. In dermatologist test cases, it produced as much as 75% improvement in the appearance of wrinkled, damaged, aging skin! > >
Microdermabrasion: Major Benefits, Serious Drawbacks

In 1985, two doctors based in Italy (Mattioli and Brutto) developed the first microdermabrasion machine. It represented a quantum leap forward in anti-aging skin care. Their device exfoliates the skin using a spray of micro-fine crystals that are continuously removed by vacuum, a procedure that offered many advantages over earlier dermabrasion techniques.

Microdermabrasion reached the US in the mid-1990s. As a result of this technological advancement, microdermabrasion quickly became one of the most popular cosmetic procedures performed in doctors’ offices. Even today, along with the newer Botox® and hyaluronic acid (Restylane® or Juvederm®) injections, microdermabrasion still remains one of the top cosmetic procedures performed.1

Although extremely effective, the mechanized microdermabrasion process can also carry serious risks. Improperly sanitized machines can allow for the possibility of cross-contamination and infection from one patient to the next due to bloodborne pathogens.

Improper use of the machine may further result in the exfoliating crystals perforating the skin or even entering the eye to cause extreme irritation.

Those with undiagnosed lesions on their skin, women who are pregnant or breastfeeding, sufferers of keratosis (a localized horn-like overgrowth of skin, sometimes discolored), people with an active outbreak of acne or rosacea, and individuals with autoimmune disorders, diabetes, eczema, lupus, psoriasis, or dermatitis may be unsuitable candidates for the in-office machine procedure.

Expense is also a significant drawback. Microdermabrasion performed in a certified medical office or clinic—the recommended, safe setting for administration of this procedure—can cost up to $300 per treatment.2 With an average of 12 sessions and an initial consultation fee of $150, this puts the total cost for a professional series of microdermabrasion treatments close to $4,000.

Day spas and beauty salons generally charge as much or more for their microdermabrasion treatments without yielding the same professional-quality results.

Rejuvenating the skin by superficially removing its outer layers is a practice that goes back thousands of years.
A Safe, Low-Cost, At-Home Alternative

Fortunately, for those who wish to experience a gentler form of microdermabrasion, a novel, dermatologist-tested exfoliant cream is now available for use at home. In patient after patient, this cream has been clinically proven to remove dead skin using fine particles of a natural organic substance known as *amber*. Traditional cultures throughout history have recognized the healing powers of amber. Modern clinical use confirms amber’s ability to rejuvenate the skin.

In one notable case, a woman presented to a dermatologist with dull, tired-looking skin and many fine lines around her eyes and on her forehead caused by premature aging and sun damage. She received a trial-size portion of an exfoliating product containing amber crystals. After using the product for three weeks, she returned to the doctor’s office. The physician noted marked improvement in the texture, tone, and radiance of the patient’s skin. Additionally, there was over a 60% decrease in the appearance of the fine lines around her eyes, as well as the appearance of wrinkles on her forehead.3

Another patient appeared at a dermatologist’s office with rough skin, dark blotchiness, and severely increased pigmentation caused by excessive sun exposure and prior pregnancies. She received a trial sample of an exfoliating product containing amber crystals. Upon her return to the physician’s office after one week of using the product, there was a 50% improvement in the roughness of the patient’s skin. There was also more than 30% improvement in the dark, blotchy

The Exfoliating Power of Amber Crystals

- A non-surgical exfoliation procedure called microdermabrasion ranks among the most popular cosmetic procedures in the US.

- Its high cost, along with significant health risks it poses in a number of cases, makes this effective anti-aging skin therapy an unattractive option for many people.

- A cutting-edge topical alternative has been identified that effectively revitalizes damaged, aging skin at a fraction of the cost.

- Its potent rejuvenating effects arise from the unique properties of amber crystals.

- Amber is a semi-solid organic substance naturally secreted by plants in response to physical injury or extreme climate changes.

- In dermatologist test cases, a topical application containing amber crystals yielded as much as 75% improvement in the health and appearance of damaged, aging skin.
areas and hyperpigmentation. After six weeks of using the product, the patient demonstrated more than 70% improvement in the roughness of her skin and more than 50% improvement in the blotchy areas and pigmentation previously observed.

A third patient consulted a dermatologist regarding her severe sun damage, wrinkles around the eyes, deep creases on the forehead, and rough, tired-looking skin. These concerns were attributed to excessive environmental stresses, regular outdoor activities, and a past history of smoking. She received a trial of an exfoliating product containing amber crystals. After one week of using the product, she returned to the doctor’s office. The physician noted over a 50% improvement in the roughness of the patient’s skin and dull complexion. After four weeks of using the product, there was more than 75% improvement of the appearance of fine lines and wrinkles around the eye area, as well as a more than 60% improvement of the deep creases of the forehead. There was also more than a 70% improvement of the sun-damaged areas, leading to a much healthier appearance of her skin.

**What Is Amber?**

Amber is one of the few precious substances on earth that is not of mineral origin. Although considered a gemstone, amber is a completely organic compound derived from the fossilized resin of extinct trees. This resin is the semi-solid organic substance that is naturally secreted by the epithelial cells of a plant in response to physical injury or radical climate changes. In the dense forests (between 10 and 100 million years ago), countless resin-bearing trees fell and were carried by inland rivers to the sea. The trees and their resins eventually sank to the ocean floor and were covered by layers of sediment.

Tree resins are highly complex organic substances that include compounds called terpenes. Over time, some of these terpenes evaporated while others condensed and underwent a cross-linking process to form polymers. Over millions of years the resin gradually hardened to become amber. The exact structure and composition of amber varies according to the species of tree that produced the resin, the age of the amber, the environment in which it was deposited, and the geothermal forces to which it was subjected.

The richest deposit of amber in the world occurs near the eastern shores of the Baltic Sea. This Baltic amber comes from a layer of blue-green sand on the ocean floor that is between 26 and 34 million years old. Aptly nicknamed the blue earth, this sand contains high levels of a mineral known as glauconite, a silicate that is responsible for its unusual blue-green color.

**How Amber Combats the Visible Effects of Aging**

In 2002, a Russian physician named Nikolai Moshkov conducted clinical experiments on the natural ability of amber to improve cellular metabolism and stimulate renewal in unhealthy cells. Moshkov discovered that he could obtain rapid and significant improvement in disorders afflicting the head, spine, thyroid gland, chest, and limbs by rubbing the skin of the affected area with a fine powder of pure amber crystals. *The most visible and dramatic results he achieved were seen on the face.* The skin appeared younger, smoother, healthier, and much more radiant. This was attributed to the antioxidant, anti-inflammatory, and tissue-regenerative properties of amber.
NOVEL METHOD TO REVERSE AGE-RELATED SKIN IMPERFECTIONS

A non-surgical exfoliation procedure called microdermabrasion ranks among the most popular cosmetic procedures in the US. Unfortunately, its high cost—and the very real health risks it poses in a number of cases—render this otherwise effective anti-aging skin therapy an unattractive option for many people.

A cutting-edge topical alternative has been identified that effectively revitalizes skin at a fraction of the cost. Its potent rejuvenating effects arise from the unique properties of amber crystals. Amber is a semi-solid organic substance naturally secreted by plants in response to physical injury or extreme climate changes. In dermatologist test cases, a topical application containing amber crystals yielded as much as 75% improvement in the health and appearance of damaged, aging skin. •

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

References


Does Exfoliation Really Work?

The process of exfoliation is very much like peeling away the dry, outer skin of an onion to reveal the living layers beneath. Whether the exfoliation is done using mechanical abrasion or a controlled chemical reaction, removing dead and damaged skin cells on the surface allows the fresh new skin underneath to become visible.

This newly exposed layer of skin feels perceptibly softer and smoother. Its surface reflects light better, making fine lines and other small imperfections harder to see. Age spots and other areas of unwanted pigmentation are less noticeable because the dead skin cells containing the pigment have been removed. Exfoliation unblocks clogged pores and allows for the release of natural skin oils.

Regular exfoliation also helps to maintain open pores, decreases pore size, and minimizes many types of superficial scarring. In addition, removing the top layer of dead and damaged cells allows health-promoting agents such as moisturizers, antioxidants, and collagen-boosting ingredients to better penetrate the skin and work more effectively.

Rejuvenating the skin by superficially removing its outer layers is a practice that goes back thousands of years. Egyptian women used rough pumice stones and abrasive powder to reduce scarring and reverse the signs of aging. Wealthy noblewomen in ancient Egypt bathed in sour milk or rubbed fermented grape skins from the bottom of wine vats on their faces, using naturally occurring biochemicals to enhance their beauty. Age-defying remedies such as these were the origin of modern day dermabrasion and chemical peels, which have not changed greatly over the years.
Discover the European “Secret” to Youthful, Healthy Legs

Combat Unsightly Veins with This High-Potency Extract

30 YEARS OF CLINICAL EVIDENCE BRINGS LONG-AWAITED RELIEF

It is estimated that half of all women in the United States will develop unsightly veins by age 50.¹ While dermatologists often suggest surgery to correct this “age-related” issue, European women have enjoyed access to a natural solution for 30 years!

Life Extension offers American women the same extract without a prescription. No more compression bandages or stockings. Instead, experience the same beautifying effects European women have been raving about for three decades—naturally!

Derived from the sweet orange, European Leg Solution featuring Certified Diosmin 95 contains a plant-based nutrient called diosmin and is available in a vegetarian tablet.

MICRONIZED FOR GREATER EFFECTIVENESS

In order to derive any significant benefit, bioactive diosmin extract must be able to reach veins directly.

Life Extension’s proprietary extract undergoes a complex, highly refined process called micronization. It yields the only form of diosmin clinically proven to support healthy vascular function in the legs.¹²

This scientifically controlled, multi-phase technique radically reduces the size of the standard diosmin particles contained in each tablet, from 37 microns to less than 2 microns. The result is an optimally bioavailable standardized extract. This ensures rapid, efficient delivery of diosmin to the bloodstream, enabling enhanced penetration of the delicate inner lining of the veins.

As with so many “age-related” conditions, inflammation is the chief culprit behind the presence of unsightly veins. Inflammatory responses are precipitated by the interaction between white blood cells and the endothelial lining.

Life Extension’s European Leg Solution featuring Certified Diosmin 95 offers effective protection by disrupting this inflammatory response.

THE PREFERRED TREATMENT AMONG EUROPEAN WOMEN FOR BEAUTIFUL LEGS IS HERE

Life Extension’s European Leg Solution featuring Certified Diosmin 95 provides the same pharmaceutical grade extract used by millions throughout Europe. The retail price for a bottle containing 30 600 mg vegetarian tablets is $20. If a member buys four bottles, the cost is only $13.50 per bottle.

Six Ways Life Extension’s European Leg Solution featuring Certified Diosmin 95 Works for You

1. Maintains healthy blood flow through your capillaries—the most fragile of your blood vessels.
2. Maintains tone and elasticity of your veins—the key to sustained vascular health.
3. Eases the effects of circulating cytokines that promote inflammation.
4. Safeguards collagen and elastin against oxidative damage.
5. Enjoys an outstanding safety record.
6. Produces results in just 1–2 weeks, with a single 600 mg tablet taken each morning.²

*Product not for sale outside the United States.

To order European Leg Solution featuring Certified Diosmin 95, call 1-800-544-4440 or visit www.LifeExtension.com


Contains corn.

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.
If exfoliation isn’t a regular part of your skin care regimen, it should be. Your skin’s dead, hardened outer layer not only worsens the appearance of wrinkles, age spots, scars, and blemishes—it also gradually destroys skin health, clogging pores and preventing the release of natural oils that normally preserve natural softness and luster as you age.

That’s why microdermabrasion is one of today’s most popular non-surgical exfoliation procedures. Under the supervision of a certified dermatologist, a spray of micro-fine crystals continuously removed by vacuum scours away dead skin cells and restores your skin’s youthful glow.

Unfortunately, the outlandish cost for medically safe results causes microdermabrasion to be impractical for budget-conscious individuals. And if you’re pregnant or breastfeeding, or suffer from a variety of health conditions including acne, rosacea, eczema, psoriasis, or diabetes, microdermabrasion poses significant risks. Even healthy individuals may suffer infections from improperly sanitized equipment.

The solution is a low-cost, at-home alternative called Amber Self MicroDermAbrasion. This cutting-edge exfoliant formula features ultra-fine amber crystals. A precious organic substance, amber derives from fossilized resins that trees release to heal themselves after physical injury and environmental stress. Amber is rich in compounds that form a basic building block for nearly all living organisms.

Amber Self MicroDermAbrasion puts these unique properties to work for you, gently removing dead skin cells and smoothing away unsightly wrinkles, lines, and other cosmetic imperfections. In dermatologist test cases, it has been shown to improve the appearance of aging skin by as much as 75%. It’s also safe for daily use.

Now you can enjoy these beautifying, age-defying effects at home, at a fraction of the cost of microdermabrasion or other costly exfoliation procedures.

A 2 oz jar of Amber Self MicroDermAbrasion retails for $49. If a member buys two jars, the price is just $31.50 per jar.
The human mouth is teeming with bacteria. Brushing, flossing, and traditional dental care often aren’t enough to escape the health risks of too much of the wrong kind of bacteria found floating around the human mouth. With oral probiotics, we may be able to prevent or at least control the growth of the dangerous organisms where they originate.

**Advanced Oral Hygiene** is a new oral probiotic that provides the beneficial bacteria that can help block harmful bacteria that first develop in the mouth. This sophisticated oral probiotic therapy allows the healthy and naturally occurring organisms found in the body to out-compete the harmful bacteria.1,3

**Multiple Health Benefits**

**Advanced Oral Hygiene** contains BLIS K12™ and *Bacillus coagulans*, a unique blend of two oral probiotics, which aim to triumph over many of the chronic threats to our health caused by oral microbes that may pose harm to the body. BLIS K12™ (*Streptococcus salivarius*) and *Bacillus coagulans* (GanedenBC30) organisms naturally survive in human tissue, maximizing their health-promoting potential and providing help with the regulation of inflammation and cell destruction caused by the dangerous germs that originate in the mouth.

Regular use of **Advanced Oral Hygiene** could make a significant impact in protecting oral health,1,3 which in turn can strengthen the immune system, ease inflammation, and help the body maintain good health.4,5

**Poor Oral Health is Associated With Risk Factors Throughout the Entire Body**

Inflammation in the mouth can translate to poor health in other parts of the body. Traditionally, poor mouth conditions have a tendency to become chronic, producing a steady elevation of inflammation in other parts of the body that receive high blood flow—thereby “seeding” the entire system with circulating “cytokines.” These cytokines, or “chemical messengers,” produce inflammatory responses in tissues far distant from the mouth and affect cellular behavior critical to the immune system’s defense. When cytokine levels continue to increase—the occurrence of even more acute inflammation can also increase.

**Advanced Oral Hygiene** can offer relief and modulate the body’s inflammatory response, making these “good” microorganisms found in the BLIS K12™ and GanedenBC30 strain the ideal candidates for easing inflammatory conditions in the body.5

**Live Life Longer and Healthier**

In combination with a rigorous oral hygiene regime, **Advanced Oral Hygiene** provides the body with beneficial bacteria to naturally help protect the immune system and prevent harmful bacteria from colonizing throughout the body.

A bottle containing 60 mint lozenges of **Advanced Oral Hygiene** retails for $20. If a member buys four bottles, the cost is only $13.50 per bottle.

**References**


GanedenBC30™ is a registered trademark of Ganeden Biotech, Inc. BLIS K12™ is a licensed trademark of Frutarom, Ltd.
For more than forty years, the antioxidant compound N-acetyl-L-cysteine or NAC has been recognized for its role in supporting bronchial and respiratory health. Today, a burst of renewed scientific interest has yielded fresh insights into its role in supporting overall health.

At the core of N-acetyl-L-cysteine's power is its ability to support healthy cellular levels of glutathione (GSH), a nutrient utilized by all cells for protection against free radical damage and insults from foreign compounds.

N-acetyl-L-cysteine directly contributes to glutathione production and stimulates enzymes involved in maintaining glutathione, providing critical energy and support for cell function across multiple systems of the body.

Over thirty placebo-controlled clinical trials involving cellular glutathione have indicated beneficial effects of oral N-acetyl-L-cysteine on health, quality of life, and well-being.

Aside from its role in glutathione synthesis, N-acetyl-L-cysteine serves as a highly bioavailable nutrient in its own right. Upon ingestion, it is readily absorbed and promotes direct cellular protection throughout the body via multiple physiological pathways. It provides immune support, helps liver cells to efficiently metabolize lipids and neutralize free radicals, and has been shown to supply nutritional support to neurons in the presence of oxidative stress.

Individuals seeking support for system-wide health with Life Extension® N-Acetyl-L-Cysteine may choose to ingest between 600-1,800 mg per day.

The retail price for a bottle containing 60 600 mg capsules of N-Acetyl-L-Cysteine is $14. If a member buys four bottles, the price is reduced to just $10.13 per bottle.

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

References

To order N-Acetyl-L-Cysteine, call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
The Emperor Has No Clothes...

Quality Lapses at Big Pharma Unveiled
The pharmaceutical industry is disseminating a myth for the purpose of frightening the public away from compounded drugs!

The claim is that since compounding pharmacies are not directly inspected by the FDA, they lack the quality control standards inherent to large pharmaceutical corporations. The media is functioning as a mouthpiece for Big Pharma by attacking compounding pharmacies and those who recommend them in lieu of side effect-prone FDA-approved drugs.

The harsh reality is that Big Pharma has been caught red-handed committing numerous and egregious manufacturing lapses. Even when life-threatening problems are uncovered, such as no active ingredient being in the finished drug, Big Pharma has done nothing until the fines become prohibitive and executives are threatened with jail time. Big Pharma’s arrogance is beyond comprehension.

Compounding pharmacies, on the other hand, sell what are often superior formulations usually at lower prices than branded FDA-approved prescription drugs. Men seeking testosterone replacement, for example, can obtain it from a compounding pharmacy for less than $30 a month, whereas a branded drug such as Androgel® costs $225 for the same quantity of testosterone.

Pharmaceutical companies have lobbied the FDA hard to prevent the public from finding out about low-priced compounding pharmacies, but there is nothing illegal about a medical doctor prescribing a compounded drug. And unlike pharmaceutical behemoths who feel they are accountable to no one, a compounding pharmacy’s reputation lives and dies with each and every individually-compounded drug it formulates.

Not all compounded drugs are cheaper to buy. Fearing competition from natural estrogen creams, pharmaceutical giant Wyeth petitioned the FDA to declare estriol (the safest estrogen) illegal. That has forced compounding pharmacies to charge much more for it because most companies fear importing it from Europe where it’s routinely used.

Wyeth (now owned by Pfizer) sells Premarin® and Prempro®—two hormone drugs that can increase the risk of certain cancers and vascular disease. Wyeth wants women to continue taking Premarin® and Prempro®, so their allies in the FDA stepped forward to interfere with the ability of American women to access estriol, a form of estrogen that has not shown lethal side effects, especially when used with natural progesterone.

The pharmaceutical industry is deceiving the public by implying that compounded drugs lack quality control standards. In this article, you’ll learn the admitted truth about the horrific manufacturing and inspection lapses committed by the largest drug companies that include pleading guilty to criminal charges. > >
You may have read about some obscene quality lapses at Big Pharma manufacturing facilities, but these reports disappear from the headlines within a day or two.

These quality lapses are particularly egregious because the profits earned on OTC and prescription drugs are so enormous. The active ingredient usually costs virtually nothing, meaning manufacturing the drug is the only significant expense. Yet even in the area of good manufacturing practices (GMP) that many dietary supplement companies strictly adhere to, large pharmaceutical companies have dropped the ball and exposed the public to dangerous products.

The purpose of this article is to memorialize some of these quality deficits so those who care to find the truth will learn that the most dangerously-made drugs emanate from an industry (Big Pharma) that enjoys some of the highest profit margins on the planet. These outlandish profits are courtesy of quasi-monopolistic protections granted by the federal government.

Ironically, while the federal government bestows numerous monopolistic benefits to Big Pharma, it also fines them when they repeatedly produce substandard drugs. What follows are examples of documented quality problems within the pharmaceutical industry:

- Just imagine not being able to breathe because of an acute asthma attack. You grab your FDA-approved asthma inhaler to open your bronchi, but nothing happens. You keep gasping for breath until you suffocate to death. The reason your asthma inhaler did not open your closed bronchi is because the manufacturer failed to put in the active ingredient (albuterol). At your funeral, people who were with you say you kept inhaling your drug, but it did not work. No one at your funeral would know that one of the leading drug manufacturers in the world (Schering-Plough) had repeatedly been caught failing to put the active ingredient into their asthma inhalers. All the FDA initially did was issue a warning telling Schering to stop selling drugs with the active ingredient missing.

After Schering-Plough kept getting caught, they were finally fined $500 million for repeatedly failing plant inspections. Inspectors found "significant regulations violations related to facilities, manufacturing, quality assurance, equipment, laboratories and labeling." It turned out Schering shipped out asthma inhalers that contained little or no active ingredient (albuterol) leading to perhaps as many as 17 deaths, according to the Public Citizen’s Health Research Group. (No one knows the actual number of deaths.) Several massive recalls were the result. According to the New York Times, “The FDA also set strict quality control terms on four Schering-Plough facilities in a consent decree...”

- If you or someone you love is suffering from Gaucher’s disease or Fabry disease, you would most likely be relying on two of Genzyme Corporation’s products for treatment. You would also be relying on that treatment to be free of adulterations.

In 2009, the FDA announced that Genzyme drugs were put into vials that were contaminated with particles of steel, rubber, or fiber. The contamination caused production on these drugs to be stopped, which meant patients would have to either have stockpiled prescriptions, search for alternative treatment methods, or forego treatment altogether. The drug shortage also limited the ability of researchers to conduct clinical trials. Genzyme Corp., “under the consent decree of permanent injunction,” agreed to correct manufacturing quality violations at one of its facilities and will return $175 million in “unlawful profits” from the sale of products that were made at the plant. While the financial penalty may force the company to alter its ways, that is hardly an acceptable conclusion for the patients who went without their prescriptions solely because of Genzyme’s misdeeds. According to a survey of 1,800 doctors released by the Institute for Safe Medical Practices, the shortages led to patients dying for want of the preferred drug therapy.
• Adults being poisoned by drug manufacturers with warehouse debris is one thing, but you’d think that when it comes to products for infants, drug companies would take extra precautions. Unfortunately, you’d be wrong. Abbott Laboratories’ recent recall of Similac® infant formula proves just that.

If you have an infant, you trust that the formula you feed your child is of the highest quality. If after feeding your child, you notice that they are experiencing severe stomachaches, would it even cross your mind that your child is suffering because there were insect parts in his or her formula? For most of us, that thought would be unthinkable, but it happened!

Abbott recently recalled 5 million cans of Similac® infant formula that possibly contained either common beetles or their larvae. The FDA said the insects pose no immediate health risk, however they acknowledged that there is a possibility that infants who consume formula containing the beetles or their larvae could experience symptoms of gastrointestinal discomfort and refusal to eat as a result of small insect parts irritating the GI tract. It is remarkable that the FDA considers a child refusing to eat because insect legs are stuck in its small intestine to be no immediate health risk. This is a case of the FDA grossly understating a problem to cover for a major company.

• Due to their compromised immune systems, chemotherapy patients have to be treated with the utmost care. With low white cell counts, low platelet counts, and an overall weakened state of health, the drugs they take to either combat cancer or fight the insidious effects of the chemo itself need to be of the utmost integrity. Imagine being a cancer patient in the fight of your life against a horrific cancer. Suddenly, uncontrollable swelling of your blood vessels causes you to be in severe pain and discomfort. Your physician checks and rechecks your drug bags, your vital signs, and your blood. Time and again they come up clueless as to what is the cause of this new trauma to your body. If you are lucky enough to survive the event, you will eventually see a press release from Amgen and Novartis recalling their intravenous drugs for the presence of glass flakes supposedly caused by a breakdown of materials in the stored vials. According to Reuters News Service, the company “initiated a voluntary recall of 24 lots of its methotrexate injection, a common chemotherapy drug, in the United States, due to the presence of small glass flakes that could result in adverse events. One of the manufacturers said the adverse events include damage to blood vessels, swelling, and possibly death.” Methotrexate is used in the treatment of neoplastic diseases (cancer), severe psoriasis, and rheumatoid arthritis, including some types of juvenile rheumatoid arthritis.

Quality Lapses at Big Pharma

• The pharmaceutical industry claims that compounded drugs are not safe or effective because they are not directly inspected by the FDA, as prescription drugs are.
• Compounding pharmacies often sell superior formulations at better prices, compared to prescription drugs.
• Compounding pharmacies must maintain high quality standards because they rely on their reputations to stay in business.
• Big Pharma has committed numerous egregious mistakes in maintaining quality control.
• For example, Schering-Plough was repeatedly caught failing to put the active ingredient in prescription medications, such as asthma inhalers. They were finally fined $500 million for failing plant inspections.
• In 2009, the FDA announced that Genzyme drugs were put in contaminated vials, which led to interrupted drug production and medication shortages.
• Abbott Laboratories recently recalled 5 million cans of Similac® infant formula due to contamination with insects or larvae.
• Other pharmaceutical companies that have recalled products due to contamination and other quality control issues include Novartis, Amgen, Johnson & Johnson, and GlaxoSmithKline.
For many, there is no more trusted name in the pharmaceutical field than Johnson & Johnson (J&J). That trust has been built from generation to generation, and Americans purchase J&J products with that trust in mind. Implied in that trust is the belief that not only are J&J products of the best quality, but they are also manufactured under the best conditions. Once again, the public’s trust has been misplaced.

J&J had to recall nearly 200 million bottles of various over-the-counter drugs. According to a Reuters Report (Tue., May 4th, 2010) “…inspectors found thick dust and grime covering certain equipment, a hole in the ceiling and duct tape-covered pipes at the Fort Washington, Pennsylvania, facility that made 40 products…” with “…raw ingredients contaminated by an unspecified bacteria, a lack of quality control procedures and poor handling of complaints, according to the report dated April 30.”

It was so bad, the FDA “…urged consumers to stop using liquid Tylenol®, Motrin®, Benadryl®, and Zyrtec® for children and infants after a broad recall,” recommending people use generics instead. The company has suspended production at the plant.

The bond between American consumers and J&J has clearly been broken, but what about the responsibility the FDA bears as the chief regulator of J&J’s factories? The FDA’s primary purpose is supposed to be to protect the consumer, but instead, it protects the profits of big medical companies and let the factories of one of America’s largest drug producers go unmonitored for too long while consumers suffered.

Lipitor® is one of the most profitable drugs of all time. Consumers have seen endless advertisements for its ability to lower total cholesterol and LDL. Recently, Pfizer recalled certain bottles of Lipitor® due to reports of “an uncharacteristic odor.” According to Pfizer, the company “…is working closely with the bottle supplier to determine the cause of the odor problem and to rapidly address it.”9 The company advises, for those who “…experience an uncharacteristic odor associated with your medication, please return the tablets to your pharmacist.” Pfizer claims the product is still safe to use, stating “medical assessment has determined the odor is not likely to cause adverse health consequences in patients…”.

Egregious Quality Lapses

If what you have read so far does not shock you, the following recent case involving GlaxoSmithKline will leave consumers wondering if any drugs are truly safe out there.

In fact, the quality control deficiencies at Glaxo were so egregious that they were highlighted in a recent 60 Minutes report titled “Bad Medicine.”10 The report focused on the atrocious manufacturing lapses at a plant operated by GlaxoSmithKline subsidiary SB Pharmco Puerto Rico, which was at the center of last year’s $750 million health fraud case the company settled.

A former global quality assurance manager for GlaxoSmithKline, for the first time on camera, offered details on what she saw at the Cidra, Puerto Rico, plant. At the facility, GlaxoSmithKline manufactured Kytril®, an anti-nausea medication; Bactroban®, a topical anti-infection skin ointment; Paxil CR®, a form of the antidepressant drug Paxil®; and Avandamet®, which is used to treat type 2 diabetes. These and other drugs were produced for sale in the United States.

60 Minutes reported on how the water used to make tablets was tainted with bacteria and about how failures on production lines had made some drugs too strong, and others not strong enough.

Of all the manufacturing lapses cited, the most alarming were the mix-ups that led to drugs being...
Big Pharma has become so arrogant with their enormous riches that they have shoved manufacturing quality control to the bottom rung of their priorities.

Filled in the wrong bottles. The mix-ups ultimately led to patients receiving and taking medicines that were either higher doses than prescribed or used to treat an entirely different condition.

Examples of these mix-ups were Avandia® diabetes pills mixed in packages with over-the-counter Tagamet® antacids, and Paxil® antidepressants being mixed with the Avandia® diabetes drug. (Avandia® was later pulled from the market because it is too dangerous to take even when properly made.)

The 60 Minutes report featured a response from a senior vice president from Glaxo headquarters in London, who said the company regrets what happened in Puerto Rico and that the company spends $600 million to ensure “plant and equipment is state of the art.”

In a statement released after the 60 Minutes story aired, GlaxoSmithKline insisted patients weren’t hurt by the problems at the Cidra plant, and that the company had been working to improve the plant’s performance as early as 2001.

As of this writing, the investigation is ongoing and additional civil and criminal charges may still be handed down. Many drugs sold in America are manufactured in Puerto Rico because of favorable tax status.

Media Bias Often Misleads Consumers

The media has a propensity to falsely claim that consumers cannot trust compounding pharmacies because they are not subject to the same rigorous standards as large pharmaceutical companies. The reality is that Big Pharma has become so arrogant with their enormous riches that they have shoved manufacturing quality control to the bottom rung of their priorities.

Readers should be aware the examples cited in this article are not an exhaustive list of failures of quality control by the pharmaceutical industry. These hideous patterns of misconduct eliminate any standing the pharmaceutical industry (and its shills in the media) has in attempting to scare the public away from the use of compounded medications.

Pharmaceutical Industry’s Double Standard

The pharmaceutical industry often claims that quality issues are rare and anomalies. A search at the www.FDA.gov website and some Internet searching, however, shows that’s not the case, and it is growing worse. Drug makers have put quality control on the low-priority list as they attempt to increase their profits through extensive cost-cutting.

The pharmaceutical industry has quite a double standard for itself. When people look to compounding pharmacies in an attempt to avoid the outrageous profit margins from various brand-name drugs, pharmaceutical companies claim compounding pharmacies are less safe due to lacking FDA-mandated quality control standards, yet these very companies often fail to adhere to acceptable manufacturing standards. It is the drug companies themselves that are pleading guilty to criminal charges of failing to follow good manufacturing practices (GMP) and knowingly putting lives in danger.
Conclusion

Although the FDA appears to have stepped up enforcement of QC issues found in the pharmaceutical industry, the FDA and the pharmaceutical industry have a complex, often nepotistic relationship. For example, according to Dr. Marcia Angell, former editor of the *New England Journal of Medicine* and author of *The Truth About the Drug Companies*, “The FDA reviews drugs for safety and effectiveness before they are allowed on the market, but drug companies pay large ‘user fees’ in return for quick reviews. That means the agency is beholden to the industry it is supposed to regulate.”

The pharmaceutical industry enjoys astounding profits and profit margins, and pays a king’s ransom in lobbying efforts and direct-to-consumer advertising in an attempt to maintain their monopoly. They accuse compounding pharmacies of failing to do what they themselves have ignored: paying attention to quality control and stringent manufacturing practices.

The American public should not be deceived by Big Pharma’s propaganda campaign to discredit those who strictly adhere to good manufacturing practices, as it is Big Pharma’s blatant disregard for safety that consumers should fear.

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

References

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University of California Researchers

**Restore Immune Function in Aging Human Cells**

An analog of a previously banned drug may have yielded a significant age-reversal *breakthrough*.

Aging of the immune system, known as *immunosenescence*, plays a central role in the overall degeneration of the human body. (See article in this issue on page 76.)

Scientists at the University of California San Francisco and the National Institute on Aging have successfully *reversed* age-related deterioration in immune cell function using *lenalidomide*, a relative of the infamous drug *thalidomide*.

In older humans, decreased generation of cell signaling molecules like *interferon-gamma* (IFN-gamma) by white blood cells *reduces* the ability of the aging immune system to kill intracellular microbes and eliminate cancer cells.²

**Lenalidomide** provides intriguing immune-boosting properties, including an increase in production of cell signaling molecules that mobilize vital immune system cells like T-helper white blood cells and natural killer cells. In fact, recent scientific data shows that lenalidomide helps to normalize output of critical immune signaling molecules like interferon-gamma and IL-2, known to be reduced in white blood cells taken from individuals **65 and older**.¹

Even more remarkable, these effects were observed at exceedingly low doses. This study has huge implications. We need normally functioning immune cells to fend off cancer and infection as we mature—precisely the kinds of conditions to which many people succumb as they and their immune systems decline with aging.

In this article, the results of this groundbreaking study are detailed. You will also learn how these findings relate to your immune system’s health and function. > >
New Benefits from an Old Drug

In the late 1950s and early ’60s, thousands of children suffered severe birth defects after their mothers took thalidomide, a sedative then used to prevent nausea in pregnancy. That catastrophe led to the complete withdrawal of the drug from the market worldwide and stifled research investigation into beneficial immune-boosting properties of the drug over the following thirty years. At the start of the new millennium, however, scientific interest was reawakened as scientists studied thalidomide’s impact on the immune system in certain skin conditions.

Given the teratogenic effects (i.e., birth defects) caused by thalidomide, new research began to focus upon “second-generation” drugs. As a result, lenalidomide has significantly changed the management of diseases such as multiple myeloma, myelodysplastic syndrome, and some leukemias, all of which arise from disruptions of the T- and B-cell command and control system. The drug is now also finding a role in management of certain challenging solid tumors such as those of the kidney and lung.

Lenalidomide directly kills cancer cells and limits tumor growth. It is the drug’s immunomodulatory potential, however, that attracted the attention of the UCSF researchers. Lenalidomide specifically stimulates T-helper and natural killer cells, in large part by promoting production of cytokine IL-2. Research clearly indicates that aging is associated with reduced levels of both IL-2 and the IL-2 receptor on cell surfaces. For example, comparison of white blood cells from younger donors (less than 40 years of age) with older donors (greater than 60 years of age) shows reduced levels of both IL-2 and the IL-2 receptor.

IL-2 helps T-helper and natural killer cells against invading infectious agents such as bacteria and viruses. Lenalidomide also inhibits T-suppressor cells that prematurely shut down immune function, thus allowing cytotoxic and natural killer cells to exert their beneficial effects against cancer cells. Lenalidomide has potent immunomodulatory effects upon inflammation. For example, lenalidomide inhibits production of pro-inflammatory cytokines like TNF-alpha, IL-1, IL-6, and IL-12 and elevates the production of the anti-inflammatory cytokine IL-10 from human white blood cells.

What does all this have to do with aging? Plenty, when we remember that immunosenescence involves decreases in the very T-cell numbers and functions that lenalidomide enhances. That’s what led Dr. Edward J. Goetzl and his team at UCSF to explore lenalidomide for the first time as an anti-immunosenescence drug.

The UCSF Study of Lenalidomide and Aging

Dr. Goetzl is a world-renowned expert in human aging and an immunologist. When Dr. Goetzl and his team explored the benefits of lenalidomide on cancer, it led to their breakthrough work demonstrating lenalidomide’s astonishing effects on immunosenescent cells.

The team obtained T-cells from a group of healthy young adults aged 21-40 years, and also from adults 65 years and older. They stimulated the T-cells to mimic an infection or invader, using standard laboratory techniques. Next, they incubated the stimulated cells with lenalidomide, keeping some stimulated T-cells untreated as controls. Finally, they measured a host of T-cell functions along with other factors.

The results from their study may change the direction of treatment for the aging immune system.

Lenalidomide-treated T-cells from young subjects increased their IL-2 production 17-fold, and that of IFN-gamma 3-fold, a remarkable increase. However, the same concentrations of lenalidomide, used to treat T-cells from the older subjects, produced an astonishing 120-fold increase in IL-2, and a 6-fold increase in IFN-gamma. What these results mean is that lenalidomide restores and sustains levels of the very cells and cytokines that otherwise diminish with aging.
That’s not all. Lenalidomide increased production of helper T-cells from older subjects, and suppressed the apoptosis to which older people’s T-cells are especially vulnerable. Furthermore, it restored T-cells’ ability to move toward a chemical stimulus to levels indistinguishable from that of younger subjects’ cells. Finally, lenalidomide treatment reduced production of the pro-inflammatory cytokine TNF-alpha from other immune cells called macrophages.

Cancer treatment regimens use doses as high as 50 mg/day for several weeks at a time. But the dosing of lenalidomide used in the UCSF study were estimated to be equivalent to those attainable by oral doses of just 1-3 mg, and they produced their beneficial effects for up to 5 days after a single treatment.

Acknowledging the astounding results of lenalidomide treatment at such tiny doses, Dr. Goetzl recently said, “If you could take a low-dosage pill with no side effects, wouldn’t you do it?”

The team has big plans for next steps. Concluding the report of this first study, they write, “Future testing of low-dose lenalidomide will focus on its potential roles in improving diverse aspects of immunity in the elderly population, ranging from the effectiveness of vaccines to host defenses against microbial infections to resistance to cancers.”

UCSF Scientists Restore Immune Function in Aging Human Cells

- Older adults have increased susceptibility to infections and cancers compared with younger people.
- That increased vulnerability is the result of age-related degradation of the human immune system’s function in the process known as immunosenescence.
- Immunosenescence produces decreased responsiveness of vital immune cells called T-cells, which hold the reins of the command-and-control system governing human immunity.
- As T-cell function declines, levels of important protective cytokines plummet, resulting in further T-cell dysfunction and impaired immune responses to microbes and cancerous cells.
- A drug called lenalidomide, originally developed for use in cancer treatment, has remarkable abilities to reverse many components of T-cell-related immunosenescence.
- A recent study dramatically proved that lenalidomide increases key cell-signaling molecules in older adults’ white blood cells by as much as 120-fold, and it can restore certain T-cell functions to levels very similar with those of healthy young adults.
- Although lenalidomide is chemically related to thalidomide, it has fewer toxic side effects even at chemotherapy doses; the recent study used substantially lower concentrations of the drug, equivalent to small oral doses.
- Lenalidomide is expected to change the way we think of immunosenescence, relegating it to the level of a treatable consequence, not an inevitable cause, of aging.
The Implications

So how might low-dose lenalidomide help the aging immune system?

The answer is it may help restore cell signaling of the aging immune system to the level of a healthy young adult. For example, young people get cancer at a small fraction of the rates of older adults. One reason is the steady patrolling of the young person’s body by a healthy, vigorous immune system. The youthful immune system “looks for” aberrant, potentially cancerous cells and destroys them before they can proliferate out of control. As another example, infection from influenza (“the flu”) and bacterial pneumonia can be quite dangerous in the elderly, while younger individuals suffer from far less mortality from these types of infectious diseases. An important reason for this difference is the vigorous response of the youthful immune system toward invading microbes in contrast to the sluggish response of the aging immune system.

However, more work needs to be done to better understand lenalidomide’s effects upon the immune system before widespread use for immunosenescence treatment in aging humans.

Understanding the Immune System

The human immune system tirelessly protects us against microscopic invaders. Without it, we rapidly succumb to otherwise innocuous agents such as viruses, bacteria, and fungi, and develop cancerous cells as well.22 While most young adults have a robust immune system, the picture darkens after that, as the immune system begins a gradual and apparently inevitable decline.22,23 As a result of this system-wide degeneration, older adults grow increasingly vulnerable to new infections and autopsy studies confirm infection as a major cause of death in the very old.22 Older people are also subject to recurrence of former infections, to development of cancers, and to autoimmune diseases and inflammation.23-25 Together these changes are known as “immunosenescence,” the aging of immunity.23 During the process of immunosenescence, which begins as early as age 60, virtually every element of the immune system becomes impaired.1,23,26,27 Many experts believe immune function over the course of your life is a core determinant of longevity.24,28

Human immunity involves a complex system of interacting components, including cells known as macrophages, dendritic cells, natural killer (NK) cells, and the B- and T-cells.1 B-cells produce the antibodies that identify and neutralize invaders. T-cells, on the other hand, interact with the other elements of the system to communicate threats and coordinate response. Some T-cells are also directly involved in attacking and destroying virally infected cells and those with cancerous characteristics.

As we age, T-cell function decreases in various key areas. Vital T-cell receptor (TCR) proteins lose their ability to connect to antigen-presenting cells.28 Helper T-cells produce less of the IL-2 and IFN-gamma cytokines they use to communicate to other immune cells about invaders.20,31 They also become less responsive to cytokines themselves, failing to reproduce in response to signals from other cells.31,32

Even the number of new recruits (the so-called “naïve” T-cells) drops, preventing the immune system from fielding fresh troops.24,33 In addition, T-cells of older individuals are at high risk for the cellular suicide known as apoptosis, further diminishing the system’s readiness.22 Scientists theorize that it is the multimodal decline of our immune system that results in a decreased life span.34

The number of “memory” T-cells, critical for responding to new exposure to known infections, also diminishes with age, which accounts for the reduced response to vaccines in older adults.24 And the assassins of the T-cell world, natural killer (NK) cells, also struggle to identify and destroy viruses and incipient cancer cells.

Some of the most profound effects of immunosenescence involve regulatory T-suppressor cells, however, which increase in number and activity.1,35,36 This results in reduced function of the rest of the T-cell-mediated immune response. Ultimately, predominance of these regulatory suppressor cells impairs our response to new infections, promotes reactivation of chronic infections (such as painful shingles), and increases our vulnerability to many cancers.37

For all of these reasons, then, scientists are profoundly interested in identifying means of reversing the changes brought on by immunosenescence and restoring immune responses to a more youthful profile. Lenalidomide is literally changing the rules of the game through its remarkable abilities to do just that.
For example, low-dose lenalidomide seemed to have different effects upon IL-17 in younger vs. older human test subjects’ white blood cells. The implications are that low-dose lenalidomide in older subjects would not be expected to impair recruitment of neutrophils (a type of white blood cell), nor increase the risk of immune system attacking healthy tissues (autoimmunity) through excessive mobilization and activation of T-helper cells and related subsets of T-effector cells. Clearly, more work needs to be done to understand the benefits and limitations of low-dose lenalidomide on the aging immune system in humans.

The concept of immunosenescence explains why the aging immune system gradually weakens and leaves us vulnerable. Lenalidomide in low doses appears to hold promise for restoring the aging immune system to more youthful, vibrant function.

Summary

The progressive deterioration of the immune system with age, known as immunosenescence, has long been assumed to be inevitable. It underlies the cause of death in the majority of older adults, especially the very old, who succumb to infections and cancers that a vigorous, healthy immune system can resist. Thanks to the work of Dr. Edward J. Goetzl and his devoted team of scientists, however, immunosenescence may soon take its place among the growing list of treatable consequences of aging. Their work with lenalidomide demonstrates the potential power of immunomodulation using tiny doses of a drug. Their recent study suggests that lenalidomide can boost age-related impairments in the all-important T-helper and natural killer cell populations, while tamping down the activity of T-regulatory cells that would otherwise suppress immune function. Astonishingly, low-dose lenalidomide can restore some T-cell functions to levels identical with those of healthy young adults. Although more work needs to be done to fully understand the benefits and risks associated with low-dose lenalidomide, Dr. Goetzl’s work holds great promise to usher in a new age of discovery and research sure to benefit older people with evidence of immunosenescence.

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

References

UNIVERSITY OF CALIFORNIA RESEARCHERS RESTORE IMMUNE FUNCTION IN AGING HUMAN CELLS


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If you suffer from persistent joint discomfort, the good news is that a natural enzyme has been shown to effectively support joint function.

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**IMPRESSIONS CLINICAL STUDIES**

A number of head-to-head trials have been conducted in people with knee inflammation. Results demonstrated that enteric-coated bromelain formulations were at least as effective as other approaches in relieving joint tenderness and swelling and were better tolerated.\(^3,5\) One study even found that bromelain is more effective than conventional methods for maintaining joint function at rest (41% for bromelain versus 23% for conventional methods).\(^5\)

Another study showed that specially-coated bromelain yielded an overall improvement in general well-being, along with improvement in stiffness and physical function.\(^6\)

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**References**


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An Option For Radical Life Extension

Growing old is not much fun. Dying is even worse. Visionary scientists are working to reverse aging in humans. But what if they don’t succeed soon enough for you? What if you’re faced with death before the age reversal revolution occurs?

Here’s what you can do to protect yourself against death. You can make arrangements to be cryopreserved and cared for until it’s possible to revive you. In suspended animation, you can travel through time until it’s possible to restore you to life, health, and youth.

If you don’t think that will be possible...think again! Although today’s methods of human cryopreservation are imperfect, they’re still capable of preserving the ultrastructure of your brain. Damage from ischemia (lack of blood flow) can be prevented, the formation of damaging ice crystals can be avoided, and further damage can be stopped entirely by caring for you at -196 degrees Celsius (-321 degrees Fahrenheit). Finally, scientists are working to perfect human cryopreservation, and to develop medical nanorobots small enough to repair damage to your cells from within.

If all this interests you, it is imperative that you attend the Suspended Animation Conference in South Florida on May 20-22, 2011. The conference will provide you with a comprehensive picture of human cryopreservation. It will reveal the latest advances in cryopreservation research and the scientific basis for thinking that revival from cryopreservation is a realistic possibility. It will also give you the opportunity to meet and get to know the revolutionaries who are making it possible for you to have an unprecedented chance at a radically extended healthy lifespan in a future of unlimited potential.

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Innovative Strategy for Combating IMMUNOSENESCENCE

Age-related loss of immune function is called “immunosenescence,” a term first coined by Dr. Roy Walford, who was Emeritus Professor of Pathology and Laboratory Medicine at UCLA and formerly a member of the Life Extension® Medical Advisory Board. In his historic book, The Immunologic Theory of Aging (Munksgaard, 1969), Dr. Walford discusses in detail how a declining immune system is one of the major causes of systemic aging—including a growing risk for cancers, infections, and inflammatory conditions.1

Researchers concerned with finding solutions to cure diseases often start with a look at the human immune system. Without the invisible wall of defense provided by a well-regulated immune system, we are susceptible to virtually every imaginable disease, from pneumonia to arthritis to diabetes.2-4 Even cancer and cardiovascular diseases are quick to take advantage of our weak spots—or overactivity—of normal immune function.5,6

Infections and cancers arise when the immune system loses its normally intense surveillance.7 Cancer victims are particularly vulnerable to infections because both the disease and many of its therapies further weaken the immune system. Autoimmune disorders, on the other hand, occur when the natural restraints on immune reactivity fade, allowing an uncontrolled inflammatory response to take place.8 And that inflammatory response, in turn, can increase the risk of cancer.9

The good news is that if we can protect and even enhance the aging immune system, we may be able to substantially delay the pathological impact of aging itself.10,11 Scientists are constantly seeking out new methods of boosting immunity, through supplements, diet, exercise, sleep, and of course expensive medications that appeal to the pharmaceutical industry.

Interestingly, leading scientists have discovered how to provide natural immunological support using immune-protective proteins found in hens’ eggs. This development promises to deliver substantial immune enhancement at a fraction of the cost of medications.12 That’s good news for all of us as we age—and great news for those whose immune systems are particularly vulnerable, such as cancer patients or those living with HIV/AIDS. > >
Creating the Hyperimmune Egg

Agricultural scientists long ago discovered that they could immunize hens against germs that threaten humans. This immunity was then passed on by the hen to her egg. Concentrated protein extracts from those so-called “hyperimmune eggs” confer remarkable levels of immunity to humans who consume them. Scientists have now been able to customize eggs to provide different types of immunity. At least 24 different organisms have been used to immunize a single hen, which then lays eggs that offer passive immunity to all of the organisms.

Let’s now look at how hyperimmune egg extracts provide unique immune protection and reverse some of the deficits caused by age-related immunosenescence.

Managing Cholesterol

Atherosclerosis is another manifestation of immunosenescence, as decreased control over inflammation facilitates the formation of arterial plaques in a process often referred to as “inflamm-aging.” The US Army Research Institute of Environmental Medicine became interested in this process because of the shocking number of soldiers with elevated cholesterol levels and decided to study the potential of hyperimmune egg extract to lower cardiovascular risk.

What they found was that soldiers who used a drink containing hyperimmune egg powder stabilized their cholesterol compared to the placebo group. This was a fascinating finding, considering that eggs are often maligned as being the source of high cholesterol.

In the study, military personnel—sergeants major in the US Army with elevated total cholesterol (greater than 180 mg/dL)—participated in a 26-week double-blind, placebo-controlled study of a drink containing hyperimmune egg extract. All subjects were physically fit people who also participated in a dietary education program to reduce fat and cholesterol intake. By the end of the trial, total cholesterol levels of placebo recipients had increased, while those in the supplemented group showed no change. Similarly, in placebo subjects, the ratio of total cholesterol to HDL increased (a bad finding), while again no change was observed in the supplemented group. These findings suggested to the researchers that “hyperimmune egg might beneficially modify the regulation of serum lipoprotein levels and thereby reduce the possibility of cardiovascular disease.”
Fighting Inflammation and Arthritis

As our immunity declines, we can also experience increased immune reactivity in the form of excessive inflammation. This seeming paradox occurs because the immune system includes powerful feedback mechanisms that normally control inflammation once the true threat has faded.\(^8\) With deteriorating overall immune function, that regulatory capability declines, leaving us vulnerable to conditions characterized by excessive inflammation.\(^18\)

The drop in our immune regulatory function with aging brings with it chronic autoimmune conditions such as lupus and rheumatoid arthritis. Notoriously difficult to treat, hyperimmune egg and similar preparations have shown considerable success in reducing inflammation in animal models.\(^14,21-23\)

An astonishing human study from Weill Cornell Graduate School of Medical Sciences demonstrated the power of hyperimmune egg therapy in patients with various forms of arthritis.\(^24\) There was a significant improvement following the start of supplementation and there was a strong trend for improvement in the patients with rheumatoid arthritis as well. Improvement was sustained for at least 30 days after patients stopped taking the supplement. The researchers believed that the hyperimmune egg preparation may have reduced the intestinal burden of organisms that tend to cross-react with human tissues during the autoimmune response.\(^24\)

Oral Health

Immunosenescence brings with it many negative changes to the oral cavity, particularly the teeth and gums, which can harbor infectious organisms and massive inflammation that contribute to chronic conditions, such as cardiovascular disease.\(^25,26\) Dental plaque is a biofilm of bacteria and inflammatory molecules that increase the risk of both cavities and gum inflammation (gingivitis).

Hyperimmune egg extract has been shown to reduce the volume of dental plaque, which in turn cuts down on the total load of inflammation in the mouth.\(^27\) And animals supplemented with hyperimmune egg against the leading bacterial cause of caries developed significantly lower caries scores than did control animals.\(^28,29\) Oral hyperimmune egg rinses have also been used successfully in humans to reduce their burden of disease-causing bacteria; the extracts remain active and present in the mouth at least overnight, offering

Combating Immunosenescence

- Eggs laid by highly immunized hens (hyperimmune eggs) hold great promise for ameliorating human disease.\(^14,17,65\)
- Hyperimmune eggs are rich in substances that protect against many different germs that cause human infections, both within and outside of the gastrointestinal tract.\(^65-68\)
- Hyperimmune egg extracts survive the hostile environment in the stomach and intestines, and may prevent germs from binding the intestinal lining.\(^15,45,49,50,68-70\)
- Hyperimmune egg extracts also block germs in the oral cavity and elsewhere in the body, contributing to a reduction in inflammation and potentially preventing autoimmune and cardiovascular diseases.\(^28,71\)
- Hyperimmune egg supplements enhance cardiac and muscle function while hastening exercise-induced healing.\(^56-58\)
- Hyperimmune egg extracts provide support for immune system function and quality of life in patients with suppressed immune systems, such as those living with HIV/AIDS.\(^60\)
- Hyperimmune egg supplements are safe for anyone who can eat eggs; consumption of eggs is not directly correlated with the risk of heart disease.\(^72,73\)
- Daily use of hyperimmune egg supplements may reduce your risk for a host of infectious, immune, and inflammatory conditions.\(^13,28,65,74,75\)
long-standing protection.\textsuperscript{30-32} Hyperimmune egg-containing toothpaste and gum implants have even been used in the battle against tooth and gum disease.\textsuperscript{33}

**Gastrointestinal Infections**

Immunosenescence has tremendous implications for the human gastrointestinal (GI) tract, which is one of our largest organs that interacts directly with the outside world. Normal GI immune protection allows only beneficial nutrients and fluids to pass while excluding the millions of dangerous organisms. The normal GI tract also secretes beneficial IgA antibodies that coat and isolate bacteria. And the GI tract contains its own set of vigilant immune system cells that recognize and respond to threats instantly.

With aging, all of those GI immune functions diminish, leaving us vulnerable not only to GI-related infections and to diarrhea, but also to malignancies such as colon cancer, one of the top killers of the elderly.\textsuperscript{34-36} In fact, bacterial overgrowth, extending into the small intestine, is a significant problem that is commonly misdiagnosed in the elderly.\textsuperscript{37}

Unfortunately, most common viral GI infections don’t respond to antibiotics, and some can actually be exacerbated by them.\textsuperscript{38,39} We need to find a better way, one that relies not on killing the organisms with chemicals, but rather inactivates them where they live and prevents their spread.

Hyperimmune egg extracts appear to offer just such a better approach. The most notorious harmful microorganisms in humans are the bacteria *Salmonella* and *E. coli* and the common virus called rotavirus. In animal studies, efficacy rates for the use of the hyperimmune egg preparation are typically near 100%, even when the egg preparation is given after infection.\textsuperscript{40-44} For example, mice were protected against rotavirus and *Salmonella* infection by oral administration of the hyperimmune egg.\textsuperscript{44-46} Astonishingly, experimental animals also received partial protection against strains other than those to which the hens had originally been immunized!\textsuperscript{42,44} Of equal importance for public health officials, hyperimmune egg-supplemented subjects excrete little or no virus or bacteria, compared with the high rates of viral and bacterial transmission seen in controls.\textsuperscript{47-50}

Even when used for treatment, after an infection has already taken hold, hyperimmune egg can be effective, producing cure rates as high as 84% and reducing excretion of germs in the stool. Interestingly, in human studies by world-renowned expert S.A. Sarker at the Center for International Diarrheal Disease Research, hyperimmune egg proved similarly effective at treating infant rotavirus diarrhea compared with a similar milk-based colostrum preparation.\textsuperscript{17,51} It’s clear that hyperimmune egg has the potential to prevent and treat dangerous and uncomfortable gastrointestinal infections. But many other roles are emerging for this discovery. Let’s examine how hyperimmune egg can prevent other kinds of infections.
Other Antibacterial Effects

Of course, waning immunity resulting from immunosenescence leaves us vulnerable to a wide variety of bacterial infections outside of the GI tract as well. Hyperimmune egg extracts are showing promise in many such infections.

Patients with cystic fibrosis (CF) are especially at risk for colonization of their lungs with *Pseudomonas aeruginosa* (PA), an organism that thrives in their overly-viscous mucous secretions. PA infection is in fact the major cause of death and disability in cystic fibrosis patients. But among cystic fibrosis patients who gargled with an hyperimmune egg preparation from hens immunized against PA, none became chronically colonized with the organism, while 24% of control subjects did.

Hyperimmune egg has also proven effective for other, less serious but more common respiratory tract infections. There was a dramatic reduction in symptoms among people with both acute and chronic bacterial sore throat when they used a hyperimmune egg-containing throat spray, compared with placebo-treated subjects.

Exercise and Fitness

Immunosenescence threatens muscle mass, cardiac function, and overall fitness, the result of increased circulation of inflammatory cytokines and increased susceptibility to infection. At the same time, moderate exercise is known to be beneficial to older adults, but brings with it some risk of muscle injury and even increased inflammation. A group of studies from the Human Performance Laboratory at the College of Charleston, SC, has revealed that hyperimmune egg supplements may hasten recovery from exercise-induced muscle damage. The supplements increase production of growth hormone, a vital mediator of tissue maintenance and repair. Supplemented subjects saw an increase in their bench press strength and endurance, decreased muscle soreness, and enhanced muscle repair during recovery. At the same time the supplemented subjects had a decrease in their heart rate and increase in their peak power during aerobic workouts.
People Living with HIV/AIDS

In many ways, infection with the human immunodeficiency virus (HIV) mimics accelerated immunosenescence with its diminished immunity and increased inflammation. A study of people living with HIV/AIDS demonstrated remarkable benefits from consumption of hyperimmune egg extract. Supplemented subjects saw overall improvement in their quality of life, including marked reductions in anorexia, abdominal pain, diarrhea, short-term memory loss, dizziness, headache, fatigue, and poor sleep. Pain and difficulty breathing were reduced as well, and 100% of subjects experienced significant weight gain by the end of the 8-week study. Markers of inflammation fell significantly, and the all-important CD4 lymphocyte count, an indicator of immune function, improved in 20% of patients.

This is a tremendously important finding, given the profound immune suppression and wasting that is typically seen in HIV/AIDS and the exorbitant expense of standard treatment. The possibility that an inexpensive and readily distributed egg extract could relieve so much suffering offers an important breakthrough.

Supporting Immune Health in Cancer Patients

Immunosenescence is a significant factor in increasing our risk for cancer, as the immune system’s normally high level of surveillance for potential malignancies tapers off. At the same time, cancer, like HIV/AIDS, brings with it a kind of accelerated immunosenescence, as cancer cells invade and destabilize their unfortunate hosts. Chemotherapy typically exacerbates the situation in most cancers, leaving cancer patients even more vulnerable to infection. The GI tract in particular takes a hard hit from both cancer and chemotherapy, both of which increase intestinal permeability and allow dangerous infections to enter the body.

Astonishingly, orally administered antibodies of various kinds are showing real promise in ameliorating the effects both of cancer and of chemotherapy on the GI tract. A mixture of human IgA and IgG antibodies, given orally to bone marrow transplant patients, prevented the dangerous increase in intestinal permeability that was seen in placebo patients. And animal-derived immunoglobulins (similar to the biologically active proteins in hyperimmune egg extracts) were able to reduce fungal colonization when given orally to bone marrow transplant recipients. These studies validate the concept of using hyperimmune egg to provide strong GI immunity support in dangerously immune-suppressed cancer patients, and point the way to future studies with even more dramatic results.

Summary

We live in a hostile world, surrounded by an environment filled with germs and toxins that can harm us acutely or cause us chronic pain and misery. As we age, immunosenescence weakens our immune system, rendering us vulnerable not only to dangerous infections, but also to cancers and even to autoimmune and other inflammatory conditions. Biomedical chemistry and pharmaceutical approaches often fail to rectify the situation, and indeed can exacerbate our risks (as in the case of excessive antibiotic prescribing, which leads to newly dangerous organisms).

The humble hen’s egg, however, is a natural repository for protective elements that can promote human health. Hens that have been immunized against human disease-causing organisms lay eggs enriched with substances that have the potential to improve human health, both in the gastrointestinal tract and...
in other parts of the body. Diseases such as gastrointestinal and other infections, as well as those caused by excessive inflammation, are all legitimate targets of hyperimmune egg supplementation. Moreover, hyperimmune egg supplements can improve immunity in people living with HIV/AIDS and even show potential for providing strong immunity support in cancer victims. There's no question: hyperimmune eggs offer a unique approach to protecting health and longevity.

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

References


6. Mann DL, Topkara VK, Evans S, Barger PM. Innate immunity in people living with HIV/AIDS and even show potential for providing strong immunity support in cancer victims. There's no question: hyperimmune eggs offer a unique approach to protecting health and longevity.


Nobody wants to get sick. Whether it’s the flu or the common cold, illness can sap you of your energy and leave you bedridden and lethargic. One of the best ways to avoid succumbing to an infectious agent is to have a robust immune system supported by lactoferrin.

Lactoferrin is a supplement in the immune-boosting arsenal. It is a versatile substance found in mother’s milk that plays an important role in the immune system response.1 Lactoferrin’s benefits include:

- Helps to promote beneficial bacterial flora growth in the intestines*
- Promotes and supports natural resistance and provides protection for healthy cells*
- Modulates immune function2*
- Scavenges excess iron to prevent free radical damage*

References:

Contains milk.

The retail price for a bottle of 60 300 mg capsules of 95% apolactoferrin (a potent form of lactoferrin) is $40. If a member buys four bottles, the price is reduced to just $27 per bottle.

The suggested dose is one 300 mg capsule per day. This means each 60 capsule bottle will last for two months. Life Extension members obtain this premium form of lactoferrin (called apolactoferrin) for less than conventional lactoferrin supplements.

To order Lactoferrin Caps, Call 1-800-544-4440 or visit www.LifeExtension.com

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The adult scalp loses about 100 hairs every day. Starting at the age of 40, hair follicles shrink, causing hair to grow back thinner, or worse, not at all. This devastating hair loss is experienced by half the population. While the prevention and treatment is complex, using a supplement with tocotrienols can be pivotal in addressing the various physiological mechanisms that lead to thinning hair.1

Super Absorbable Tocotrienols combats the underlying causes of hair loss, supporting otherwise healthy hair follicles that genetic disposition, advancing age, high concentrations of DHT (the male hormone dihydrotestosterone), and sebum build-up may cause to weaken, degrade or shrink. Super Absorbable Tocotrienols, a natural, orally administered, bio-enhanced tocotrienol complex, can be taken to support youthful hair thickness and growth.

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Those who want to obtain the benefits of this potent hair formula can order Life Extension®’s Super Absorbable Tocotrienols. The recommended dosage is one softgel taken two times daily with food. The retail price for a bottle of Super Absorbable Tocotrienols containing 60 softgels is $30, but if a member buys four bottles, the price is reduced to $21 per bottle.

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RESTORE IMMUNE BALANCE WITH
i26® Hyperimmune Egg

Longevity enthusiasts know the crucial importance of protecting immune health. So much so that some researchers believe age-related changes in immune function may accelerate system-wide aging itself.*

To complement immune-protecting strategies Life Extension® members already employ, i26® Hyperimmune Egg powder was introduced last year. Derived from the eggs of hyper-immunized hens, it may facilitate youthful immune balance in several ways. i26® Hyperimmune has been clinically shown over the past 20 years to support the immune system and help with gastrointestinal insults and digestive issues.

Now Available in Capsule or Chewable Tablet Forms

For ease of use and convenience, i26® Hyperimmune Egg is now available in vanilla-flavored chewable tablet or capsule forms, in addition to powder.

A canister containing 140 grams of i26® Hyperimmune Egg powder retails for $49.99. Life Extension® members pay $42 per jar. Each jar provides 31 servings.

Bottles containing 45 i26® Hyperimmune Egg vanilla-flavored chewable tablets (15 servings) or 135 capsules (15 servings) retail for $31.99 each. Members pay $25.59 per bottle for either.

To order any of these i26® Hyperimmune Egg products call 1-800-544-4440 or visit www.LifeExtension.com

These products may not need to be taken every day. Some people keep them on hand for those occasions when the need to support immune health arises.

Caution: Diabetics should also consult a physician, and monitor blood sugar levels closely.

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When coming up with a name for his fitness company, Lorenzo Price wanted something that conveyed energy, enthusiasm, and above all, a "no-excuses" attitude.

"'Do It Fitness' is the perfect name," Price says. "It encapsulates my training and nutrition philosophy in three simple words. When it comes to getting in shape or altering your diet, I've found that far too many people talk about wanting to improve their fitness and eating habits while very few people actually do anything about it. The name says it all. Do It Fitness."

This isn't to say that Price doesn't take the time to talk to his clients. In fact, it's just the opposite. Upon first meeting someone he is going to work with, Price asks them to list the three goals they'd most like to meet while working with him. He then discusses the motivation behind those goals to get to the root of what a client is truly after. Quite often, the real goal is then revealed.
“For instance,” Price says. “If a client simply tells me that they want to lose weight, well, that’s a very vague goal, so I’ll keep asking questions. I’ll ask them why they want to lose weight. Sometimes, with my aging clients, they’ll say they want to lose weight because they feel tired all the time. Well, now I know that the issue isn’t so much weight loss, but energy improvement. When I press further, I’ll find out that they want to be more active with their grandchildren. A few questions later, I’ll find out that their grandchild plays tennis and they’d like to play with them. Now we have a specific goal: To be able to play tennis with the grandkids. And we’re off and running!”

Putting Philosophy Into Action

Paying attention to detail is what separates Price from other trainers in the fitness world today. Often, trainers that work at large chain gyms are only interested in the volume of clients they have, rather than the quality of training. It can be a very impersonal experience, with the trainer watching the clock more than the client to make sure they have you out in time for the next person.

“In addition to weight loss, many of my clients are dealing with some sort of shoulder, knee, hip, or lower back problem,” Price says. “With these clients, technique is important in many exercises because we don’t want to further aggravate a problem. Another benefit of watching a client’s technique is that I can see how someone may be favoring a certain area of their body. Sometimes, a lower back problem is really a lack of flexibility in the quads or hamstrings, which leads to restricted lower body movements, which puts extra pressure on the back. You need to constantly be on the lookout for these things so you can treat the right problem.”

When you listen to Price, you get the feeling that peeling back the layers of someone’s physical fitness is just as much art as science.

On the science front, he’ll perform a body assessment on each client when they start to help determine a baseline level of fitness in several key areas. Depending on if they apply to a particular client, he’ll measure cardiovascular endurance, muscle strength and endurance, injury issues, body composition, flexibility, and recovery time. When these numbers shake out, he’ll have a better idea of where a client is starting from.

Of course, not all of his clients are beginning an exercise program for the first time or have let themselves get out of shape. Many clients exercise on a regular basis but are looking to improve in a specific area or sport.

“I have helped several overweight clients lose in the range of 10 to 30 pounds,” he says. “But I
have also helped younger clients pack on lean muscle mass through high calorie diets and strength training. I’ve also worked with clients who simply want to be better golfers or tennis players or swimmers. There is simply no age limit on these activities anymore. If someone has the right attitude and the right motivation, I can work with them to meet any realistic goal.”

When Fitness Meets Nutrition

While common sense dictates that diet has as much to do with overall fitness as training does, what people know and what they practice are often two remarkably different things. With this in mind, Price spends almost as much time training people how to eat properly as he does training them how to exercise.

“It does no good to train someone without revamping their diet as well if that’s an issue,” Price says. “Changing eating habits is just as important as changing exercise habits. I advise my clients to eat healthy, balanced meals filled with fruits, vegetables, fresh fish, chicken, and whole grains. The fruits and vegetables provide the antioxidants, vitamins, and minerals people need to keep them healthy, while the grains, fish, and poultry provide the energy and protein.”

Price feels like he has to live the life that he recommends, which is why he says that he and his wife make a concerted effort to eat only the healthiest meals with the freshest ingredients.

“Fortunately, my wife is an excellent cook,” he says. “But for my clients who aren’t as lucky as I am, I tell them that there are plenty of options for quick, healthy meals. Even fast food restaurants have grilled chicken salads now. Also, if people don’t like cooking, I’ll advise them to make several healthy meals at once on Sunday and then put them in the fridge to be eaten throughout the week. That saves time, money, and health.”

But no matter how well someone sticks to their new diet, Price knows that they’ll need some help with supplements to make sure they’re getting the proper amount of nutrients.

“Life Extension® without a doubt has the finest supplements available today,” he says. “I recommend that all my clients become members and take advantage of the highest quality ingredients that Life Extension uses. Personally, I take Life Extension’s Whey Protein, Two-Per-Day Multi-vitamin, Branched Chain Amino Acids, and their Agave Digestive-Immune Support formula.”

With diet and exercise taken care of, there’s only one thing left: attitude.

“All I ask is that my clients give me 100% because that’s what I’m going to give them,” he says. “If we’re both giving our best, anything is possible.”

Lorenzo Price is the Fitness Director and founder of Do It Fitness, LLC, in Miami, FL. To contact Do It Fitness, visit www.doitfitnessmiami.com.
Overlooked in the effort to support sexual function in aging men is the health of the vascular system. Blood flow through the delicate lining of the arteries (the endothelium) is essential to sexual arousal, so it should come as no surprise that endothelial function is closely associated with male sexual capacity.

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A 60-tablet bottle of Life Extension® Prelox® Natural Sex for Men® retails for $50. If a member buys four bottles, the price is reduced to just $30.38 per bottle.

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References

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People who struggle with weight loss often point to several “Achilles’ heels” that sabotage their efforts to keep off the pounds: eating between meals, grazing at night, and a constant desire to snack, are among the most common.

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The fact that Satiereal® induced significant reductions (100%) in the desire to snack, but with only moderate weight loss, is further support for the multi-pronged approach needed to effectively manage weight that has long been espoused by Life Extension®.

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AMINO ACIDS
Acetyl-L-Carnitine
Acetyl-L-Carnitine-Argininate
Branched Chain Amino Acids
D, L-Phenylalanine Capsules
GABA Powder
Glycine Capsules
Glycine Powder
Arginine Capsules
L-Arginine Free Base Powder
Arginine/L-Ornithine Capsules
L-Carnitine Capsules
L-Cysteine Capsules
L-Glutathione, L-Cysteine & C
L-Glutamine Capsules
L-Glutamine Powder
L-Lysine Capsules
L-Lysine Powder
L-Tyrosine Tablets
Mega L-Glutathione Capsules
N-Acetyl Cysteine Capsules
Optimized Carnitine with GlycoCarn®
PharmaGABA
Super Carnosine Capsules
Taurine Capsules
TryptoPure® Tryptophan
(Optimized) TryptoPure® Plus

BONE & JOINT HEALTH
Arthromax™ with Theaflavins
Bone-Up™
Bone Restore™
Bone Strength Formula w/KoAct™
Chondroitin Sulfate
Chondrox
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

BRAIN HEALTH
Acetyl-L-Carnitine
Acetyl L-Carnitine-Argininate
CDP Choline Capsules
Cognitex with NeuroProtection Complex
Cognitex with Pregnenolone &
Cognitex with NeuroProtection Complex

BRAIN & MEMORY ENHANCEMENTS
Agave Digestive-Immune Support
AHCC® (Active Hexose Correlated Compound)
Buffered Vitamin C Powder
Echinacea
Enhanced Life Extension Whey Protein
i26 Hyperimmune Egg
Immune Protect with PARACTIN®
Lactoferrin
Lifeshield® Immunity™
Maltaise SX-Fraction
Norwegian Shark Liver Oil
Primal Defense™
ProBoost™ Thymic Protein A
Pure Gar™
Sambus® Guard
Theralac Capsules
Thymic Immune Factors
Ultimate Flora Advanced Immunity
Vitamin C with Dihydromorphone
Zinc Lozenges with Vitamin C

BONE & JOINT HEALTH
Arthromax™ with Theaflavins
Bone-Up™
Bone Restore™
Bone Strength Formula w/KoAct™
Chondroitin Sulfate
Chondrox
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

DIGESTIVE
Agave Digestive-Immune Support
Bromelain Powder
Carnosoothe w/PicroProtect
Digest RC™
Enhanced Super Digestive Enzymes (also available with Probiotics)
Florestor
Intact Digest
LifeFlora™
Natural EsophagusGuard
N-Zimes™
Pancreatin
Primal Defense™
Regimint
Saccaromyces Boulardii-Plus

BURNT AND SANDY PRODUCTS
BlasTag™
Dual-C
Inner Power™
Memory Upgrade™

EYE CARE
Bilberry Extract
Blackcurrant Freeze Dried Extract
Brite Eyes III

Herbal Products
Astragalus Root Extract
Astragalin
Bilberry Extract
Blackcurrant Juice Concentrate
Blueberry Extract
Blueberry Extract w/Pomegranate
Boswellia Extract
Butterbur Extract w/Standardized
Rosmarinic Acid
Calcium D-Glucarate
Cilantro Herbal Extract
Citrus Bioflavonoids
Enhanced Berry Complete with RZD™ Acai
Full Spectrum Pomegranate™
Grapeseed Extract with Resveratrol &
Pterostilbene
Huperzine A with Natural Vitamin E
Kyoic® Garlic Formula 105
Kyoic® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
Mega Lycopene Extract
Nutrim
Optimized Ashwagandha Extract
Pomegranate Extract
Pomegranate Juice Concentrate
ProGreens®
Pure-Gar™
Pyrogrenol
Optimized Quercetin
Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract
Rosmarinic Acid Extract
Silymarin

LIVER HEALTH
Branch Chain Amino Acids
N-Acetyl Cysteine
Optimized Milk Thistle (Silymarin)
Phospholipid (Nutsal)
SAA
Silymarin

MINERALS
Biosil
Bone Restore
Bone Strength Formula w/KoAct™
Bone-Up™
Boron Capsules
Calcium Citrate with D3

OVERCAST POLARIZED SUNGLASSES
Solarshield Sunglasses
Super Zexanthin with Lutein &
Meso-Zexanthin and CS5
(Plus Astaxanthin also available)
Vision Optimizer

SOEZYME with GiGgOZin®
Stevia Extract
Super Bio-Curcumin®
Super Curcumin with Bioperine®
Super Gingko Extract
Triple Action Cruciferous Vegetable Extract
Venotone
Whole Grape Extract

HAIR CARE
Dr. Proctor’s Advanced Hair Formula
Dr. Proctor’s Shampoo
Life Extension Shampoo and Conditioner
Super-Absorbable Tocotrienols

HEART HEALTH
Advanced Lipid Control
Aspirin (Enteric Coated)
Cholesterol Lowering
Diabetic Control
Fibrinogen Resistant
Fish Oil
Homocysteine Resistant
Natural BP Management
Peak ATP® with GlycoCarn®
Policosanol
Red Yeast Rice
Super Absorbable CoQ10™ with d-Limonene
Super Omega-3 EPA/DHA with Sesame
Lignans & Olive Fruit Extract
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with Enhanced
Mitochondrial™ Support
Silymarin®
Theaflavin Standardized Extract
TMG Powder
TMG Tablets

HERBAL PHYTO PRODUCTS
Artichoke Leaf Extract
Astragalus Root
Bilberry Extract
Blueberry Extract
Blackcurrant Juice Concentrate
Blueberry Fruit Extract w/Pomegranate
Butterbur Extract w/Standardized
Rosmarinic Acid
Calcium D-Glucarate
Cilantro Herbal Extract
Citrus Bioflavonoids
Enhanced Berry Complete with RZD™ Acai
Full Spectrum Pomegranate™
Grapeseed Extract with Resveratrol &
Pterostilbene
Huperzine A with Natural Vitamin E
Kyoic® Garlic Formula 105
Kyoic® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
Mega Lycopene Extract
Nutrim
Optimized Ashwagandha Extract
Pomegranate Extract
Pomegranate Juice Concentrate
ProGreens®
Pure-Gar™
Pyrogrenol
Optimized Quercetin
Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract
Rosmarinic Acid Extract
Silymarin

LIVER HEALTH
Branch Chain Amino Acids
N-Acetyl Cysteine
Optimized Milk Thistle (Silymarin)
Phospholipid (Nutsal)
SAA
Silymarin

MINERALS
Biosil
Bone Restore
Bone Strength Formula w/KoAct™
Bone-Up™
Boron Capsules
Calcium Citrate with D3
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Buyers Club Order Form

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**SUB-TOTAL OF COLUMN 2**

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**SUB-TOTAL OF COLUMN 3**

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

APRIL 2011

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**SUB-TOTAL OF COLUMN 4**

To order online visit: www.lifeextension.com
## Buyers Club Order Form

### APRIL 2011

**Buyers Club Order Form**

**To order call: 1.954.766.8433 or 1.800.544.4440**

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**SUB-TOTAL OF COLUMN 6**

**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

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**For a complete list of products and prices, please see the Buyers Club Order Form.**
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Retail Each</th>
<th>Member Each</th>
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<td>ESSENTIAL FAT-SOLUBLE NUTRIENTS - 30 softgels</td>
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<td>EUROPEAN LEG SOLUTION DOSISMIN 95° - 600 mg, 30 veg. tabs</td>
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**SUB-TOTAL OF COLUMN 7**

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<td>FIBER FOOD POWDER - 300 grams</td>
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<td>FIBRINOREST™ - 30 veg. caps</td>
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<td>FLAXSEED POWDER (HI-LIGNAN® - NUTRI-FLAX®) - 1 oz powder</td>
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**SUB-TOTAL OF COLUMN 8**

*ライフエクステンションメンバーレシピ25%オフの特別価格* APRIL 2011
## Buyers Club Order Form

<table>
<thead>
<tr>
<th>No.</th>
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<th>Member Each</th>
<th>Qty</th>
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**To order call:** 1.954.766.8433 or 1.800.544.4440

*LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS*
Buyers Club Order Form

<table>
<thead>
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<th>No.</th>
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<td>MEMORY UPGRADE™ - 600 grams powder</td>
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<td>MENOPAUSE SOLUTIONS - 120 tablets</td>
<td>49.95</td>
<td>37.46</td>
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<tr>
<td>00536</td>
<td>METHYLCOBALAMIN - 1 mg, 60 lozenges (vanilla)</td>
<td>9.95</td>
<td>7.46</td>
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<tr>
<td>00537</td>
<td>METHYLCOBALAMIN - 5 mg, 60 lozenges (vanilla)</td>
<td>32.00</td>
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<tr>
<td>00709</td>
<td>MIGRA-EEZ™ (BUTTERBUR) - 60 softgels</td>
<td>29.50</td>
<td>22.13</td>
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**LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS**

**SUB-TOTAL OF COLUMN 11**

**SUB-TOTAL OF COLUMN 12**

APRIL 2011
<table>
<thead>
<tr>
<th>No.</th>
<th>Item Description</th>
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<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<td>NATURAL SLEEP MELOTTIN® - 5 mg, 60 veg. caps</td>
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<td>NATURAL STRESS RELIEF - 30 veg. caps</td>
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<td>NO-FLOW HIACIN - 800 mg, 100 caps</td>
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<td>01035</td>
<td>NUTRIM - 170 grams powder</td>
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<td>00523</td>
<td>N-ZIMES® - 270 caps</td>
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<td>OCTOSSANOL - 8000 mcg, 60 caps</td>
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<td>01483</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 60 softgels</td>
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<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 120 softgels</td>
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<td>Buy 10 bottles, price each</td>
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<td>23.25</td>
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<td>ONE-PER-DAY - 60 vegetarian tablets</td>
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<td>ONLY TRACE MINERALS - 90 caps</td>
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<td>OPTIZINC® - 30 mg, 90 veg. caps</td>
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<td>01070</td>
<td>ORGANIC TOTAL BODY CLEANSE™ - 14-day supply</td>
<td>34.99</td>
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<tr>
<td>00043</td>
<td>L-ORNITININE - 500 mg, 100 caps</td>
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<td></td>
<td>Buy 4 bottles, price each</td>
<td>20.00</td>
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<td>00107</td>
<td>PABA CAPS - 500 mg, 100 caps</td>
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<td>Buy 4 bottles, price each</td>
<td>12.33</td>
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<td>00773</td>
<td>PANCREATIN - 500 mg, 50 caps</td>
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<td>PEAK ATP® WITH GLYCOCAM® - 60 tablets</td>
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<td>PECTA SOL-C® MODIFIED CITRUS PECI - 454 grams powder</td>
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<td>74.96</td>
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<td>Buy 4 jars, price each</td>
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<td>01080</td>
<td>PECTA SOL-C® MODIFIED CITRUS PECI - 270 veg. caps</td>
<td>69.95</td>
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<td>PGX® SOLUBLE FIBER BLEND (WELLBET®) - 180 caps</td>
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<td>PHARMAGABA® - 60 chewable tablets</td>
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<td>27.00</td>
<td>20.25</td>
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<td>01320</td>
<td>PHOSCHOL® - 900 mg, 100 softgels</td>
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<td>PHOSPHATIDYLKERINE CAPS - 100 mg, 100 caps</td>
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<td></td>
<td>Buy 4 bottles, price each</td>
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<td>36.00</td>
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<td>00614</td>
<td>PILL CUTTER/GRINDER</td>
<td>11.95</td>
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<td>POLICOSANOL - 10 mg, 60 tablets</td>
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<tr>
<td></td>
<td>Buy 6 bottles, price each</td>
<td>18.00</td>
<td>13.50</td>
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**SUB-TOTAL OF COLUMN 13**

**SUB-TOTAL OF COLUMN 14**

LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

APRIL 2011
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<th>Retail Each</th>
<th>Member Each</th>
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<td>01217</td>
<td>PYRRODIAL S'-PHOSPHATE - 100 mg, 60 veg. caps</td>
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<tr>
<td></td>
<td>Buy 4 bottles, price each</td>
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<td><strong>Q, R</strong></td>
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<td>01309</td>
<td>QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps</td>
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<tr>
<td></td>
<td>Buy 4 bottles, price each</td>
<td>17.00</td>
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<tr>
<td>01030</td>
<td>RED YEAST RICE (Bluebonnet)- 600 mg, 60 veg. caps</td>
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<td>RED YEAST RICE (Nature's Plus)- 600 mg, 60 veg. caps</td>
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<td>RED YEAST RICE EXTENDED RELEASE - 30 veg. tablets</td>
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<td>REGIMINT - 60 enteric-coated caps</td>
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<td>REJUVENEX® BODY LOTION - 6 oz</td>
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<td>Buy 4 tubes, price each</td>
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<td>Buy 8 tubes, price each</td>
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<td>00918</td>
<td>REJUVENEX® FACTOR - 1.7 oz airless pump</td>
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<td>Buy 2 jars, price each</td>
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<td>REJUVENIGHT w/PROGESTERONE (ULTRA) - 2 oz</td>
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<td>Buy 4 jars, price each</td>
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<td>Buy 4 bottles, price each</td>
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<td>RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps</td>
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<td>RHODIOLA EXTRACT - 250 mg, 60 veg. caps</td>
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<td>Buy 4 bottles, price each</td>
<td>10.58</td>
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<td>(D) RIBOSE POWDER - 150 grams</td>
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<td>(D) RIBOSE TABLETS - 100 veg. tabs</td>
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<td>36.75</td>
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<tr>
<td></td>
<td>Buy 4 bottles, price each</td>
<td>45.00</td>
<td>33.75</td>
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<td>00070</td>
<td>RNA CAPSULES - 500 mg, 100 caps</td>
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<td>13.46</td>
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<td>Buy 4 bottles, price each</td>
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<td>ROSMARINIC ACID EXTRACT - 60 veg. caps</td>
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<td>Buy 4 bottles, price each</td>
<td>53.00</td>
<td>39.75</td>
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<td>01082</td>
<td>SACCHAROMYCYES BOULARDI + MOS - 30 veg. caps</td>
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<td>01067</td>
<td>SACCHAROMYCYES BOULARDI + MOS - 90 veg. caps</td>
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<td>01432</td>
<td>SAFFRON w/SATIREAL (OPTIMIZED) - 60 veg. caps</td>
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<td>Buy 4 bottles, price each</td>
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<td><strong>00573</strong></td>
<td>SAMBU GUARD - 175 ml</td>
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<td>SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets</td>
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<td>Buy 8 boxes, price each</td>
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**SUB-TOTAL OF COLUMN 15**

**SUB-TOTAL OF COLUMN 16**
Buyers Club Order Form

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<th>No.</th>
<th>Retail Each</th>
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<th>Qty</th>
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## ORDER SUBTOTALS

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## ORDER TOTALS

Sub-Total A (Sub-total of Columns 1 through 19)

Postage And Handling (Any size order, continental U.S.) $5.50

C.O.D.s (Add $7 for C.O.D. orders)

Shipping

**GRAND TOTAL** (Must be in U.S. dollars)

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- CHECK HERE FOR C.O.D. ORDERS

- CHECK HERE FOR UPS BLUE LABEL (2ND DAY)

- CHECK HERE FOR UPS RED LABEL (OVERNIGHT)
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Don’t suffer the harsh side effects of antibiotics.

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ANTIBIOTICS AND THERALAC WORK HAND IN HAND.

Many people taking antibiotics suffer disruption of their intestinal flora, and consequently, their digestive regularity suffers, too. Antibiotics severely diminish helpful probiotic bacteria. Thus, unhelpful flora flourish. One particular adverse bacteria, Clostridium difficile, or C. diff., is known to be resistant to antibiotics and can cause diarrhea. The best way to stop the havoc C. diff. wreaks is to overwhelm it with Theralac.

Theralac is also proven to up-regulate your immune system helping you avoid getting sick in the first place. It helps with nutrient absorption, regulates peristaltic action, and helps maintain normal estrogen levels, cholesterol and glycemic levels in those already within normal range.

THERALAC IS CLINICALLY PROVEN TO WORK.

An effective probiotic, Theralac has been proven in a clinical study to maintain normal intestinal flora while people were on antibiotics. In a double-blind, placebo-controlled study subjects took two Theralac capsules daily for two weeks while on the powerful antibiotic Augmentin®. The results were amazing! The Theralac group saw no disruption of intestinal flora while the non-Theralac® group experienced substantial disruption.

LEADING DOCTORS RECOMMEND THERALAC.

Dr. Russell Blaylock, MD, recommends taking 2-4 Theralac capsules daily while on antibiotics, continuing for two weeks following antibiotic therapy. And key doctors of Lyme disease patients rely on Theralac to help patients suffering from severe antibiotic associated diarrhea.

So to ensure digestive health while taking antibiotics, order Theralac today by calling 1-800-544-4440 or visit LifeExtension.com. Then take your antibiotics with a clear mind, and intestinal tract.

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A Partnership in Heart Health

New Chapter Zyflamend & LifeExtension Super Omega-3

Multiple Synergistic Components, Whole Body Benefits

Many people think that only joints are affected by inflammation. The truth is that the body’s natural inflammatory response affects everyone and every major organ system. Given the link between a healthy inflammation response and whole body health – a source of extensive and ongoing research – a supplement strategy geared toward promoting a healthy inflammation response is as fundamental as a daily multivitamin.* Research at leading medical institutions, including human clinical trials, has demonstrated a unique herbal formulation’s ability to promote a safe, natural and healthy response to inflammation.*

Zyflamend® is the #1-selling herbal in the U.S.† for healthy inflammation response.* It contains hundreds of bioactive constituents from ten of the most researched botanicals that promote a healthy inflammatory response and provide multiple health benefits: heart health, healthy aging, joint health, and bone health.*

Zyflamend for Heart Health

Recent research suggests that the key factor in predicting heart health is gauging the amount of inflammation in the arteries. C-reactive protein is a blood marker used to assess inflammation and heart health.

Early data from a human clinical study conducted at Columbia University suggests that daily supplementation with Zyflamend promotes healthy levels of C-reactive protein.*

In data presented at the 2006 meeting for the Society for Integrative Oncology, researchers reported the following analysis of data from a Zyflamend human clinical study: “A statistically significant reduction in serum C-reactive protein was... observed after 18 months.”

Maintaining a healthy cardiovascular system is strongly linked to a healthy inflammation response – Zyflamend is the first choice for promoting heart health.*

© 2010 New Chapter, Inc.  † According to 2010 SPINS Data

Omega-3 Is Important for Cardiovascular Health

The body needs fatty acids to survive and is able to make all but two of them: linoleic acid (LA) in the omega-6 family, and alpha-linolenic acid (ALA) in the omega-3 family. These two fatty acids must be supplied by the diet and are therefore considered essential fatty acids (EFAs).

Omega-3 fatty acids, found in cold-water fish (and fish oil), perilla oil, and flaxseed oil, are essential elements of a healthy diet. While the polyunsaturated fats known as omega-6 fatty acids are essential to life, most Americans and citizens of other Western nations consume far too many omega-6 polyunsaturated fatty acids and not enough omega-3 polyunsaturated fatty acids. In fact, some Western diets consist of 20 parts of omega-6 to only one part of omega-3. For optimum health, the ratio of omega-6 to omega-3 fatty acids should be between 1:1 and 4:1.*

The severe imbalance that occurs with most people contributes to the development of long-term health problems.

Life Extension’s Super Omega-3 is a premium, scientifically-validated fish oil concentrate, derived from sustainable sources, that contains a proprietary, full-spectrum blend of synergistic nutrients to provide scientifically-validated cardioprotective health benefits.

Super Omega-3 from Life Extension® uses a patented EPA/DHA extraction process that results in a pure, stable, and easy-to-tolerate fish oil extract. While most fish oil is distilled to decrease contaminants such as mercury and PCBs, the Pure +** fish oil used in Super Omega-3 is produced with a patented method that purifies the oil with a highly advanced distillation process to reduce pollutants to virtually undetectable levels. The result is an improved fish oil that exceeds the standards set by international rating agencies.

To order Zyflamend or Super Omega-3, call 1-800-544-4440 or visit www.LifeExtension.com

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Worn Out to WOW in 2 Weeks!

Are you fed up with feeling overtired, overstressed, overweight and completely overwhelmed? It's time to take back control of your body and your health! I created Flush & Be Fit™, a powerful 3-part cleansing and energizing formula made exclusively for women to target key health concerns like fatigue, irritability, poor digestion, belly bloat, vaginal yeast and more.*

Brenda Watson, C.N.C., N.D.
Digestive Care Expert

Be the Woman You Want To Be in Just Two Weeks!
To look your best on the outside, Brenda believes you must feel your best on the inside. Flush & Be Fit helps you alleviate concerns most women face so you can look, feel and act like the person you want to be.

- Simple 2-week, 3-part Formula Just for Women
- Cleansing Herbs, Enzymes, Probiotics & Nutraceuticals
- Easy-to-take Morning, Midday and Evening Formula
- Convenient All-in-One Daily Strip Packs
- Natural Vegetable Capsules
- No Fillers or Binders

Morning Pack—Flush & Detox
Detoxifying herbs help stimulate the natural cleansing function of the liver and fuel the lymphatic system.* This can help jumpstart weight loss by eliminating toxins in stored fat, which can contribute to excess fat around hips, thighs and buttocks.*
Concentrated cranberry extract, hibiscus and dandelion support urinary tract health and normal kidney function.*

Afternoon Pack—Energize & Balance
Revitalizing green tea, yerba mate, ginseng and more help boost and sustain energy and alleviate feelings of fatigue.*
Active probiotic cultures promote healthy vaginal flora and help balance yeast levels.*

Evening Pack—Cleanse & Eliminate
Gentle yet effective herbal laxative formula promotes bowel regularity and helps relieve occasional constipation.*
Natural laxative herbs gently stimulate a sluggish bowel.*
Hydrating magnesium helps retain water in the bowel, making stools easier to pass.*
Soothing herbal ingredients help ease elimination.*

To order Flush & Be Fit, call 1-800-544-4440
or visit www.LifeExtension.com

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.
For a large percentage of men over the age of 50, having a healthy prostate is the key to living a normal life. Dietary supplementation for urinary and prostate health helps men maintain a normal hormonal balance, which promotes normal urinary flow and prostate health. Choosing to support a healthy prostate through supplementation is one of the smartest choices an aging man can make.

Ultra Natural Prostate Formula combines eleven cutting-edge natural ingredients that have been scientifically substantiated to protect the prostate gland and maintain its healthy function.* One of the newest additions to the formula is European pumpkin seed oil extract, which is rich in delta-7 sterols and fatty acids.

The formula provides saw palmetto extract and Graminex Flower Pollen Extract™ to interfere with DHT activity and help regulate inflammatory reactions in the prostate.* Lycopene is a carotenoid that has been added to the formula to help maintain healthy DNA gene function in prostate cells.

In order to boost its anti-estrogen capabilities, Ultra Natural Prostate Formula incorporates HMRlignan™, derived from Norway spruce, flax lignans, and nettle root extract.

Since normal aging can lead to potentially unsafe levels of prostaglandins in the prostate, Pygeum africanum extract is included to help suppress prostaglandins, and thereby promote prostate comfort.* Beta-sitosterol has been added because it is the most biologically active component of pygeum and enhances its protective effects.

Ultra Natural Prostate Formula also contains 5-LOXIN® boswellia extract to protect against the dangerous enzyme 5-lipoxygenase, and the mineral boron to help slow elevation of prostate-specific antigen (PSA).

The retail price for one bottle of Ultra Natural Prostate Formula is $38. If a member buys four bottle, the price is reduced to $26.25 per bottle. If a member buys 12 bottles, the price is reduced to $24 per bottle.

Contains soybeans.
WHAT’S INSIDE

LifeExtension® Magazine

STEPPING UP AGE-REVERSAL RESEARCH • PAGE 7
A team of Harvard-affiliated scientists has succeeded for the first time in reversing advanced degenerative disease in an animal model. Read about new projects Life Extension Foundation® is funding to speed up this kind of age-reversal research.

WHAT EUROPEANS ARE USING TO RESTORE YOUTHFUL SLEEP • PAGE 26
Chronic insomnia strikes nearly one-third of Americans. Find out how a natural proprietary compound widely used in Europe safely induces relaxation and sleep.

HOW INSOMNIA DESTROYS SKIN HEALTH • PAGE 34
Over time, poor sleep degrades skin health and may cause dermatitis and eczema. The good news is there are nutrients that can restore restful sleep and promote healthy skin.

NEW AMBER EXFOLIANT REJUVENATES AGING SKIN • PAGE 46
Microdermabrasion, a popular way to revitalize aging skin in the US, is costly and poses health risks. A novel amber crystal exfoliant offers an affordable, safe alternative.

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