Cancer Research Paralyzed By Bureaucracy

Internal Protection Against Solar Damage

Newly Discovered Benefits of Coffee

Exclusive Report From Cardiovascular Disease Symposium

PLUS—Vitamin D Slashes Breast Cancer Mortality Creatine Protects Against Neurodegeneration Hysterectomy Procedure to Avoid
Super Ubiquinol CoQ10 With BioPQQ® contains shilajit to increase coenzyme Q10 in mitochondria plus PQQ to support the generation of new mitochondria in aging cells. This three-way mitochondrial support strategy offers the following benefits:

1. **SUPER UBIQUINOL CoQ10**
   
   CoQ10 is required to convert the fats and sugars you eat into cellular energy. The body’s production of CoQ10 markedly declines with advancing age.
   
   Scientific studies show that absorption of the ubiquinol form of CoQ10 is far greater than the ubiquinone form.¹

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   PrimaVie® shilajit has been shown to double levels of CoQ10 in mitochondrial.¹ Combining CoQ10 and shilajit produced a 56% increase in energy production in the brain—40% better than CoQ10 alone. And in muscle, there was a 144% increase in energy production—27% better than CoQ10 alone.²

3. **PQQ PROMOTES YOUTHFUL CELLULAR FUNCTION**
   
   - **PQQ** activates genes that promote the formation of fresh mitochondria.³
   - **Mitochondrial DNA** is situated at the source of free radical production, but has relatively little protection from their damaging effects.³ PQQ powerfully boosts mitochondrial antioxidant defenses while promoting the generation of new mitochondria.³,⁵

   A bottle of 30 softgels of Super Ubiquinol CoQ10 With BioPQQ® retails for $54. If a member buys four bottles, the price is reduced to $37.50 per bottle.

Kaneka QH Ubiquinol® is a registered trademark of Kaneka Corporation. PrimaVie® is a registered trademark of Natreon, Inc. BioPQQ® is a registered trademark of MGC (Japan).

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74 A COMMON BUT DEADLY GYNECOLOGICAL PROCEDURE
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87 WELLNESS PROFILE
Author of *The Sailor Who Climbs Mountains*, Jean Braure is a three-time Olympic sailor and Life Extension® member who has also scaled the world’s highest peaks. At 78—and still climbing—he takes a range of supplements to improve his performance.

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Hemp seeds are a rich source of two essential fatty acids—**alpha-linolenic acid** and the rare **gamma linolenic acid**—along with all the essential amino acids and abundant minerals and vitamins. Hemp seeds quell inflammation, enhance cardiovascular protection, and ease eczema symptoms.

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Nicholas Gonzales, MD, pioneered research into an enzyme-based nutritional approach to treating cancer. In his book, *What Went Wrong*, he describes how the medical world’s bias and incompetence derailed a crucial clinical trial and nearly succeeded at discrediting his therapy.
Next Generation Curcumin

How Much Curcumin Are You Absorbing?

Curcumin is an active compound derived from the Indian spice turmeric. It has been widely acclaimed for its diverse health-promoting effects on nearly every organ system in the body, including its support for the body’s natural inflammatory response system. But most curcumin is neither absorbed well nor retained well in the blood—posing a challenge to those who wish to maximize its benefits.

Life Extension® took the lead in resolving this issue several years ago by introducing Super Bio-Curcumin® containing BCM-95®, a patented, bioenhanced preparation of curcumin that has been shown to reach up to 7 times higher concentration in the blood than standard curcumin.

Now, an exciting next generation curcumin formula has become available! The Advanced Bio-Curcumin® with Ginger & Turmerones provides additional compounds that further boost absorption of curcumin’s highly beneficial phytonutrients.

UNRIVALED POTENCY AND ABSORBABILITY

In addition to BCM-95®, this curcumin formula contains:

1. Turmerones: After curcumin is extracted from turmeric, what remains is turmeric oil rich in compounds called turmerones. Combining BCM-95® with a high content of turmerones provides health consumers with more beneficial turmeric compounds that further multiply absorption. Scientists have shown that these potent turmerones not only support curcumin absorption, but significantly increase the amount of curcumin inside the cell as well.

2. Ginger: Curcumin and ginger are close botanical relatives. Research demonstrates that they have overlapping and complementary health benefits, and scientists are focusing on the therapeutic effects of combining these two plants.

Advanced Bio-Curcumin® with Ginger & Turmerones provides a supercritical extract of ginger standardized to the greatest concentration of turmerones—including beneficial gingerols and shogaols.

3. Phospholipids: This new curcumin formula also contains phospholipids, a type of emulsifying molecule known to greatly enhance absorption of poorly soluble active compounds.

The powerfully enhanced bioavailability and potency of Advanced Bio-Curcumin® with Ginger & Turmerones is superior to conventional curcumin supplements. This product represents the most powerful and cost-effective way to supplement with—and receive the full benefits of—this very critical nutrient.

The suggested daily dosage of one softgel of Advanced Bio-Curcumin® with Ginger & Turmerones provides:

- 630 mg Turmeric Phospholipid Blend
- 200 mg Ginger CO₂ extract (root)

Each softgel of Advanced Bio-Curcumin® with Ginger & Turmerones provides 400 mg of BCM-95® Super Bio-Curcumin plus an array of turmerones and phospholipids.

A bottle of 30 softgels of Advanced Bio-Curcumin® with Ginger & Turmerones retails for $30. If a member buys four bottles, the price is reduced to $20.25 per bottle.

Contains soybeans.

Bio-Curcumin® and BCM-95® are registered trademarks of Dolcas-Biotech, LLC.

To order Life Extension® Advanced Bio-Curcumin® with Ginger & Turmerones, call 1-800-544-4440 or visit www.LifeExtension.com

References


Caution: Do not take if you have gallbladder problems or gallstones. If you are taking anti-coagulant or anti-platelet medications, or have a bleeding disorder, contact your healthcare practitioner before taking this product.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Gustavo Tovar Baez, MD, operates the Life Extension Clinic in Caracas, Venezuela. He is the first physician in Caracas to specialize in anti-aging medicine.

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

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

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The Scientific Advisory Board includes:

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John Bok, PhD, is the author of two books on cancer therapy, Cancer and Natural Medicine (1996) and Natural Compounds in Cancer Therapy (2001). He obtained his doctorate at the University of Texas Graduate School of Biomedical Sciences with research at the MD Anderson Cancer Center, focusing on screening models to identify promising new anticancer drugs. 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.

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

Deborah F. Harding, MD, is founder of the Harding Anti-Aging Center. She is double board-certified in internal medicine and sleep disorder medicine. She also earned the Cenegeics 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).

Richard Kratz, MD, DSci, is clinical professor of ophthalmology at the University of California, Irvine, and the University of Southern California (Los Angeles). Dr. Kratz pioneered the cataract-removal technique called phacoemulsification and developed intraocular lenses to replace the crystalline lens. He is currently involved in projects relating to glaucoma, cataract extraction, and facilitating eyesight for the totally blind.

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

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

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

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

Michael D. Ozner, MD, FACC, FAHA, is a board-certified cardiologist who specializes in cardiovascular disease prevention. He serves as medical director for the Cardiovascular Prevention Institute of South Florida and is a noted national speaker on heart disease prevention. Dr. Ozner is also author of The Great American Heart Hoax and The Miami Mediterranean Diet (2008, Benbella Books). For more information visit www.drozner.com.

Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Renton, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored 11 books and publishes Nutrition and Healing, a monthly newsletter with a worldwide circulation of more than 100,000.
In 2003, the Life Extension Foundation® introduced a standardized *resveratrol* extract shown to favorably alter genes implicated in the aging process—many of the same genes that respond to calorie restriction.

Since then, we have identified additional compounds that simulate calorie restriction’s ability to trigger youthful gene expression—the process by which genes transmit signals that slow certain aspects of aging.

Compelling evidence reveals that certain compounds found in berries, such as *pterostilbene* and *fisetin*, possess potent “longevity gene” activators that work in synergy with *resveratrol*. For example, *fisetin* (found in strawberries) has been shown to stabilize resveratrol in the body by shielding it from metabolic breakdown,\(^1\) thus extending its beneficial effects.

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

**References**

To order Optimized Resveratrol with Synergistic Grape-Berry Actives, 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 first surgical attempt to cure pancreatic cancer was demonstrated in Germany in 1909. In 1935, a doctor named Allen Whipple devised a more effective way to remove the pancreas and adjacent body parts.

Dr. Whipple’s technique involves the removal of the head of the pancreas, along with portions of the stomach, small intestine, gall bladder, and common bile duct.

The surgical impact on the body is severe. There is a higher death rate from this procedure than many other hospital operations. Sometimes the rearranged internal organs do not hold together and infection spreads inside the patient. This leads to follow-up surgery where the remainder of the pancreas and the spleen are removed to correct problems caused by the first operation.

Some patients do not heal well and leak pancreatic juice from where body parts are sewn together. This happens so frequently that the surgeon leaves in drainage catheters for fluids to exit so they don’t accumulate inside the patient.

Another complication is paralysis of the stomach that can take over a month to heal. During this time a feeding tube is surgically placed into the small intestine to provide nourishment.

Some patients develop type I diabetes because the insulin-producing areas of their pancreas is removed, requiring life-long insulin injections.

Despite these horrific surgical side effects, most patients who survive the painful hospital ordeal die from metastatic pancreatic cancer. Few are cured.

The name of this surgery is the "Whipple Procedure." While it’s been refined since Dr. Whipple’s work in 1935, pancreatic cancer still kills the vast majority of its victims—79 years later!

The snail’s pace of progress against malignancies like pancreatic cancer should provoke societal outrage against the establishment. Yet like lambs standing in line awaiting slaughter, the public tolerates mediocre medicine that is inflicting horrific suffering and massive numbers of needless deaths.

We view these bureaucratic lags as intolerable delays that will be ridiculed by future medical historians. This article describes a drug long ago approved by the FDA that can improve outcomes in pancreatic and other cancer cases. This treatment, however, is not being incorporated into conventional practice.
Steve Jobs was criticized for delaying a Whipple Procedure for nine months after being diagnosed with pancreatic cancer. The initial approaches Jobs tried (acupuncture, vegan diet, herbs, spiritualists) had no chance of eradicating his primary pancreatic tumor.

It’s hard to blame the then 49-year-old co-founder of Apple, however, for not wanting his body cut up via a Whipple Procedure. Steve Jobs eventually died at age 56 after undergoing multiple aggressive treatments, including a liver transplant.

How many technologies developed in the early 1900s do consumers still use today? Yet, even the stethoscope (invented in 1819) remains state-of-the-art in today’s archaic world of medical practice.

If one is diagnosed with pancreatic cancer at a relatively early stage, the Whipple Procedure is still the best treatment option. Overlooked are a myriad of adjuvant therapies that can markedly improve long-term survival and reduce the horrific complications inherent to the Whipple surgical procedure.

The cancer treatment I describe next is not new. It has long been recommended to Life Extension® members.

Interleukin-2 Versus Placebo In Pancreatic Cancer Treatment

The subcutaneous administering of 9 million international units a day of the drug interleukin-2 to pancreatic cancer patients three days before surgery induced the following benefits compared to placebo patients administered saline:

<table>
<thead>
<tr>
<th></th>
<th>Interleukin-2 Group</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two-Year Survival</td>
<td>33%</td>
<td>10%</td>
</tr>
<tr>
<td>Three-Year Survival</td>
<td>22%</td>
<td>0%</td>
</tr>
<tr>
<td>Postoperative</td>
<td>33%</td>
<td>80%</td>
</tr>
</tbody>
</table>

This study should have made headline news. Instead it was buried in a 2006 edition of the journal *Hepato-Gastroenterology*.46

Life Extension has been recommending moderate dose interleukin-2 as an adjuvant cancer treatment since the late 1990s.

Skeptics point to studies in advanced melanoma and renal cell carcinoma patients where interleukin-2 provides only modest survival improvements. These narrow-focused cynics neglect evidence that interleukin-2 is most effective when administered before immune-suppressing surgery, radiation, and chemotherapy begins.33-37,46

Interleukin-2 (IL-2) enhances overall immune function, most notably by enhancing natural killer cell activity.13-15 Natural killer cells are among the body’s most important immune defenses against malignant and viral-infected cells.16-20 (Cells infected with certain viruses are more prone to convert to malignant cells.)21

IL-2 was long ago approved to treat kidney cancer22-26 and metastatic melanoma.27,28 Its efficacy was likely limited by the advanced disease stage patients are at by the time IL-2 is administered.30 There is toxicity associated with high-dose IL-2.31,32

Intriguing research suggests that administering moderate-dose IL-2 to patients before surgery and chemotherapy may improve survival and other outcomes.33-37 It does this by boosting immune
function prior to it being impaired by conventional treatments.

Surgery results in significant immune impairment, something we warned against long before the mainstream considered it a factor in the poor survival rates seen in many types of cancer. Immune suppression that occurs during chemotherapy is a well-established treatment complication.

In a study conducted on pancreatic cancer patients, half the group was administered moderate-dose IL-2 for three consecutive days prior to a Whipple Procedure. Two years after the operation, 33% of patients pre-administered IL-2 were alive compared to only 10% of control surgical patients. Three-year survival was 22% in the IL-2 group compared to 0% of the controls.

Surgical complications occurred in 80% of the control surgical patients compared with only 33% in the IL-2 pretreatment group. While the control group spent 19.5 days confined to the hospital after their Whipple Procedure, the IL-2 group escaped the hospital in 12 days.

Life Extension has been recommending moderate-dose IL-2 since the 1990s, yet the mainstream oncologists behave as if these drugs are limited to advanced cancers for which they originally gained FDA-approval. The reality is that IL-2 and other immune-boosting drugs may have far greater efficacy when administered early in the disease process against a wide range of solid tumors and some types of leukemia.

Cancer is not relegated to modern times. It has killed human beings forever, but has become prominent as people live longer and cancer incidence markedly increases. Pancreatic cancer, for instance, increases sharply in individuals over age 50, and most patients are 60 to 80 years old when diagnosed.

HIV rose to prominence in the early 1980s, though the virus existed in the human population before then. The problem was that no one paid attention until thousands started dying.

Within 15 years of HIV infection becoming pandemic, effective anti-viral “cocktails” were discovered that turned AIDS from a death sentence into a manageable chronic disease.

In 1981, AIDS was a disease of unknown origin. It is controllable today because of rapid scientific innovation. Pancreatic cancer, on the other hand, still kills virtually all its victims with the best hope for long-term survival being the Whipple Procedure first refined in 1935.

So why were AIDS treatments discovered so quickly while effective cancer therapies languish?

The difference was the aggressive way that experimental multimodal therapies were implemented in HIV/AIDS patients compared to the suffocating bureaucracy that stymies cancer research.

In the early days of AIDS treatment, any therapy that might work was tried immediately on dying patients and the results evaluated and documented. These treatments were often administered by those infected with HIV who faced pending death if a cure were not discovered quickly. The FDA was cast by...
first recommended these nutrients in the October 1985 edition of this publication (called at that time Anti-Aging News).

While the study published in the Journal of the American Medical Association was conducted in a region of Africa where malnutrition is rampant, and the study had other flaws (like a 25% dropout rate in both groups), the delay in HIV-induced immune suppression in patients taking these nutrients was remarkable.

A number of previous studies support the benefits of certain nutrients in delaying HIV progression79,84-86 Even FDA Consumer Magazine eventually acknowledged the value of AIDS patients using nutrient supplements.

We also recommended a drug called isoprinosine to AIDS patients in the October 1985 issue of Anti-Aging News. This contributed to our being arrested by the FDA because isoprinosine was not an approved drug. In the June 21, 1990, edition of the New England Journal of Medicine, a study found that HIV-infected humans who took isoprinosine were eight times less likely to progress to AIDS compared to placebo.87 This was not enough, however, to keep us from being indicted in 1991.

What helped save us was the continuing publication of research findings corroborating that isoprinosine and certain nutrients significantly delayed disease progression in HIV-infected patients, the wayside as AIDS activists made certain that potentially effective treatments were not obstructed by bureaucratic red tape.77

We at Life Extension are proud of the part we played in saving the lives of AIDS patients by defying FDA attempts to shut us down. An editorial published late last year in the New England Journal of Medicine revealed how HIV revolutionized the way global health is pursued, and how it resulted in accelerated delivery of innovative life saving treatments.78

We Were Jailed!

The FDA did not like our aggressive stance when it came to accelerating medical research, particularly as it related to helping AIDS victims. The FDA did everything in its power to shut Life Extension down and imprison us for life.82 According to the FDA, we were ripping off dying AIDS patients by recommending unproven therapies.

The Journal of the American Medical Association (Nov 27, 2013) featured an article describing a 54% reduction in the risk of progressing from HIV to full-blown AIDS using selenium and multi-vitamins.83 Life Extension
thus negating the FDA’s argument that we were “ripping off AIDS patients” by recommending “unproven” therapies.

The FDA was on the wrong side when it sought to destroy us in the 1980-1990s. Regrettably, millions of Americans continue to perish from needless bureaucratic red tape from virtually all diseases except AIDS. The reason AIDS is the exception is that AIDS activists made it clear to the FDA that there would be no bureaucratic delays in delivering experimental therapies to HIV-infected patients. The FDA capitulated and this enabled rapid medical innovation to occur in a free market environment.

Cancer patients, on the other hand, sit by like timid sheep, as the FDA decides which experimental therapy they are “allowed” to try and how far their disease must progress before the experimental therapy is made available on a so-called “compassionate-use” basis. FDA’s granting of “compassionate-use” sometimes occurs weeks after the patient dies, or is so close to death that it has no chance of working.

In 2010, the Life Extension Foundation® pledged a substantial amount of money to a prestigious cancer research institute to evaluate many of the components contained in our published Pancreatic Cancer Treatment Protocol. The institution eagerly pushed this project forward, generating reams of paperwork in order to obtain Institutional Review Board approval.

Here we are in 2014, and the total number of pancreatic patients enrolled in this study is zero. Bureaucratic delays like this are beyond rational understanding. These are human lives we are talking about!

When we devised unique treatments for AIDS in the 1980s, they were provided to dying AIDS patients almost overnight. Not all of them worked, but the ones that did built on a foundation that has resulted in HIV patients living for decades, as opposed to pancreatic cancer patients who often die in a matter of months.

Contrast the rapid development of AIDS therapies to most pancreatic cancer patients who die even after enduring the Whipple Procedure that was first described in 1935. It is clear that methods employed by AIDS activists are far superior to today’s regulatory quagmire that stymies cancer research.

Cancer will likely kill over 570,000 Americans this year.88 Already-approved treatments could be saving lives, such as administering moderate dose interleukin-2 early in the disease process. Yet even these simple treatment enhancements are ignored by the oncology mainstream that prefers to practice assembly line medicine.

These kinds of delays would have never been tolerated by AIDS activists, who experimented with any potentially effective drug on large numbers of dying patients to quickly discover what worked and what didn’t.

The New England Journal of Medicine credits the work of AIDS pioneers as revolutionizing the way medical research is conducted today. We at Life Extension disagree with this Pollyanna assessment, as cancer therapies we uncovered decades ago remain bogged down in FDA red tape. Many are not being pursued at all despite a continuous stream of favorable data flowing out of research facilities.

The slogan in the black box below was chanted by AIDS activists who surrounded FDA headquarters in 1988 and shut down the agency for one day:89,90

“Act Up, Speak Out… Silence = Death!”

Protest Now Rather Than Wait For Funerals

I do not know why every cancer patient and their family does not march on Washington to demand the same exemption from bureaucratic suffocation that enabled HIV to become a manageable disease in a relatively brief window of time.

Perhaps cancer patients should write their family and friends and state something to the effect:

“In lieu of attending my funeral, would you mind marching on the Capitol in Washington D.C. and insist that cancer patients have unfettered access to any therapy that might work.”

For longer life,

William Faloon
References


Systemic inflammation is involved in most undesirable consequences of aging. Culprits behind inflammation are pro-inflammatory cytokines, such as interleukin-1 and tumor necrosis factor-alpha. Luteolin is a flavonoid that has been shown to help suppress these inflammatory cytokines.13-16

**BENFOTIAMINE**: As humans age, proteins in their bodies become irreversibly damaged by glycation reactions. Glycation is the cross-linking of proteins and sugar to form non-functioning structures called advanced glycation end products in the body, which can lead to alterations of normal cell function. Carnosine is not only a powerful anti-glycating agent, but it also protects neurons against reactive and cytotoxic protein carbonyl species associated with normal aging.1,2

**PQQ**: This breakthrough micronutrient has been shown to trigger mitochondrial biogenesis—the growth of new mitochondria in aging cells—PQQ also activates genes involved in protecting the delicate structures within the mitochondria.7,10

**LUTEOLIN**: Systemic inflammation is involved in most undesirable consequences of aging. Culprits behind inflammatory reactions are pro-inflammatory cytokines, such as interleukin-1 and tumor necrosis factor-alpha. Luteolin is a flavonoid that has been shown to help suppress these inflammatory cytokines.13-16

**BENFOTIAMINE**: Effectively modulates multiple destructive biochemical pathways that are induced by higher than desirable blood glucose levels. Human mortality studies indicate that ideal fasting glucose levels are between 74-85 mg/dL. Yet many aging people have fasting glucose above 90 mg/dL, which is less than optimal.1-3 Benfotiamine protects endothelial cell integrity from the effects of high glucose levels. In addition, benfotiamine exhibits direct antioxidant capacity and supports DNA function.20

**PYRIDOXAL 5'-PHOSPHATE**: Aging results in the formation of advanced glycation end products throughout the body. Pyridoxal 5'-phosphate is the active form of vitamin B6 that has been shown to protect against both lipid and protein glycation reactions.21-24

**R-LIPOIC ACID**: Destructive free-radical activity in the mitochondria plays a major role in the loss of cellular vitality. A microencapsulated Bio-Enhanced® R-lipoic acid facilitates youthful mitochondrial energy output while guarding against free radicals. Two forms of lipoic acid are sold in the supplement market, but R-lipoic acid is far more potent.25-28

**ACETYL-L-CARNITINE ARGINATE**: The amino acid L-carnitine is required to transport fats into the mitochondria to be burned for cellular energy. Acetyl-L-carnitine arginate is a patented form of carnitine that also supports neurites in the brain.29

Taking all of the individual ingredients in the Mitochondrial Energy Optimizer with BioPQQ® separately would be prohibitively expensive, but Life Extension® members obtain this comprehensive formula at substantial savings.

A bottle of Mitochondrial Energy Optimizer with BioPQQ® containing 120 capsules retails for $94. If a member buys four bottles, the price is reduced to $63 per bottle.

### Just four capsules of Mitochondrial Energy Optimizer with BioPQQ® provide:

- **Carnosine** 1000 mg
- **ArginoCarn® Acetyl-L-carnitine arginate** DiHCl 675 mg
- **R-Lipoic acid** (as microencapsulated Bio-Enhanced®) 150 mg
- **Benfotiamine** 150 mg
- **Vitamin B6** (as PSP) 100 mg
- **BioPQQ®** 10 mg
- **Luteolin** 8 mg
- **Calcium** 230 mg

### References


To order Mitochondrial Energy Optimizer with BioPQQ®, call 1-800-544-4440 or visit www.LifeExtension.com

To view images of the various ingredients and supplements contained within Mitochondrial Energy Optimizer with BioPQQ®, 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.
High Potency FAT-SOLUBLE NUTRIENTS in ONE Softgel

Most people don’t get enough oil-based nutrients like vitamin K, lycopene, and gamma tocopherol. This problem is solved with a one-per-day softgel called Super Booster. It provides high potencies of fat-soluble compounds lacking in dry powder formulas, along with other nutrients.

Just one SUPER BOOSTER provides:

• VITAMIN K2  Scientific studies show vitamin K2 provides superior benefits for the bones, arteries, and other tissues. The MK-4 form of vitamin K2 is the most rapidly absorbed and is now routinely used in Japan to maintain healthy bone density. MK-4, however, only remains active in the blood for a few hours. The MK-7 form of K2, on the other hand, remains bioavailable to the human body over a sustained 24-hour period. Super Booster provides a potent dose of MK-7 and MK-4 to keep calcium in the bone and out of the arteries.

• GAMMA TOCOPHEROL  If one consumes only alpha tocopherol, the critically important gamma tocopherol is displaced from cells within the body. While alpha tocopherol vitamin E inhibits lipid peroxidation, the gamma tocopherol form quenches the dangerous peroxynitrite free radical. It is especially important for those who take vitamin E supplements to make sure they consume at least 200 mg a day of gamma tocopherol.

• LUTEIN  The carotenoid lutein helps maintain healthy cell division, supports the macula of the eye, and protects the endothelial lining of the arteries.

• Lycopene  Evidence suggests that people who ingest the carotenoid lycopene enjoy healthier prostate function. Lycopene also helps guard against LDL oxidation.

• GINKGO  Hundreds of studies substantiate the multifaceted effects of Ginkgo biloba in promoting healthy circulatory and neurological function.

• CHLOROPHYLLIN  Scientific studies indicate that chlorophyllin may protect against environmentally induced damage to DNA.

A bottle of 60 Super Booster softgels retails for $42. If a member buys four bottles, the price is reduced to $28.50 per bottle. The Super Booster saves consumers huge dollars by combining a wide variety of costly nutrients into one daily softgel. If you add up the price of the individual ingredients contained in the Super Booster, you would spend two to three times more for this potency if taken separately.

To order Super Booster, 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.
SUPPORT FOR THE IMMUNE SYSTEM

Reishi mushroom has been traditionally used to boost immune system vitality. Its broad-spectrum benefits have been demonstrated in thousands of studies.¹

An advanced extraction technology has resulted in a new Reishi extract that make its active compounds even more bio-available.

REISHI SUPPORTS A HEALTHY IMMUNE SYSTEM

An abundance of evidence demonstrates that Reishi constituents enhance the protective activity of the body’s hematopoietic stem cells, T-cells, and other crucial immune factors.²⁻⁹

Reishi’s immune-supporting compounds include an array of unique polysaccharides, triterpenes, and other constituents,¹⁰,¹¹ many of which assist activation of the cell surface receptors that modulate normal immunity.²⁻¹²

The Reishi mushroom also supports the body’s production of endogenous antioxidant enzymes—such as superoxide dismutase (SOD), catalase, and glutathione—which, in turn, support the body’s natural immune defenses against free radical damage¹³,¹⁴

ADVANCED EXTRACTION TECHNOLOGY

Reishi Extract Mushroom Complex delivers powerful compounds and represents the next generation of natural immune support. Reishi extracts standardized to polysaccharides have been available for years, but most do not standardize for triterpenes and include the spores. This full-spectrum extract has multiple components that have shown to support healthy immune function and enhanced longevity in a natural experimental aging model.¹⁵

To order Reishi Extract Mushroom Complex, call 1-800-544-4440 or visit www.LifeExtension.com

The suggested 2 capsules a day of Reishi Extract Mushroom Complex provide:

Reishi mushroom (Ganoderma lucidum) extract (Fruit body) 980 mg
[standardized to 13.5% polysaccharides (132.3mg) and 6% triterpenes (58.8mg)]

Shell-broken Reishi mushroom (Ganoderma lucidum) spore 150 mg

A bottle containing 60 vegetarian capsules of Reishi Extract Mushroom Complex retails for $30. If a member buys four bottles, the price reduced to $20.25.

References
15. FASEB. 2012;26:373.2.
Higher Vitamin D Levels Associated With Improved Breast And Colorectal Cancer Survival

An article published online in the *European Journal of Cancer* reports the results of two meta-analyses conducted by researchers at the German Cancer Research Center in Heidelberg, which affirm a protective effect for higher levels of vitamin D against the risk of dying from breast cancer as well as colorectal cancer.*

The researchers selected five studies that involved 4,413 breast cancer patients and five studies that included 2,330 colorectal cancer patients. Analysis of the selected studies uncovered a 38% average lower risk of dying from any cause and a 42% lower risk of dying from breast cancer when the highest versus lowest categories of serum 25-hydroxyvitamin D levels were compared. For colorectal cancer, the risk averaged 29% lower for all-cause mortality and 35% lower for disease-specific death among the highest groups.

**Editor’s Note:** Authors Haifa Maalmi and colleagues note, “The rather consistent results found in our meta-analyses suggest vitamin D supplementation might bear a potential to improve prognosis among colorectal and breast cancer patients, a suggestion that should be followed up and tested in randomized controlled trials.”

*D. Dye


Nutritious Meals Reduce Health Care Expenditures In Chronically Ill Population

The *Journal of Primary Care & Community Health* published an article by researchers affiliated with Philadelphia’s Metropolitan Area Neighborhood Nutrition Alliance (MANNA), which reports a health savings benefit for nutritious meal delivery to men and women with chronic ailments.*

The study compared 65 MANNA clients with 633 Medicaid patients with chronic illnesses who did not receive the services. Subjects in the MANNA group received three nutritionally balanced meals per day that employed Medical Nutrition Therapy (MNT) to improve nutritional status, disease-fighting ability, and quality of life. Health care costs for all participants were assessed for the six months prior to and six months following the beginning of the meal deliveries.

Average monthly health care costs including inpatient costs and hospital admissions decreased among the MANNA clients during the three months after the meal service was initiated, demonstrating a health benefit for improved nutrition.

**Editor’s Note:** In the months after receiving the meals, the group's monthly healthcare costs were an average of 31% lower than costs incurred by participants who did not receive the meals.

*D. Dye

Need For Choline Higher In Some Individuals

An article published in The FASEB Journal presents University of North Carolina researchers’ findings of a variance in the requirement for choline among people of different genders and ethnic backgrounds.*

Kerry-Ann da Costa, PhD, and colleagues gave 79 men and women a 10-day diet that provided 550 mg choline per day, which is the Institute of Medicine's adequate intake level. This was followed by a diet containing only 50 mg choline daily for up to six weeks, during which changes associated with the development of liver or muscle dysfunction were monitored. DNA samples were evaluated for 200 variations in 10 genes related to choline metabolism in order to determine their relationship with deficiency symptoms.

The researchers observed several single nucleotide polymorphisms (SNPs) associated with choline deficiency-related organ dysfunction in women when they consume a diet low in choline, as well as variants that affect choline requirements. Editor’s Note: Other SNPs were identified with muscle damage. Variation in SNPs that affect choline requirement was observed among Europeans, Mexicans, Asian Americans, and people of African descent. —D. Dye

Meta-Analysis Links Greater Calcium Intake To Lower Colorectal Cancer Risk

The results of a meta-analysis published online in the International Journal of Cancer support a reduced risk of colorectal cancer among men and women with a higher intake of calcium.*

Edward L. Giovannucci, ScD, of Harvard School of Public Health, and colleagues selected 21 publications reporting 20 prospective observational studies for their analysis. Analysis of overall intake of calcium, which involved studies that included a total of 1,415,597 participants among whom 12,305 cases of colorectal cancer occurred, uncovered an 8% lower risk of the disease in association with each 300 mg per day increase in calcium intake. Those whose consumption of calcium averaged 1,000 mg per day had an 18% lower risk of the disease compared to those whose intake was 250 mg, and among those whose intake was 1,750 mg, the risk was 26% lower.

Editor’s Note: Analysis of studies that examined supplemental calcium, which included 8,839 colorectal cancer cases among 920,837 subjects, revealed a 9% lower risk of the disease in association with each 300 mg per day increase.

—D. Dye

Aspirin Is Not Beneficial Before Non-Cardiac Surgery

A study presented at the annual meeting of the American College of Cardiology and published in the New England Journal of Medicine reported that giving surgery patients aspirin may cause more harm than good.*

The study involved just over 10,000 patients undergoing non-cardiac surgery. Half received 200 mg of aspirin right before surgery, while half received a placebo. The aspirin group continued to take 100 mg of aspirin for a month following the operation.

Researchers found that 7% of patients in the aspirin group, or 351 people, had a heart attack or died within 30 days of surgery, compared to 7.1% (355) of those who received a placebo, indicating no benefit to taking aspirin. More significantly, 230 patients in the aspirin group experienced major bleeding versus 188 who took a placebo.

There was no difference in the outcomes for patients who regularly took a daily aspirin compared to those who took it specifically before surgery.

“You’re not preventing heart attacks and mortality, but you are increasing the risk of significant bleeding,” said study leader Dr. P.J. Devereaux.

Editor’s Note: The take-home lesson based on these study results is to discontinue aspirin two days before surgery in consultation with your doctor if aspirin has been prescribed to you. A second related study, also published in the New England Journal of Medicine, found that the drug clonidine, which is given to 20% of patients with atherosclerosis (hardening of the arteries) is also ineffective and potentially harmful.

—A. Kessler

Greater Vitamin C Intake Linked With Reduced Risk Of Breast Cancer Mortality

The results of a meta-analysis conducted by researchers at Sweden’s Karolinska Institute indicate improved survival among women with breast cancer who had a higher intake of vitamin C from supplements or food sources, according to the European Journal of Cancer.*

For their analysis, Holly R. Harris and her colleagues selected nine reports describing 10 observational studies that included a total of 17,696 women diagnosed with breast cancer. Among this group, there were 1,558 deaths attributable to the disease and 2,791 total deaths. Studies examined the effect of supplementing with vitamin C following breast cancer diagnosis and/or the effect of vitamin C obtained in the diet.

When the studies reporting the effects of vitamin C supplementation were evaluated, the use of supplements was associated with a 19% lower risk of total mortality and a 15% lower risk of dying from breast cancer in comparison with no use.

Editor’s Note: Analysis of vitamin C from food sources uncovered a 27% lower risk of mortality and a 22% lower risk of breast cancer death in association with each 100 mg per day increase. Comparison of high versus low dietary intake resulted in a 20% lower risk of dying and a 23% reduction in the risk of breast cancer mortality among women whose intake was categorized as high.

—D. Dye


Meta-Analysis Results Indicate Blood Pressure Reduction Benefit For EPA/DHA

The results of a meta-analysis published online in the American Journal of Hypertension add evidence to a blood pressure-reducing effect for the omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).*

Paige E. Miller and colleagues analyzed 70 randomized trials that compared the effects of EPA and/or DHA to a placebo. The average dose of EPA plus DHA was 3.8 grams per day, which was supplied by fish oil in the majority of the studies.

Analysis of hypertensive subjects who were not receiving treatment for their condition found an average reduction of 4.51 mmHg in systolic blood pressure and a 3.05 mmHg reduction in diastolic pressure among those who received EPA and DHA in comparison with a placebo. In the meta-analysis of all studies, EPA plus DHA was associated with an average reduction in systolic and diastolic blood pressure of 1.52 mmHg and 0.99 mmHg.

Editor’s Note: When the analysis was restricted to EPA/DHA from supplements alone, systolic blood pressure was lowered by an average of 1.75 mmHg and diastolic by 1.11 mmHg. Diastolic blood pressure was found to be significantly reduced when the dosage of EPA/DHA exceeded 2 grams per day.

—D. Dye


Genes Reflecting Increased Vitamin E Status Associated With Lower Prostate Cancer Risk

An article appearing in the Journal of Nutrition reveals a lower risk of prostate cancer in men with genetic variants indicative of higher vitamin E status. “Genetic variants in genes involved in vitamin E transport or metabolism may be important determinants of potential beneficial effects of vitamin E supplementation on prostate cancer risk,” authors Jacqueline M. Major and associates note.*

The study included participants in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial, which enrolled over 155,000 men and women between 1993 and 2001. The current investigation compared 483 men diagnosed with prostate cancer and 542 matched control subjects who had genotype data on three vitamin E-related variants available. The researchers found that the presence a specific single nucleotide polymorphism was associated with a 25% lower risk of prostate cancer in comparison with the more common genotype.

Editor’s Note: As potential mechanisms for vitamin E, the authors emphasize its antioxidant properties that can protect against oxidative damage or inhibit lipid peroxidation within the cells. They also discuss the vitamin’s modifying effect on inflammation.

—D. Dye

**Meta-Analysis Reveals Lower Risk Of Dying In Association With Higher Vitamin D In Nearly 30 Years Of Follow-Up**

A review and meta-analysis published in the *British Medical Journal* concluded an association between a higher serum level of vitamin D and a lower risk of death from any cause over follow-up periods ranging from 0.3 to 29 years. The international team of researchers also uncovered a reduction in the risk of premature death in association with the use of vitamin D3 supplements.*

Rajiv Chowdhury and colleagues selected 73 observational cohort studies that reported serum 25-hydroxyvitamin D levels and the cause of deaths that occurred among 849,412 men and women over follow-up. The analysis uncovered a 35% higher risk of death from cardiovascular disease or from any cause over follow-up among those whose vitamin D levels were in the lowest one-third of subjects in comparison with those whose levels were among the highest third.

**Editor’s Note:** Analysis of 22 randomized controlled trials of vitamin D supplements, involving a total of 30,716 participants, revealed an 11% lower risk of dying over three to seven years of follow-up among those who received vitamin D3 in comparison with a placebo or no treatment. —D. Dye

[Br Med J. 2014 Apr 1.]

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**Lifestyle Improvement May Be As Influential As Drug Therapy For Erectile Dysfunction**

An article published online in *The Journal of Sexual Medicine* reveals that lifestyle changes may be as good as prescription medication for treating erectile dysfunction (ED) in older men.*

In an investigation of 810 men aged 35 to 80 years at the beginning of the study, Gary A. Wittert, MD, and his associates at the University of Adelaide in Australia documented the presence of erectile dysfunction in 23.2% of the subjects. During the following five-year period, 31.7% developed ED, yet the condition went into remission among 29%.

Predictors of the development of ED included having a lower income, the presence of significant abdominal fat, depression, diabetes, obstructive sleep apnea, voiding lower urinary tract symptoms, and other factors. Predictors of its remission included employment and the absence of lower urinary tract symptoms, angina, diabetes, and disordered lipids.

**Editor’s Note:** “The good news is, our study also found that a large proportion of men were naturally overcoming erectile dysfunction issues,” Dr Wittert concluded. “The remission rate of those with erectile dysfunction was 29%, which is very high. This shows that many of these factors affecting men are modifiable, offering them an opportunity to do something about their condition.”

[The J Sex Med. 2014 Feb 18.]

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*South Med J. 2014 Apr;107(3).*
New look on the outside. Same premium quality inside.

IT’S HERE!

After getting feedback from customers like you, we’ve made a few changes for the better. That’s why we’re proud to introduce our fresh, new product look.

Cleaner, simpler, easier-to-read. But that’s not all. The wide-mouth bottle makes it more convenient to access supplements. And with a QR code right on the label, getting detailed product information is just a snapshot away.

This transition to our new look will happen over time, so you will still receive bottles bearing the previous labels in your shipments. Rest assured that whichever label you see on the outside, you’ll find the same premium-quality supplements on the inside.
Few nutritional sources have gained as much scientific validation as pomegranate.¹

The vast majority of research has focused on extracts from the fruit. Only recently have scientists identified the synergistic action of compounds specific to other parts of the pomegranate—most notably its seeds and flowers.

The Next-Generation Pomegranate Formula

Life Extension® offers an advanced, cutting-edge pomegranate formula that brings together novel phytonutrients in a unique, high-potency blend.

Full-Spectrum Pomegranate™ combines standardized extracts from the whole fruit and flower, along with pomegranate seed oil, to support system-wide health. In addition to the highly absorbable antioxidant powerhouses found in pomegranate fruit,²-⁴ Full-Spectrum Pomegranate™ augments these polyphenols with newly discovered biologically active compounds from other parts of the pomegranate plant.

These little-known nutrients include: punicanolic acid that provides cellular support to help with inflammation,⁵ and pomegranate, to combat age-related metabolic changes.⁶

This superior formula supplies the complete nutritional profile of the pomegranate plant. Just one softgel of Full-Spectrum Pomegranate™ provides polyphenols equivalent to 12.3 ounces of pomegranate juice concentrate (or 30 pomegranates) plus a proprietary blend of seed oil and flower extract.

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

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.
**BONE RESTORE**

**WITH VITAMIN K2**

_Bone Restore_ combines critical bone boosting nutrients into one superior formula.

_Bone Restore_ includes highly absorbable forms of calcium and boron, along with vitamin D3, magnesium, zinc, manganese, and silicon. _Bone Restore_ is available with or without vitamin K2 (MK-7).

The retail price for 120 capsules of _Bone Restore_ is $24. If a member buys four bottles, the price is reduced to $16.50 per bottle. (Item# 01727)

The same _Bone Restore_ formula without vitamin K2 (MK-7) is available as well. The retail price for 120 capsules is $22. If a member buys four bottles, the price is reduced to $14.25 per bottle. (Item# 01726)

Just four capsules of _Bone Restore_ provide:

<table>
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<tr>
<td>Highly Absorbable Calcium</td>
<td>700 mg</td>
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<tr>
<td>Vitamin D3</td>
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<tr>
<td>Vitamin K2 (as menaquinone-7)</td>
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<tr>
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<td>Manganese (as amino acid chelate)</td>
<td>1 mg</td>
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<tr>
<td>Silicon (from horsetail extract)</td>
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**Note:** Those who take _Super Booster_ or _Super K_ usually do not need additional vitamin K2. They should order _Bone Restore without vitamin K2_. Those taking the anti-coagulant drug Coumadin® (warfarin) should use _Bone Restore without vitamin K2_.

Fruitex® B® and OsteoBoron® are registered trademarks of VDF Futurerceuticals, Inc. U.S. patent #5,962,049. DimaCal® and TRAACS® are registered trademarks of Albion Laboratories, Inc. Malate is covered by U.S. Patent 6,706,904 and patents pending.

To order _Bone Restore_, 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.
Protect Against Sun-Induced Skin Aging From The Inside Out

Even if you’re exposed to solar rays for just a few minutes a day, photons in the sun’s ultraviolet rays can wreak havoc on your skin, leading to wrinkles, age spots, and cancer.

Most people think that topical sunscreen is the best way to protect against the negative effects of ultraviolet radiation. But even if you faithfully apply sunscreen daily, some parts of your body remain vulnerable to the skin-aging and DNA-damaging effects of the sun.

Fortunately, there is an additional way to protect your skin.

A natural plant compound works at a deep level inside your skin’s cells to reduce the effects of harmful ultraviolet rays and blunt skin aging.1-3

*Polypodium leucotomos* is a tropical fern extract containing a natural mixture of phytochemicals that have been shown to inhibit photaging.4-6 It inhibits a protein-degrading enzyme that is a prime cause of photoaging.7 Most strikingly—it exerts its effects when taken orally.4,5

In this article, you’ll learn how this plant extract significantly prevents4,5—and even repairs5—the ravages of ultraviolet radiation that lead to premature skin aging.
These destructive effects on tissue structure are eventually visible as photo-aged skin. The prominent clinical sign is wrinkling, but other effects include a loss of elasticity, age spots, hypo- or hyper-pigmentation, spider veins, and blackheads.17

Some people currently rely totally on topical sunscreens—but scientists have found this protection alone to be largely inadequate.17-19

The good news is that scientists have now established that an extract of the fern Polypodium leucotomos contains a high percentage of photo-protective compounds that block the skin aging that results from sun exposure.5

Unleash Your Skin’s Internal Ultraviolet Defenses

For centuries, Honduran natives have protected themselves against sun damage and skin disorders by ingesting Polypodium leucotomos fern extract. The first report on its effectiveness was published 47 years ago in the journal Nature,20 and since then, clinical trials have demonstrated that this antioxidant-rich extract safely bolsters the skin’s defenses against the accelerated aging caused by ultraviolet rays.5

Polypodium leucotomos contains photoprotective compounds—phenols, biological acidic molecules, and monosaccharides—that prevent the sun’s rays from breaking down the body’s own photoprotective molecules. Studies suggest no significant toxicity or allergenic properties.5,6,21

By preserving this natural, built-in protection against sun damage, Polypodium leucotomos exhibits strong anti-aging activity on the skin, both superficial and deeper layers.22

Polypodium leucotomos works in a number of ways to protect the structural integrity of your skin:

• Polypodium leucotomos prevents the destructive structural changes in the skin associated with increased oxidative stress. For example, Polypodium leucotomos inhibits ultraviolet light’s dramatic disorganization of microfilaments—the tough but flexible, fibrous framework that supports skin cells.22

• It also inhibits the ultraviolet light-induced mislocation of adhesion points between cells themselves, and also between cells and the surrounding matrix.22,23 These adhesion points hold separate cells together and provide tissues with structural cohesion and an important signaling pathway—without which skin breakdown may occur.24,25
Polypodium leucotomos extract helps protect the skin from premature aging by inhibiting several matrix metalloproteinases—enzymes that break down elastin and collagen—and by increasing the expression of tissue inhibitors of metalloproteinases (TIMP), your body’s own inhibitor of metalloproteinase.26,27

Polypodium leucotomos stimulates molecules that are reduced in the skin during the onset of photoaging—such as elastin, collagen, and transforming growth factor beta (TGF-beta), which is a protein that activates a host of signaling pathways involved in many cellular processes.26,28

Ultraviolet radiation also damages cellular membranes in the skin by inducing lipid peroxidation.29,30 Polypodium leucotomos extract blocks this process and thus prevents skin damage.31

Recent research has established the effectiveness of Polypodium leucotomos at naturally protecting both ultraviolet-radiated and non-radiated fibroblasts26—cells that synthesize the extracellular matrix and collagen, the structural framework of skin tissue.32

Additionally, extracts of Polypodium leucotomos have been shown to inhibit protein-destroying skin enzymes that decrease skin elasticity,31 to inhibit damaging skin inflammation,33 and to promote the survival of healthy skin cells.22,33

So by protecting from the harmful ultraviolet rays as well as blocking the multiple forms of damage they cause, Polypodium leucotomos extract provides the skin with extraordinary protection from photoaging1,34—allowing you to retain a high degree of healthy, youthful skin despite chronological aging.2

Restoring Sun-Damaged Skin

Remarkably, scientists found that Polypodium leucotomos not only prevents, but also repairs, the sun’s damaging effects on the skin. It prevents sun-aged skin by directly inhibiting MMP (matrix metalloproteinase) expression, preventing the breakdown of collagen in the first place. It repairs sun-aged skin by stimulating new production of collagen and elastin5,31,32—healing and regenerating photoaged skin after exposure to ultraviolet radiation.5

What You Need To Know

Skin Protection From The Inside Out

Most people assume that the only protection against the skin-aging effects of ultraviolet light must come from topical skin application. But research demonstrates that the oral fern extract Polypodium leucotomos works deep inside the skin to protect against ultraviolet rays and reduce skin aging.

Sunscreens are an important defense, but most people apply them too lightly and inconsistently.

Numerous studies indicate that Polypodium leucotomos inhibits degradative matrix remodeling, a main cause of photoaging. Most remarkable—it exerts these effects when taken orally.

This novel extract inhibits—and even repairs—the ultraviolet damage that prematurely ages the skin. Oral Polypodium leucotomos is the most potent tool for preventing photoaged skin, especially when used with topical sunscreen for complete protection.
Four Problems With Sunscreens

The first problem with relying on sunscreens alone for skin protection is finding one that works. The only truly effective sunscreens are those that provide equal protection across the full range of ultraviolet B (UVB) and ultraviolet A (UVA) light. Protecting against both is vital because short wavelength UVB injures the outer layers of the skin (epidermis), while long wavelength UVA damages deeper layers of the skin (dermis).

Second, studies demonstrate that most people apply sunscreen incorrectly and fail to consistently reapply when required—and further demonstrate that it is still important to avoid unnecessary sun exposure after its application. Many consumers apply only 25 to 50% of the amount used for SPF testing. This results in an SPF that is 50% or less effective than the labeled SPF.

A third problem with sunscreens was underscored by a 2014 study showing that infrared radiation (IR)—which is outside the ultraviolet range—can also contribute to skin photoaging. Sunscreens do not generally protect against infrared radiation, and scientists have been scrambling to develop products that do.

Finally, no matter how effective and properly applied, topical sunscreens do not provide uniform, total-body surface protection—leaving the eyes, lips, and scalp open to damage by the sun’s rays.

To block photoaging, sunscreens should always be carefully selected, applied in appropriate doses, reapplied at correct intervals, and used in conjunction with other photoprotective measures, such as shade, clothing—and ideally, an internal, whole-body protective option.

The regenerative properties underlying this anti-aging effect include reactive oxygen species scavenging capability, inhibiting premature apoptosis (cell death), and blocking improper extracellular matrix rearrangements that occur during oxidative damage. These activities suggested to scientists that the benefits of Polypodium leucotomos may extend beyond skin care—and may be useful as a systemic anti-aging and antioxidant tool.

In fact, scientists already suggest looking beyond the anti-aging effects of Polypodium leucotomos on the skin—and towards future research on its effects on other parameters related to body aging, such telomere length and telomerase activity.

Powerful Skin Health Benefits

In an array of studies, Polypodium leucotomos has proven its ability to block the long-term skin-aging consequences of sun exposure—but the short-term benefits are equally impressive. This is specifically demonstrated with sunburn, idiopathic dermatoses, and skin cancer.

Sunburn

In the same way that oral Polypodium leucotomos extract can block long-term sun-induced skin aging, it will also help prevent the shorter-term skin damage known as sunburn, which over time greatly contributes to skin photoaging.

If you’re used to covering up or using topical sunscreens, it may be difficult to imagine that swallowing a capsule could provide potent protection from harmful ultraviolet radiation from inside the skin. But multiple studies show that Polypodium leucotomos might increase the amount of time you can spend in the sun before your skin becomes red and inflamed.1,2,3

In an early clinical trial, 21 study participants experienced an almost 3-fold increase in the amount of UV radiation that would generate comparable redness/sunburn, compared to when they used no form of UV protection.2 Those who took special drugs that increase photosensitivity experienced impressive results, in this case increasing the amount of UV radiation before visible suntan occurred by up to nearly 7 fold.2,3

In another study, scientists enlisted volunteers who had fair-to-light skin, which made them more naturally vulnerable to sunburn. The active group received Polypodium leucotomos extract in doses equivalent to 7.5 milligrams per kilogram of body weight—translating to 525 milligrams per 154-pound person—and was then directly exposed to varying doses of artificial ultraviolet radiation. Compared to control subjects, individuals taking Polypodium leucotomos extract experienced a substantial decrease in skin reddening.1

Microscopic effects are even more impressive. Extract-treated cells showed reduced skin damage caused by ultraviolet light—including significantly fewer sunburn cells, which are indicators of tissue injury. They also showed a decreased level of the kind of DNA damage that can lead to cancer, as well as a trend suggesting the preservation of Langerhans cells (key immune cells found in the epidermis, or outer layer of skin).1

Idiopathic Dermatoses

While sunburn is an inflammatory reaction with a known cause, some people are prone to specific skin disorders where the cause is unknown, called...
Skin Cancer

The same sunlight that leads to structural changes and accelerated skin aging can trigger changes that boost the risk of skin cancer, including melanoma. The accelerated aging of skin—photoaging—occurs most often on sun-exposed areas of the skin, such as the face, neck, upper chest, hands, and forearms.60

Seborrheic keratoses—small, benign, wart-like growths—are regarded as a key biomarker of chronological or intrinsic skin aging.57,60 They are not caused by, and appear independently of, sun exposure.

Vascular lesions—such as broken blood vessels, facial veins, rosacea, telangiectasias, and many other kinds of vascular blemishes—are regarded as a key biomarker of photoaging. They are not caused by, and appear independently of, intrinsic aging. Studies in humans and in mice have demonstrated that acute and chronic ultraviolet B (UVB) irradiation greatly increases skin angiogenesis (the formation of new blood vessels from existing vessels).61-63

Chronological Aging Versus Photoaging

Chronological aging of the skin is predetermined by each individual’s physiological predisposition.

Sun-induced aging of the skin—or photoaging—varies with the degree of sun exposure and the amount of melanin in the skin.

Chronological aging of the skin is characterized by laxity and fine wrinkles, as well as possible development of benign growths such as seborrheic keratoses and angiomas. However, chronological aging is not associated with increased or decreased pigmentation or with the very deep wrinkles that are characteristic of photoaging.57 This form of skin aging can occur anywhere on the body.

Sun-induced photoaging is clinically characterized by deep wrinkles, as well as mottled pigmentation, rough skin, skin tone loss, dryness, sallowness, deep furrows, severe atrophy, spider veins, laxity, leathery appearance, marked loss of elasticity, actinic purpura (purple spots), precancerous lesions, and possibly skin cancer, including melanoma.58,59 The accelerated aging of skin—photoaging—occurs most often on sun-exposed areas of the skin, such as the face, neck, upper chest, hands, and forearms.60

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Idiopathic dermatoses. This category can include polymorphic light eruption, a condition in which sufferers experience a skin rash after even brief exposure to sunlight.

In one study, when scientists gave idiopathic photodermatoses patients 480 milligrams per day of oral Polypodium leucotomos and then exposed them to sunlight, an astounding 80% of treated patients reported improvement.36

And in a more recent study of 57 patients with idiopathic photodermatoses, when subjects orally took 480 milligrams of Polypodium leucotomos daily and then exposed themselves to sunlight, 73% of the patients experienced a significant reduction in symptoms.37
reduces ultraviolet light-induced DNA damage and mutations associated with skin cancer, concluding that oral *Polypodium leucotomos* is “…an effective systemic chemoprotective agent.”

**Enhancing The Photo-Protective Effects Of Polypodium Leucotomos**

Scientists were intrigued to identify a specific extract that further enhances the potent photoprotective effects of *Polypodium leucotomos*. Obtained from three red orange varieties (*Citrus sinensis* var. Moro, Tarocco, and Sanguinello), this extract is known as **Red Orange Complex** and provides abundant phenolic compounds, including anthocyanins, flavanones, ascorbic acid, and hydroxycinnamic acids.

Early lab studies indicated that Red Orange Complex exerts an anti-inflammatory effect on human cells, including keratinocyte cells—the predominant cell type in the epidermis. In cell culture studies, this complex has been shown to inhibit the growth and development of human cancer cells and to inhibit cell death caused by UVB rays.

In addition, *in vivo* research demonstrated that Red Orange Complex provides topical photoprotection against UVB-induced skin redness. Supplementation was also found to increase serum thiol groups—which are free-radical quenchers—in individuals exposed to significant automobile exhaust pollution in the workplace and were also found to reduce oxidative stress in type II diabetic patients.

Encouraged by these results, scientists conducted a clinical trial to study the complex’s photoprotective capacity. Enrolling 18 volunteers, the study team measured the effects of oral Red Orange Complex.

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### Topical Versus Oral Sunscreen

**Sunscreens** are generally applied in insufficient dosages such that the effective SPF is 50% or less than the labeled SPF and they’re seldom reapplied as required. Sunscreens do not generally block infrared radiation. Also, few people are in the habit of wearing sunscreen on cloudy days—but radiation scattering by clouds can result in higher total radiation levels on partly cloudy days than on completely sunny days. In fact, 80% of ultraviolet light can penetrate light cloud cover.

**Oral Polypodium leucotomos** tropical fern extract can block UV and IR radiation at the cellular level and can inhibit the many cellular skin photoaging effects.

**Sunscreens** have one key mechanism: they function at the skin surface by limiting the amount of solar radiation that penetrates deeper to trigger photoaging.

**Oral Polypodium leucotomos** is active at multiple levels—from the skin surface to deep inside and in between skin cells, exerting broad effects that protect skin from the effects of radiation. Working through multiple mechanisms, *Polypodium leucotomos* reduces photoaging by:

- Preventing decomposition of the body’s photoprotective molecules
- Reducing the remodeling of the tissue matrix
- Inhibiting oxidative stress-induced morphological (structural, form-related) changes
- Preventing radiation-induced loss of cell-to-cell and cell-to-matrix anchorage points
- Inhibiting several matrix metalloproteinases
- Stimulating an endogenous tissue inhibitor of metalloproteinase (TIMP)
- Reducing lipid peroxidation
- Protecting fibroblasts
- Inhibiting elasticity-decreasing enzymes
- Lowering inflammation
- Inhibiting apoptosis
- Scavenging reactive oxygen species (ROS)
- Repairing photoaging damage by stimulating elastin, collagen, and transforming growth factor beta (TGF-beta), and
- Preventing DNA damage.
supplementation on UVB-induced damage. After 15 days, the intensity of the induced redness decreased by about 35%—demonstrating significant sun protection for the skin.51

These various outcomes demonstrate that Red Orange Complex supports Polypodium leucotomos to further inhibit the aging effects of ultraviolet radiation on the skin.

**Summary**

Many people assume that protection from the skin-wrinkling effects of ultraviolet radiation must occur outside the body—but clinical research shows that an oral extract of the fern Polypodium leucotomos works deep inside the skin to protect against ultraviolet rays and block skin aging.1,3

Polypodium leucotomos has been shown in numerous studies4,5 to inhibit degradative matrix remodeling, a main cause of photoaging.6 And most striking—it exerts these effects when taken orally.4,5

This novel extract helps prevent4,5—and even repair6—ultraviolet radiation damage that prematurely ages the skin.

The most effective program to protect against the accelerated skin aging (photoaging) involves limited exposure to sunlight (especially between noon and 2:00 p.m.), liberal application and reapplication of a quality topical sunscreen, and regular oral supplementation with Polypodium leucotomos fern extract with Red Orange Complex to further enhance the fern extract’s effectiveness.

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**


Understanding The Sun’s Wavelengths

Different wavelengths of sunlight radiation represent different risks as follows:65

- **UVC rays**—wavelengths of which range from 180 to 280 nanometers—are almost completely absorbed by the ozone layer and do not affect the skin.

- **UVB rays**—wavelengths of which range from 280 to 325 nanometers and which are strongest around midday—affect the superficial layer of the skin known as the epidermis and causes sunburn.57

- **UVA rays**—wavelengths of which range from 315 to 400 nanometers—were believed to have a minor effect on the skin, but studies now show that UVA penetrates deeper into the skin. UVA also makes up about 95% of sunlight, while UVB makes up about 5% of sunlight, and therefore, UVA causes more severe skin aging damage.57,65-68

- **IR or infrared radiation**—wavelengths of which range from 760 nanometers to one millimeter—has only recently been determined to induce skin photoaging and skin damage.56,63,69 While the proton energy of infrared is low, the total amount of infrared that reaches human skin is massive compared to ultraviolet radiation. Most IR lies within the IR-A band—ranging between 760 nanometers and 1,440 nanometers—a band of IR that represents about 30% of total solar energy. IR-A penetrates human skin deeply with 50% of it reaching the dermis skin layer.57


Your brain is under constant onslaught from environmental and stress-related challenges, as well as normal aging processes.\(^1,2\)

Fortunately, our brain cells have built-in, self-healing systems that provide natural defenses against these ongoing threats.\(^1\) Even more remarkable, molecular science is revealing that the human brain has the capacity to preserve the neurons involved in brain remodeling (plasticity).\(^1\)

Scientists in China and Singapore have found that gastrodin, a compound typically derived from a traditional Chinese orchid (Gastrodia elata), provides powerful support for the brain's normal defenses and regenerative mechanisms.\(^2,3\)

To make these benefits available to members, Life Extension® introduces Brain Shield™, providing 300 mg of gastrodin in each capsule for maximum brain support.

**MULTIFACTORIAL BENEFITS!**

Recent studies confirm that the gastrodin in Brain Shield™ is one of the most powerful compounds for supporting healthy brain function at any age! Gastrodin works by the following mechanisms:

- To retain normal function, the aging brain relies on adequate blood flow to get sufficient oxygen and fuel.\(^4\) It has been repeatedly shown that formulas containing gastrodin beneficially support normal, healthy levels of brain blood flow in both animals and in humans.\(^5,6\)

- The body maintains a delicate balance of neurotransmitters, such as GABA, which is of tremendous importance to healthy brain function. Studies show that alone or in combination the active compound gastrodin helps maintain healthy levels of vital neurotransmitters in those whose levels are already within the normal range.\(^7-10\)

- With aging, short-term memory function is often impaired. Studies show that gastrodin helps support the healthy body's normal defenses against the mild memory problems associated with aging.\(^11\)

- Scientists have shown that the breakdown metabolites of gastrodin help provide support against the normal stress and tension of daily life.\(^12\)

- And Brain Shield™ helps alleviate the occasional cranial pain associated with daily life.\(^13\)

Those seeking maximum benefit should start with one 300 mg capsule of Brain Shield™ taken twice daily.\(^14\)

After 30 days, one Brain Shield™ (gastrodin) capsule daily may be sufficient based upon the experience of gastrodin as an over-the-counter (OTC) pharmaceutical agent. Those taking Cognitex® are obtaining 50 mg of gastrodin in the daily dose along with complementary nutrients. As additional research continues on gastrodin, better clarification on optimal dosing for a wide range of neurovascular and neuro-inflammatory conditions should be available.

A bottle of 60 300 mg vegetarian capsules of Brain Shield™ retails for $33. If a member buys four bottles, the price is reduced to $22.50 per bottle.

### References
More Comprehensive Sun Protection

Enhanced Fernblock® with Red Orange Complex is designed to complement topical sunscreens for sun exposure. Taken orally, FernBlock® supplements the effectiveness of topical sunscreens by protecting the entire skin surface and has an obvious advantage in that it cannot be removed by perspiring or bathing.

If taken daily, just one capsule should provide everyday protection. Each vegetarian capsule of Enhanced FernBlock® with Red Orange Complex provides:

- **FernBlock® Polypodium leucotomos extract** (leaf) 240 mg
- **Red Orange Complex** (Sicilian red oranges – Citrus sinensis var. Moro, Sanguinello, and Tarocco) extract (fruit and peel) 100 mg
- **Vitamin C** (as ascorbic acid from Red Orange Complex) 5.5 mg

A bottle of 30 vegetarian capsules of Enhanced FernBlock® with Red Orange Complex retails for $42. If a member buys four bottles, the price is reduced to $28.50 per bottle.

**To order Enhanced FernBlock® with Red Orange Complex, 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.
A naturally occurring organic acid known as creatine has long been used by athletes to boost their performance and build muscle strength without steroids. But emerging research is showing that creatine also has important anti-aging effects in vital tissues throughout the body.

As we age, the unique benefits of creatine become more pronounced. From protection against cognitive decline and congestive heart failure to reducing insulin levels and shielding against muscle loss, creatine enhances mitochondrial function that helps reduce the ravages of aging.

Recently, creatine has been found to significantly lower the accumulation of a recognized marker of aging called lipofuscin in the brains of aging mice.¹ As a result, creatine-fed mice lived an average of 9% longer than control animals—that’s equivalent to more than seven years for an average human!¹
The supplemented animals also performed significantly better on neurobehavioral testing. In fact, creatine is now being hailed by experts as “a starting-point for a novel means of delaying neurodegenerative disease, and/or for strengthening memory function and intellectual capabilities.”

Because of creatine’s vital impact on your body’s energy levels, it should be considered for anyone interested in slowing aging, improving energy levels, and fighting off age-related diseases.
Creatine’s High-Energy Impact

In order to understand how creatine can have such a powerful impact on a wide range of functions within the body, you have to understand the key role that creatine plays in cellular energy supplies.

Mitochondria are found in every cell and are responsible for converting food into the energy the body needs in order to function. Aging leads to the accumulation of dysfunctional mitochondria. The loss of mitochondrial function can cause the buildup of aging pigments known as lipofuscin. Lipofuscin builds up when a cellular “garbage-disposal system” (i.e., autophagy) breaks down. Eventually, with the decrease in autophagy and related increase in lipofuscin, there is increased oxidative stress, decreased energy production, and ultimately, cell death.

In studies, creatine has been found to help boost cellular energy and to significantly lower accumulation of lipofuscin in the brains of aging mice. Creatine also helps maintain adequate levels of high-energy phosphate-containing molecules in tissues with especially high energy consumption, such as the heart, brain, and muscle. High levels of creatine support the body’s production of ATP, the universal energy-transfer molecule, when ATP itself is used up by these power-hungry tissues.

Ultimately, supplementing with creatine helps restore the energy loss that is at the root of many age-related diseases. As you’ll see in the next sections, creatine supplementation has a positive impact on everything from cognitive decline to cardiovascular health.

Creatine Provides Energetic Solutions To Cognitive Decline

Many brain disorders involve a disruption of the brain’s energy supply systems. That applies not only to chronic, age-related diseases such as Parkinson’s, Alzheimer’s, and Huntington’s, but also to acute conditions such as strokes and traumatic brain and spinal cord injuries. Creatine’s role as an energy-enhancer suggests it may be helpful in all of these conditions.

In addition, this energy loss leads to the accumulation of the damaging lipofuscin pigments that are present in all of these neurodegenerative diseases. Creatine’s ability to lower the accumulation of this aging pigment offers promise in the treatment of these cognitive diseases.

Here’s a rundown on what we know about creatine supplementation in brain diseases associated with aging:

Alzheimer’s disease primarily affects memory and cognition, with debilitating loss of the ability to recognize loved ones, to navigate even around the home, and to sustain meaningful conversations.

Creatine supplementation shows promise in addressing the underlying causes of this disease—especially when given in the early stages. This is due in large part to creatine’s role as an energy enhancer. That’s because energy loss from dysfunctional mitochondria plays a major role in this disease—and causes damaging lipofuscin pigments to accumulate as a result.

Creatine also protects brain cells against the root cause of this energy loss, namely the excitotoxicity that is a hallmark of neurodegenerative diseases in general, and against the toxic Abeta proteins that are unique to Alzheimer’s. Creatine protects against this toxicity, which impairs mitochondrial energy production.

Parkinson’s disease is a disorder of movement control in the brain; it produces tremors, slowed movements, and a characteristic “mask-like” face. Advanced Parkinson’s disease can also include dementia, with symptoms similar to Alzheimer’s.
Creatine can have a positive effect on a number of the factors involved in this disease. For starters, brain tissue from both humans and animals with Parkinson’s disease show abnormally high levels of telltale lipofuscin pigment. This indicates that problems with cellular energy management and waste control are underlying factors in the disease. As we’ve discussed, creatine has been found to lower the accumulation of lipofuscin.

Creatine also enhances the survival and protection of neurons that produce dopamine, the missing transmitter in the disease. Studies have shown that creatine improves patient mood, allows smaller doses of medication to be used, and also reduces the side effects of those meds. This is especially noteworthy for Parkinson’s patients, since the most commonly prescribed medication for Parkinson’s (L-DOPA, a precursor to dopamine) causes disturbing side effects including out-of-control movements.

Huntington’s disease is a genetic neurodegenerative disorder that involves damage to motor control centers in the brain, and symptoms include wild, out-of-control movements. As with the other disorders, the brain cells of Huntington’s patients display excessive amounts of the aging pigment lipofuscin—indicating underlying problems with cellular energy. This suggests creatine may be an important component in the battle against this disease.

Remarkably, creatine supplementation has been shown to offer considerable neuroprotection even after the onset of symptoms in animal studies. Supplemented animals also survived significantly longer than controls when creatine was provided in the early and middle stages of the disease. These effects were directly attributed to creatine’s ability to increase brain levels of energy in the form of stored ATP.

Mice with experimental Huntington’s disease that were supplemented with creatine showed slower loss of brain tissue and delayed accumulations of the destructive protein gene huntingtin. Supplemented animals also had improvements in body weight and motor performance, and slower onset of diabetes.

Amyotrophic Lateral Sclerosis (ALS) is a devastating neurodegenerative disease that can strike without warning at almost any age. Sometimes referred to as Lou Gehrig’s disease, it is closely associated with mitochondrial dysfunction in the brain cells that control voluntary movement, resulting in weakening and eventually atrophy of skeletal muscles. Respiratory failure is the major cause of death in ALS patients.

Although it is considered an untreatable condition, creatine could offer symptomatic treatment for
those suffering from ALS. In human patients, creatine supplementation at **20 grams/day** for seven days, followed by **3 grams/day** for up to six months, increased voluntary muscle contractions at the knee in **70%** of patients, and at the elbow in **53%** of patients. These improvements wore off after six months; however, the researchers concluded that creatine can at least temporarily boost muscle power in ALS patients.

This beneficial effect may be due to creatine’s impact on the neurotransmitter **glutamate**. The over-stimulation of glutamate leads to excitotoxicity, which is a phenomenon implicated in ALS. Animal research showed that creatine helps reduce increases in brain levels of glutamate. Supplemented animals also survived longer and performed better on motor tests.

**Strokes** most often occur as a result of insufficient blood supply to areas of the brain. Decreased blood flow to the brain is associated with excessive amounts of lipofuscin (the aging pigment). This suggests stroke damage at the cellular level is not unlike that of degenerative diseases of the brain—and indicates that creatine’s ability to lower the accumulation of this aging pigment may make it beneficial for stroke victims as well.

Mouse studies of creatine supplementation show marked reduction in the size of damaged areas after blood flow to the brain is interrupted by a stroke. In addition, creatine supplementation also replenished ATP in the brain that had been depleted as a result of stroke. Human studies of creatine in stroke victims are not yet available. However, given creatine’s strong safety record, researchers recommend that people at high risk for strokes consider supplementing with creatine.

**Cognitive functioning in normal adults** is also favorably affected by creatine supplementation. Creatine’s widespread benefits on muscle fatigue prompted one group of researchers to focus on its ability to improve mental fatigue as well. At a dose of **8 grams/day** for five days, the supplement reduced mental fatigue induced by repeated mathematical calculations. Tests showed that the subjects’ brains utilized more oxygen after supplementation, a measure of enhanced energy use.

Older adults taking **5 grams** of creatine, four times daily, performed better on tasks of memory and cognition.

The cognition-enhancing effects of creatine seem to be especially strong in tasks that require a rapid speed of processing, such as deciding quickly whether it’s safe to cross a street, or in distinguishing a friendly face from a potentially threatening one. Following extended sleep deprivation (up to 36 hours), creatine supplementation also improved performance of complex “executive” tasks involving decision-making skills.

Most of the data on these diseases are at present derived from animal studies or basic lab studies, but large human trials are in the pipeline. However, given creatine’s impressive safety record as an energy-enhancer in humans during exercise, many experts are recommending that older adults, especially those at high risk for acute brain injuries such as stroke, should begin regular supplementation with creatine.
Cardiovascular Effects Of Creatine Supplementation

Creatine supplementation clearly improves skeletal muscle performance in healthy athletes and older adults.\(^{42-44}\) That has led scientists to consider whether creatine could also function as an energy-enhancer for the most important muscle in the body: the heart. Numerous studies in both animals and humans indicate that it can.

In animal studies, creatine supplementation restored ATP levels in animals subjected to energy-reducing cardiac stress; it also reduced markers of heart muscle exhaustion.\(^{45}\) Other studies show similar effects, even in unstressed animals.\(^{46}\)

Human studies of creatine supplementation remain few, but the results are promising. In one study, patients with chronic congestive heart failure took high doses (20 grams/day) of creatine for 10

Did you know that aging tissues, even those deep within our bodies, develop physical and biochemical changes remarkably similar to the ones we can see from the outside?

It’s true. Take liver spots, for example. These brownish blemishes are examples of external aging and represent accumulations of pigments from generations of broken-down skin cells.

In the microscopic photographs above, you can see nearly identical pigment accumulations in the tissues of the heart. Known as lipofuscin ("the aging pigment") these pigment collections provide stark evidence of internal aging. Lipofuscin builds up when a cellular garbage-disposal system (autophagy) breaks down. Eventually, with the decrease in autophagy and related increase in lipofuscin, there is increased oxidative stress, decreased energy production, and ultimately, cell death.\(^{5,6}\)

But you don’t have to sit idly by as your body fills with these age-induced garbage collections. Creatine has recently been found to significantly lower accumulation of lipofuscin in brains of aging mice.\(^1\)

As a result, creatine-fed mice lived an average of 9% longer than control animals—\textit{that's equivalent to more than seven years for an average human!}\(^6\) The supplemented animals also performed significantly better on neurobehavioral testing.\(^{1,2}\)
days, undergoing cardiac and exercise testing before and after the supplementation period. Supplemented patients had significantly increased levels of energy-rich creatine phosphate in their muscles compared with controls, and they performed as much as 21% better on exercise cycle testing.47

In a similar study in patients with congestive heart failure, those taking creatine almost doubled the number of handgrip exercises. They also significantly reduced the amount of muscle waste products they produced.48 Since those with congestive heart failure typically experience reduced exercise tolerance,48 these improvements bode well for creatine as an enhancer of mobility and quality of life for these patients.49,50

**Creatine Shows Potential In Managing Blood Sugar And Insulin Levels**

One natural consequence of creatine’s ability to boost muscle energy levels is a subsequent increase in your body’s ability to utilize glucose as metabolic fuel.51 Creatine has long been known to lower blood glucose levels in healthy patients. Now, studies are beginning to appear that indicate creatine’s blood-sugar benefits in diabetic patients as well.

In humans, creatine supplementation markedly increased the production of the glucose transporter complex called GLUT-4, which shuttles sugar molecules from the blood into cells and on to mitochondria.52

**Contraindications Of Creatine Monohydrate?**

Hundreds of studies to date have shown that creatine monohydrate is an amazingly non-toxic and safe supplement with numerous benefits. Further studies directly examining possible side effects, both prospective and long-term retrospective (up to five years), have failed to find any serious side effects of creatine supplementation on various markers studied, such as renal function, hepatic function, and others. So are there contraindications of creatine monohydrate?

Although creatine monohydrate is clearly safe for healthy people with a very low side-effects profile using up to 10 grams per day, are there specific groups who should not use it?

Again, the data suggest very few actual contraindications. The only people who should avoid creatine supplements are those with a history of renal disease and/or those taking nephrotoxic (poisonous to the kidneys) medications. There’s been a handful of case reports that show very high doses of creatine (and the reports were not always clear as to what form of creatine was used) were associated with kidney dysfunction.70

Typical for such a simple case report, it’s unclear what other medications were involved or pre-existing medical condition existed.

However tenuous the connection between high-dose creatine monohydrate and pre-existing kidney dysfunction, it’s prudent to advise people with a history of renal disease and/or those taking nephrotoxic medications to avoid creatine supplementation until more data exists examining that connection. As creatine monohydrate supplementation may cause a transient increase in creatinine levels in some individuals, it may act as a false indicator of renal dysfunction.
Animal studies show similar phenomena, along with lowered blood glucose and reduced plasma insulin levels.\textsuperscript{51} This is a critically important point, because elevated insulin levels are associated with diseases such as cancer and atherosclerosis.\textsuperscript{5,53,54}

In sedentary but otherwise healthy men, \textbf{10 grams/day} of creatine along with moderate exercise produced significant improvements in oral glucose tolerance test results.\textsuperscript{55} A study published in 2011 showed that diabetics taking creatine supplements combined with exercise experienced similar improvements in blood sugar, glucose tolerance testing, and hemoglobin \textit{A1c}, the measure of glucose exposure over long periods.\textsuperscript{56}

**Creatine: Protecting Older Adults From Muscle Loss**

As we age, we tend to become increasingly sedentary. Combine that with age-related changes to our biology, and the result is typically the loss of healthy muscle mass, known as sarcopenia.\textsuperscript{57,58} Muscle loss can be serious—especially when combined with poor cognition and balance—as it increases your risk of falling. And of course, weakened bones increase the risk of a serious injury in a fall.\textsuperscript{59}

Several studies now support the use of creatine supplementation to enhance lean body mass, muscular performance, and fatigue resistance in young adults.\textsuperscript{58,60,61} These benefits are of equal interest for older people.

New research shows that supplementing with approximately \textbf{5} to \textbf{20 grams/day} could provide major benefits for older people. Supplementation produces significant improvements in the ability to perform short-lived but high-energy actions, such as those involved in sitting down and rising up again from a chair, in which a person must lower and then raise their entire body weight in a short period.\textsuperscript{62} Other studies show improvement in grip strength.\textsuperscript{63} While exercise is helpful, many studies show that creatine is beneficial even in the absence of such training.\textsuperscript{58}

A small but growing body of evidence suggests that creatine may improve bone mineral density and strength, particularly if combined with resistance exercise.\textsuperscript{58}

The evidence for creatine supplementation is now so great that one expert has written, “\textit{Physicians should strongly consider advising older adults to supplement with creatine and to begin a resistance training regime in an effort to enhance skeletal muscle strength and hypertrophy, resulting in enhanced quality of life.”}\textsuperscript{64}

**Summary**

Long used by athletes as an energy-enhancing aid, creatine is increasingly showing promise in diseases that involve deterioration of the energy balance in our bodies. These include neurodegenerative diseases, especially Parkinson's and Huntington's diseases, as well as heart disease and diabetes. And animal studies reveal significant extension of the life span in older animals supplemented with creatine.\textsuperscript{34,35}

Our bodies run on energy. We extract that energy from food, and then move and store it in tissues for immediate release. As we get older, however, our energy-storing and energy-moving apparatus begin to fail, and byproducts begin to accumulate. Creatine helps the body transfer energy and provide energy to tissues that have very high energy demands, such as the brain, heart, and muscle.

Research on creatine as a life-extender in humans is in its infancy, but the existing evidence of its efficacy, combined with its strong safety record, make it an interesting supplement for adults to consider who seek to slow aging and fend off its consequences. •

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


Choosing the Right Probiotic for You

While many supplements provide just one type of bacteria, taking a probiotic with multiple varieties of good bacteria can help better fight off bad bacteria. FlorAssist® Probiotic Liquid Vegetarian Capsules provide a proprietary blend of six bacterial strains! Each FlorAssist® dual capsule contains 15 billion CFU consisting of:

- Lactobacillus acidophilus LA-14
- Bifidobacterium lactis BL-04
- Lactobacillus paracasei LPC-37
- Lactobacillus rhamnosus LR-32
- Bifidobacterium bifidum/lactis BB-02
- Bifidobacterium longum BL-05

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- Lactobacillus rhamnosus LR-32
- Bifidobacterium bifidum/lactis BB-02
- Bifidobacterium longum BL-05

These potent strains of probiotic bacteria adhere to the soft lining of the intestinal tract, help maintain a healthy surface, and support the digestive system.

The retail price for a bottle containing 30 capsules of FlorAssist® Probiotic Liquid Vegetarian Capsules is $33. If a member buys four bottles, the price is reduced to just $22.30 per bottle.

Why Don’t Probiotics Always Work?

One of the complications many commercial probiotics face is their inability to overcome hurdles in the digestive tract before hitting their target area—an aspect that can greatly limit their beneficial effects. FlorAssist® Probiotic Liquid Vegetarian Capsules utilize a “dual encapsulation” technology to combat the shortcomings of many commercial probiotics, delivering unprecedented amounts of live bacterial colonies to where your body needs them.

FlorAssist® Probiotic Liquid Vegetarian Capsules...

- Contain probiotic strains that are acid resistant, protecting them from stomach acid that can destroy the viability of the strains;
- Have dual encapsulation technology, keeping the capsule intact longer, and ensuring that the probiotic reaches the small intestine;
- Provide a high CFU (Colony Forming Units) of 15 billion per capsule!

FlorAssist® Probiotic Liquid Vegetarian Capsules...

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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.

To order FlorAssist® Probiotic Liquid Vegetarian Capsules, call 1-800-544-4440, or visit www.LifeExtension.com
Many creatine products are sold on the American market, but the most absorbable form is creatine monohydrate imported from Germany. Life Extension offers two different creatine supplements to provide energy-boosting effects to cells throughout the body.

Each Creatine Cap supplies 439.5 mg of creatine from 500 mg of creatine monohydrate. The suggested dose for healthy people is 2-4 capsules a day. A bottle containing 120 Creatine Caps (500 mg) retails for $10.95. If a member buys four bottles, the price is reduced to $6.94 per bottle.

For those seeking creatine’s ultimate benefits, Life Extension has devised a formula that provides 2,000 mg of creatine monohydrate, 15 grams of whey isolate, and 3,000 mg of glutamine in each scoop. The retail price for a 1,000 gram jar of Creatine-Whey-Glutamine Powder is $30. If a member buys four jars, the price is reduced to $20.25 per jar.

Contains milk and soybeans.
Coffee is a widely consumed beverage. It contains over 1,000 compounds, many of which are biologically active. Coffee also contains a complex mixture of polyphenols, making it one of the most popular pharmacologically active beverages.

Scientific interest in uncovering the health benefits contained in a daily cup of coffee has exploded in the last several years.

For example, drinking two extra cups of coffee daily may reduce your risk of developing type II diabetes. That’s the conclusion of a 2014 study of more than a million people, which demonstrated a 12% decrease in diabetes risk for each additional two cups of coffee consumed (the decrease was 11% among decaffeinated coffee drinkers).

That’s only one example of the rapidly expanding literature regarding the benefits of drinking coffee. There now is compelling evidence of coffee’s health benefits regarding cardiovascular disease, metabolic syndrome, neurodegenerative disease, plus liver and kidney cancers.

And a stunning epidemiological study has shown sharp reductions in the risk of overall death among coffee drinkers.

Enjoying a cup of coffee—or more—provides important longevity and protective benefits.
Coffee Reduces Risk Of Death

In a study funded by the National Institutes of Health and published in the prestigious *New England Journal of Medicine*, researchers explored the relationship between coffee drinking and the risk of dying. The study included more than 229,000 men and over 173,000 women who ranged in age from 50 to 71 years at the start of the study. The researchers followed the subjects for up to 13 years—or 5.15 million person-years!—making this one of the most powerful studies of its kind.

The researchers found that the risk of dying was significantly reduced in those who drank coffee (all levels of consumption) compared to those who did not. Compared to those who drank no coffee, the risk for men of dying from any cause was reduced 6% among those who drank 1 cup/day, 10% for 2-3 cups, 12% for 4-5 cups, and 10% for 6 or more cups/day. For women, the risk reduction was 5, 13, 16, and 15%, respectively.
While these findings are certainly impressive, the researchers also discovered that coffee consumption produced significant reductions in the risk of dying from a number of specific causes, including heart disease, respiratory disease, stroke, injuries and accidents, diabetes, and infections.5

It is evident from this study, and many earlier, smaller studies, that far from being “bad for you,” as was once believed, coffee can be considered an important promoter of long life and good health.

Coffee Provides Cardiovascular Protection

The complex mix of anti-inflammatory polyphenols and other bioactive compounds in coffee delivers potent cardioprotective properties. The greatest benefits have been found in filtered coffee consumption.20-23 Reversing earlier concerns that coffee might increase or aggravate cardiovascular disease risk, large epidemiologic studies reveal important positive effects on the heart, blood vessels, and brain that contribute to a reduction in the risk of heart disease, atherosclerosis, and stroke.21,24,25

In one large meta-analysis, over 1.2 million participants were evaluated for their cardiovascular disease risk according to their coffee consumption.12 Compared to subjects who drank no coffee at all, the researchers found a 15% cardiovascular disease risk reduction among those who drank an average of 3.5 cups/day, and 11% for those who had an average of 1.5 cups/day. This was an important study since it showed some level of protection for all amounts of coffee consumption.

One of the most important predictors of cardiovascular disease risk is endothelial dysfunction.26 The endothelium is an ultra-thin layer of cells that lines blood vessels. It sends biochemical signals, including nitric oxide, to smooth muscle cells in the vessel walls, triggering them to relax and dilate, or contract and constrict, thereby regulating blood flow and pressure throughout the body.27 People with atherosclerosis (hardening of the arteries) have perturbed endothelial function, causing vital organs such as the heart or brain to suffer from disrupted blood flow, which in turn can produce a heart attack or stroke.28

The effects of coffee consumption on endothelial function have been controversial, in part because of confusion regarding the role of caffeine. Caffeine has been found to temporarily worsen endothelial function in some studies, but the antioxidant and other benefits of polyphenols in coffee appear to largely negate this effect.1,15,29 In a group of older adults consuming a typical drink of boiled caffeinated coffee, endothelial function was 49% better in those who reported high consumption compared with those reporting low consumption.16

Even 200 mg of caffeine (equivalent to about 2.5 cups of coffee) improved endothelial function by 160% in patients with known coronary artery disease and by 121% in healthy volunteers, suggesting there may in fact be a beneficial role for caffeine in addition to the polyphenols.6 In a separate study, 300 mg of caffeine, given to healthy young men, produced a 25.5% improvement in endothelial function; this effect was traced to an increase in production of the vessel-dilating compound nitric oxide.30

Decaffeinated coffee has also repeatedly been shown to improve endothelial function, reducing the risk of cardiovascular disease. In one study, endothelial function improved 46% one hour after consumption of two cups of decaffeinated Italian espresso coffee, and by 23% one hour after consumption of one cup.31

Given that decaffeinated coffee exerts positive effects on endothelial function, it appears that the polyphenol compounds exert substantial benefits. A study of healthy, non-diabetic men showed that ingestion of a single dose of purified caffeine polyphenols improved endothelial function following a glucose challenge (simulating a meal).23 This is an important finding, given that after-meal increases in blood sugar are strongly associated with poor endothelial function and increased cardiovascular risk.32-34
Both caffeinated and decaffeinated coffee, even at fairly high levels of consumption, exert favorable effects on endothelial function and on cardiovascular disease risk. Importantly, one study showed no significant negative effects of coffee consumption, either caffeinated or decaf, on certain types of ECG associated with cardiovascular disease.35

Coffee Protects Against Metabolic Syndrome And Type II Diabetes

The modern lifestyle is contributing to an alarming and constant increase in the prevalence of obesity, type II diabetes, and their deadly long-term consequences.36-40

In particular, metabolic syndrome—abdominal obesity, hypertension, abnormal blood lipids, and insulin resistance producing borderline/high blood sugar levels—is on the rise, along with increased risks for diabetes, heart disease, cognitive decline, and even cancer.37,41,42

Fortunately, there’s a growing body of evidence favoring coffee consumption as a means of protection against both metabolic syndrome and diabetes.

In a study from Japan, where rates of metabolic syndrome have been rising sharply over the past decades, all components of metabolic syndrome occurred less frequently among coffee drinkers than among non-drinkers. More components of metabolic syndrome were present in those who drank less coffee.43

Other studies have shown similar effects, with heavy coffee drinkers being more protected from metabolic syndrome components like elevated triglycerides; one study showed that drinking 1.5 to nearly 3 cups/day offered a 49% reduction in the risk of having high blood sugar.13

Coffee’s impact on fat accumulation is also favorable. Both light (1-3 cups/day) and moderate (4 or more cups/day) coffee consumption was shown to reduce abdominal fat collections in a group of middle-aged men. Moderate coffee consumption was also associated with higher blood levels of the beneficial hormone adiponectin, which helps regulate metabolic processes, further evidence of reduced deleterious activity of fat tissue.14,44

Animal studies provide some insights into how coffee exerts its protective effects against metabolic syndrome.

In one study, rats were fed a diet rich in animal fats and sugars, including fructose. They rapidly developed metabolic syndrome, which led to dangerous remodeling of their heart structures and also to non-alcoholic fatty liver disease (NAFLD), both of which occur in humans who consume too much sugar and fat.45

What You Need To Know

The Numerous Health Benefits Of Coffee

• Coffee is one of the most widely consumed beverages in the world; it contains more than 1,000 different compounds.

• Once thought likely to be harmful, coffee is now recognized as an excellent source of antioxidant and anti-inflammatory molecules.

• Very large and powerful epidemiological studies show that coffee consumption is associated with longer lifespans and with reduced risks of dying from a host of common, age-related conditions.

• Coffee reduces the risk of cardiovascular disease, metabolic syndrome, diabetes, neurodegenerative diseases, and liver and kidney cancers.

• If you enjoy drinking coffee, go for it — there is ample evidence that coffee is a highly functional beverage that gives one pleasure, robust health, and a long life.
Coffee has numerous beneficial properties that appear to be independent of its caffeine content. While coffee is known to contain more than a thousand bioactive compounds, scientists have learned that one such compound, chlorogenic acid, is responsible for the lion’s share of coffee’s healthful activities.

Chlorogenic acid is a polyphenol, making it a member of one of the largest classes of plant molecules that promotes human health. Chlorogenic acid also has powerful anti-oxidant and anti-inflammatory effects. It is also recognized as one of the important cardioprotective components of coffee, capable of improving heart muscle cell health, potentially reducing the risks of congestive heart failure after a heart attack. It inhibits the clumping of platelets that contributes to blood vessel blockage to produce heart attacks and strokes.

Chlorogenic acid also has a potent impact on how our bodies effectively handle sugars and fats. Studies show that this polyphenol provides important anti-obesity and glucose-lowering effects, and treatment of diabetic animals with chlorogenic acid was able to partially prevent the biochemical and cognitive changes associated with diabetes, improving memory and decreasing anxiety. In studies of animals with long-term consequences of diabetes, such as painful diabetic neuropathy and poor wound healing, chlorogenic acid not only lowered blood sugar, but directly reduced pain and enhanced healing rates.

The beneficial effects of coffee drinking on neurodegenerative diseases such as Parkinson’s and Alzheimer’s is largely attributable to chlorogenic acid, according to recent studies. Chlorogenic acid reduces oxidative stress-induced brain cell death, and also preserves the activity of vital neurotransmitters (nerve cell signaling molecules) that are lost in Alzheimer’s patients.

Finally, chlorogenic acid, by modulating genetic expression, promotes immune system activation that favors detection and destruction of cancer cells by patrolling immune cells, helping to abort an incipient cancer before it can take root and grow.

There’s no longer any doubt about coffee’s health-giving properties. Modern coffee processing techniques that enhance the chlorogenic acid content may serve to make your daily “cuppa” contribute strongly to your health and life span.

But when a supplemental coffee extract was added to the rats’ diet, those unhealthy effects were significantly reduced, and the animals’ glucose tolerance and high blood pressure also resolved.

Similarly, mice fed a high-fat diet gained weight and increased abdominal fat stores, but when fed the same diet and supplemented with coffee (decaf or regular) they had lower body weights and fat stores. The supplemented animals also had significantly lower levels of liver damage indicators and inflammatory markers, compared with unsupplemented controls.

Even in animals with both metabolic syndrome and diabetes, coffee has proved to be therapeutic. A study of rats that had both disorders showed coffee consumption reduced serum glucose, total cholesterol, and triglycerides, thus lowering risk factors for developing cardiovascular disease and other complications of metabolic syndrome.

The benefits of coffee on metabolic syndrome were summarized in a comprehensive review in late 2013. Of the studies examined, all of the animal and most of the human research demonstrated protective effects of coffee on metabolic syndrome and on development of non-alcoholic fatty liver disease (the few human studies that showed no effect were conducted among young populations, who have a relatively low incidence of metabolic syndrome at baseline).

A main risk posed by metabolic syndrome is the development of full-blown type II diabetes, the result of sustained exposure to fat-related inflammatory cytokines and poor insulin sensitivity. As with metabolic syndrome itself, coffee is highly protective against type II diabetes.

A large multi-ethnic study of more than 75,000 men and women showed that drinking 3 or more...
cups/day of regular coffee reduced risk of developing type II diabetes 35% in women, and 14% in men; this study did not find significant risk reduction with decaffeinated coffee.\textsuperscript{50}

That difference between caffeinated and decaf coffees, however, seemed to disappear in research that examined even larger populations. Two important 2014 meta-analyses, each including more than a million participants, provide definitive evidence that both kinds of coffee offer protective effects against type II diabetes. The first demonstrated that compared with little or no consumption, the risk for developing diabetes was reduced by 8, 15, 21, 25, 29, and 33% for consumption of 1 to 6 cups/day (respectively), with protection seen for both caffeinated and decaffeinated brews.\textsuperscript{51}

The second meta-analysis showed similar results. Compared with the lowest level of coffee intake, those drinking the largest amounts of regular coffee had a 29% lower risk, while those drinking the largest amount of decaf had a 21% lower risk.\textsuperscript{4} This study also demonstrated that each additional two cups of regular coffee reduced diabetes risk by 12% (11% in decaf drinkers).\textsuperscript{4}

Animal studies show that coffee (decaf and regular) contributes to decreased insulin resistance (the precursor to type II diabetes) and reduces blood sugar levels by modulating several proteins involved in insulin signaling and down-regulating genes involved in inflammation.\textsuperscript{52} Subsequent research suggests these effects may in turn lead to increased energy utilization and energy expenditure, both important factors in reducing total body fat stores and reducing the risk for diabetes and metabolic syndrome.\textsuperscript{53}

Coffee Protects Brain Cells

Both caffeine and coffee show powerful effects in protecting brain cells from age-related degeneration. Epidemiologic studies show that people with higher intakes of coffee and caffeine are less likely to develop Alzheimer’s or Parkinson’s diseases, two of the most feared cognitive disorders of aging.\textsuperscript{54-59}

People with mild cognitive impairment (MCI, the precursor to Alzheimer’s) who have higher blood caffeine levels are significantly less likely to progress to full-blown dementia, and rates of cognitive decline are slower in people with higher caffeine intake.\textsuperscript{60,61} Coffee drinkers who consume 3 cups/day are 28% less likely to develop Parkinson’s disease.\textsuperscript{62}

In animal studies, it has been shown that caffeine and caffeinated coffee can prevent Alzheimer’s-like cognitive impairment from developing as mice age, and reverse the cognitive impairment and accumulation of the abnormal Alzheimer’s brain protein called Abeta in aged mice.\textsuperscript{63} Caffeine also prevented the brain changes associated with Parkinson’s disease in an animal model, through reduction in inflammatory cytokines and preservation of brain cells in important memory regions.\textsuperscript{55,64}
But that’s not the only beneficial component of caffeinated coffee. Studies have shown that caffeinated coffee elevates plasma levels of a growth factor (GCSF—or granulocyte-colony stimulating factor) that is associated with improved memory. GCSF is also thought to promote formation of new brain cells and the synapses that connect them. And a specific non-caffeine coffee component called EHT (eicosanoyl-5-hydroxytryptamide) has direct anti-inflammatory and antioxidant effects that preserve the specific neurons that die off in Parkinson’s disease.

Caffeine is also associated with a decreased risk of depression, as shown by studies documenting up to a 43% risk reduction in people at the highest versus the lowest caffeine consumption. Consumption of coffee itself provides a 39 to 77% reduction in risk of depression.

Coffee Prevents Liver And Kidney Cancers

The rich brew of bioactive compounds in coffee is now credited with preventing certain cancers, particularly those of the liver and kidneys.

Hepatocellular carcinoma is the most common primary malignant cancer of the liver; it is strongly associated with hepatitis B and C viral infections, and coffee drinking appears to confer a protective effect. Compared with people drinking 0-1 cups of coffee/day, those drinking 2-3, 4-5, 6-7, and 8 or more cups/day have reductions in liver cancer risk of 34, 56, 62, and 68%, respectively. This level of protection is provided by coffee, regardless of whether a person has been infected with either or both hepatitis B and C viruses, both of which are strongly associated with liver cancer. Overall, studies show a remarkably consistent average risk reduction of about 50% in coffee drinkers versus non-drinkers, regardless of study design or location.

Proposed mechanisms for protection against liver cancer include induction of toxin-destroying and antioxidant enzymes, and reducing enzymes that activate carcinogens.

Coffee consumption appears to reduce kidney cancer risk as well, with laboratory evidence demonstrating that coffee helps destroy renal cancer cells. Compelling evidence also shows general improvements in kidney function among coffee drinkers.

Several studies have now shown that coffee significant increases kidney function as measured by glomerular filtration rate (GFR), the amount of toxin-containing fluid that is filtered through the kidney each minute (higher numbers are better). The effect was demonstrated to be even greater in middle-aged and elderly coffee-consuming female diabetics.

And among kidney dialysis patients, coffee drinking is associated with significant improvements in lipid profile, a cardiovascular risk that is increased in those on dialysis.

Summary

Coffee, one of the world’s most popular beverages, is a complicated mix of more than a thousand compounds. In addition to caffeine, which itself appears to have beneficial effects, coffee also contains polyphenols and other compounds capable of modifying gene expression, protecting tissues from oxidant and inflammatory damage, and other favorable effects.

A major study demonstrated that coffee drinkers are at significantly lower risk of dying from all causes, as well as from many of the specific conditions that are the leading cause of death among Americans, from cardiovascular disease to diabetes. Additional studies have shown benefits from coffee consumption on metabolic syndrome, neurodegenerative diseases, and cancers of the kidney and liver.

So, find a brand of coffee that you enjoy, preferably one with known quantities of antioxidant molecules, and drink up—you’ll be doing yourself and your health a pleasurable favor.

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


NEW HEALTH BENEFITS FROM DAILY COFFEE


In a placebo-controlled human study, subjects took 350 mg of **green coffee extract** three times daily (before meals).

Study subjects were not asked to change their calorie intake or exercise level, but people participating in weight-loss trials often do make lifestyle changes in order to increase their odds of shedding body fat.

The impressive findings, published in January 2012, noted that men and women lost an average of **17.6 pounds**—over **10%** of body weight—after **12 weeks** of **green coffee extract** supplementation! There was also an average **4.44%** reduction in body fat percentage!

The conclusion is that **green coffee extract** supports the ability to lose weight. The form of **green coffee bean extract** used in this successful weight loss study is **CoffeeGenic® Green Coffee Extract**.

**How CoffeeGenic® Works**

The active ingredient in **green coffee bean extract** is **chlorogenic acid**.

Published studies on chlorogenic acid demonstrate a wide range of supportive properties related to insulin sensitivity, and to glucose formation and absorption.

Clinical research has shown that chlorogenic acid helps limit after-meal glucose surges, supporting healthy blood sugar levels for those already within the normal range.

**CoffeeGenic® Green Coffee Extract** provides a standardized dose of chlorogenic acid extracted from **green coffee beans**.

Based on the latest research, **CoffeeGenic® Weight Management™ with Green Coffee Extract** has been formulated to provide in each capsule:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Dosage</th>
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<tbody>
<tr>
<td>CoffeeGenic® Green Coffee Bean Extract</td>
<td>350 mg</td>
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<tr>
<td>[Standardized to 50% chlorogenic acids (175 mg)]</td>
<td></td>
</tr>
<tr>
<td>Integra-Lean® African Mango (Irvingia gabonensis) proprietary extract (seed)</td>
<td>100 mg</td>
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<tr>
<td>Chromium as Crominex® 3+ chromium stabilized with Capros® Amla (Phyllanthus emblica) extract (fruit) and PrimaVie® Shilajit</td>
<td>150 mcg</td>
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<tr>
<td>Iodine (as potassium iodide)</td>
<td>100 mcg</td>
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<tr>
<td>Green Tea decaffeinated extract</td>
<td>50 mg</td>
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<tr>
<td>[98% polyphenols (49 mg), 45% EGCG (22.5 mg)]</td>
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The suggested dose is just one capsule before each meal. A bottle of **90 vegetarian capsules** of **CoffeeGenic® Weight Management™ with Green Coffee Extract** retails for $40. If a member buys four bottles, the price is reduced to **$27 per bottle**.

**References**


**To order CoffeeGenic® Weight Management™ with Green Coffee Extract, call 1-800-544-4440 or visit www.LifeExtension.com**
Most grocery store creamers are comprised of an artificial milk-like substitute made of chemicals as well as dangerous hydrogenated oils, corn syrup solids, artificial flavors and sweeteners, and a brew of stabilizing and emulsifying chemicals.

The new Rich Rewards™ Protein Coffee Creamer contains a healthy serving of nutritious, high-quality protein—with no added sugar or anything artificial.

Easy-to-use and requiring no refrigeration, vanilla-flavored Rich Rewards™ Protein Coffee Creamer Vanilla is naturally sweetened with non-calorie antioxidant Monk fruit extract.

A Protein Boost To Your Morning Coffee

Each serving of Rich Rewards™ Protein Coffee Creamer contains only 1 gram of carbohydrate—but provides a full 5 grams of healthy protein. That's about as much protein as a hard-boiled egg! The leading brands of commercial creamers have no protein.¹

The protein in Rich Rewards™ Coffee Creamer is from a milk protein isolate that is high in casein, a slower digesting protein, which helps promote satiety, energy expenditure, and protein balance.²

Rich Rewards™ Protein Coffee Creamer contains no sodium, cholesterol, saturated fat, trans fat, hydrogenated oils, or gluten—and no added sugar.

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.
Scientists have found that people living on the Greek island of Ikaria enjoy a longer, healthier life span and it may be due to the way they prepare their coffee.

Instead of heavily roasting the coffee and thus removing beneficial polyphenols, they boil it in a way that retains its unique compounds.1 Greek islanders who consumed this polyphenol-rich coffee were found to have healthy endothelial function that scientists suggested may play a role in their longevity.1

POLYPHENOL-RETAINED COFFEE

Among the most beneficial coffee polyphenol is chlorogenic acid, an inhibitor of an enzyme called glucose-6-phosphatase. This enzyme stimulates the excess creation of glucose in the liver, which can result in blood glucose elevation.

For coffee lovers who like to freshly grind their own coffee beans, Rich Rewards® Breakfast Blend Whole Bean Coffee is made using a patented, 100% natural process called HealthyRoast™.2 This process delivers a more complete nutritional profile of the coffee bean, yielding up to 87% more chlorogenic acid than conventional coffees!

Handpicked deep in the rainforests of Central America, Rich Rewards® consists exclusively of 100% USDA certified organic arabica coffee beans, gently roasted in small batches—with the polyphenols then added back in to provide optimal health benefits.
To order any of the Rich Rewards® Breakfast Blend Coffee options, 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 years, Michael Ozner, MD, has been organizing the world’s largest cardiology conference devoted to the prevention of cardiovascular disease.

Dr. Ozner serves as medical director for the Cardiovascular Prevention Institute of South Florida and is a member of Life Extension’s Scientific Advisory Board.

On February 6, 2014, Dr. Ozner gave opening remarks at his 12th Annual Cardiovascular Disease Prevention International Symposium in Miami Beach, Florida. This article provides an overview of the various presentations made at this conference dedicated to preventing the most prevalent disease striking Americans.
Dangers Of Fructose

Robert Lustig, MD, (Professor of Clinical Pediatrics, University of California, San Francisco) believes that sugar consumption, fructose consumption in particular, is more of a cause of type II diabetes than obesity. He said that sugar consumption in the US increased by a factor of 10 between 1820 and 1900, and doubled between 1900 and the year 2000.

Table sugar (sucrose) is composed of equal parts of the two simple sugars glucose and fructose. Fructose has often been recommended to diabetics because unlike glucose, fructose consumption does not stimulate insulin secretion as much as glucose (fructose has a lower glycemic index). But a study of overweight human subjects showed that a high-fructose diet promotes insulin resistance, visceral obesity, and elevated serum triglycerides (fats in the bloodstream), an effect not seen when glucose was substituted for fructose in the same diet.

Fructose elevates uric acid production, which has damaging effects on the kidney and cardiovascular system. Most soda drinks are currently sweetened with high fructose corn syrup, partly because fructose is sweeter and more soluble than glucose. Increased consumption of those soda beverages has been linked to weight gain and might play a role in the growing incidence of obesity. Even fruit juice, which can be high in fructose, has been linked to type II diabetes. Dr. Lustig lamented the promotion of orange juice by pediatricians. Apple juice, which has more than twice the fructose as orange juice, is the juice most often given to children under age 5. Fruit juice is a poor substitute for fruit or milk, especially in light of the fact that half of children between the ages of 1 and 5 do not get enough calcium.
Smoking And Psychological Factors In Cardiovascular Disease

Wayne Sotile, PhD, (Clinical Assistant Professor, Tulane University) discussed efforts to reduce or stop cigarette smoking. A long-term study of British doctors showed that smokers died about 10 years younger than non-smokers. A study of smokers who suffered a heart attack showed that 80% attempted to quit smoking after the heart attack, but after one year only about half were still not smoking.

Dr. Sotile described tactics for reducing smoking, such as only smoking if a smoker rated the desire to smoke as being greater than 7 on a scale from 1 to 10. He said that simply encouraging smokers to keep a count of the cigarettes they smoked reduced cigarette consumption by half. But he also cited a study of heavy smokers which showed that a 50% reduction of cigarette consumption did not significantly reduce the risk of premature death. Complete cessation of smoking will provide definite health benefits—life and health are extended in proportion to how early in life a smoker completely stopped smoking.

Dr. Sotile said that for those who are unable or unwilling to quit smoking, electronic cigarettes have considerably fewer toxicants and carcinogens than tobacco cigarettes.

In a separate lecture, Dr. Sotile discussed psychological factors leading to cardiovascular disease. Studies of certain “type-A” behavior factors (competition and exaggerated commitment to work) have not shown convincing results that the personality type leads to increased risk of coronary artery disease, whereas hostility (a major attribute of the type A personality) has been associated with increased risk.

Confounding this analysis, however, is the fact that hostile people more often have unhealthy lifestyles. Work stress is particularly toxic when there is high demand, but low decision latitude. Dr. Sotile thinks that the number of stresses is less important for cardiovascular risk than the number of uplifts (gratitude, interest, hope, pride, amusement, and love).

Women’s Issues In Cardiovascular Disease

Sharonne Hayes, MD, (Professor of Medicine and Cardiovascular Diseases, Mayo Clinic, Rochester, Minnesota) is concerned with both women’s issues and psychological issues associated with cardiovascular disease.

For example, certain metabolic changes during pregnancy can resemble diabetes, and may accelerate the development of diabetes after pregnancy. In a study involving subjects who lost their significant other, women were three times more likely to experience death of a spouse after age 65 than a man. The risk of a heart attack in the first 24 hours after the death of a spouse was increased more than 20 times, and it decreased subsequently. Women are more likely to die of stroke than coronary artery disease, whereas the opposite is the case for men. Women with a history of depression are two to three times more likely to have calcification of their coronary arteries than women without a history of depression. Patients with coronary heart disease are much more likely to have impaired endothelial function, and are much more likely to die if they are depressed. A study showed that anxiety is a stronger predictor of coronary artery disease than depression. Exercise reduces death rates in depressed heart patients. Another study cited showed that pet ownership is associated with lower blood pressure, reduced incidence of cardiovascular disease risk factors, and increased survival in individuals with existing cardiovascular disease.

Dr. Hayes reported on a Mayo Clinic survey of the hierarchy of female concerns. What is most important to women is their children, followed by their home, their career, their pet, their spouse, and lastly, themselves. Dr. Hayes suggested that the low priority women give to their own needs can manifest in not taking time to look after their health, such as by exercising. As another example, she reported that 79% of women said they would call 911 if someone else was experiencing symptoms of a heart attack, but only 53% would call 911 if they were the one experiencing heart attack symptoms.
Small Cholesterol Particles Are The Worst

Michael Richman, MD, (Cardiothoracic/Vascular Surgeon, Center for Cholesterol Management, Los Angeles, California) did not agree with Dr. Nasir that routine screening for coronary artery calcium justifies the radiation exposure. He said calcified atherosclerotic plaques do not rupture, and that in his surgical experience, ruptured plaques are soft. He cited a study showing that coronary vessel blockage frequently occurs without calcification.\(^44\)

Dr. Richman noted that many small cholesterol particles are a better indicator of cardiovascular risk than the total amount of cholesterol.\(^45\) Small cholesterol particles are more easily oxidized,\(^46,47\) and small particles enter blood vessel walls more easily than large cholesterol particles.\(^48\)

Dr. Richman’s preferred phrase for helping people to remember the importance of the number of small particles as opposed to total amount of cholesterol is “The number of cars that cause a traffic jam is not related to the number of people in the cars.”

Calcium In Coronary Arteries

Khurram Nasir, MD, (Research Director, Center for Prevention and Wellness, Miami, Florida) is concerned that half of the serious coronary artery disease incidents (including death) occur in individuals who displayed no previous symptoms.\(^40\) As a predictor of coronary artery disease, he has found imaging of calcium in the coronary artery to be superior to assessments of coronary artery wall thickness\(^41\) or blood levels of the inflammatory agent C-reactive Protein (CRP).\(^42\)

In a study of about 44,000 patients, about half of the participants had coronary artery calcium detectable by electron beam tomography. The patients having the highest coronary artery calcium were about seven times more likely to die during a mean 5.6-year period.\(^43\) Dr. Nasir believes that because scanning for coronary artery calcium is easy and inexpensive, it should be as routine as mammograms. Some people avoid the coronary calcium score diagnostic test because of the radiation exposure.

Prevention Of Blood Vessel Aging

Valentin Fuster, MD, (Professor, Mount Sinai School of Medicine, New York, New York) asked if aging can be prevented—in particular, aging of blood vessels. The extensive shortening of telomeres that cap the ends of chromosomes causes cells to stop dividing (become senescent). In white blood cells, telomeres shorten about 6 to 9% per decade.\(^49\) Senescence of the cells that line blood vessels (endothelial cells) causes them to more readily bind to cells (monocytes) that contribute to atherosclerosis.\(^49\) Age-related decline in the supply of stem cells is observed in blood vessels which might ultimately lead to age-related atherosclerosis.\(^49\) In addition, aging leads to an increasing deposition of calcium in blood vessels and is associated with a reduction in bone mineral density.\(^50\)
vessel calcification causes kidney disease.\textsuperscript{50,51} It is a misconception that rupture of atherosclerotic plaques is usually a fatal event. Plaques frequently rupture in the absence of clinical symptoms.\textsuperscript{52} What can be fatal is repeated ruptures leading to increasing risk for blood vessel occlusion and eventually to clots that block the blood vessels completely.\textsuperscript{52}

**Chelation Therapy For Cardiovascular Disease**

Gervasio Lamas, MD, (Chairman of Medicine, Mount Sinai Medical Center, Miami Beach, Florida) reported on his clinical trial showing a reduction in cardiovascular disease in patients receiving intravenous chelation therapy with disodium EDTA (ethylene diamine tetraacetic acid).\textsuperscript{53}

Chelation is a controversial intravenous therapy that removes metal ions such as calcium, lead, zinc, cadmium, arsenic, iron, and more from the bloodstream.\textsuperscript{53,54} Some of these metals are toxic, whereas others are essential for health and survival. The claim that chelation could remove calcium from atherosclerotic plaques makes no sense insofar as EDTA is water soluble and cannot cross cell membranes,\textsuperscript{55} but removal of toxic metals could be beneficial for other reasons. Chelation therapy must be done slowly, because when done too rapidly blood calcium levels can become so low as to cause death.\textsuperscript{56}

Dr. Lamas’ study was criticized because the chelation therapy infusion mixture needed to be made locally (shortly before administration), because so many of the testing centers practiced alternative medicine (including chelation therapy), and because so many more patients in the placebo group than in the chelation group withdrew from the study, leading to suspicion that many patients had discovered that they were being given a placebo.\textsuperscript{57}

A follow-up analysis of the chelation clinical trial by Dr. Lamas’ team showed considerably greater benefit for heart attack patients in the trial who were diabetic compared to those who were not diabetic.\textsuperscript{58} It is plausible that chelation therapy could be particularly beneficial for diabetics due to the fact that it most likely inhibits the formation of advanced glycation end-products (AGEs), which are responsible for many of the health problems associated with diabetes.\textsuperscript{59} At the conference, Dr. Lamas suggested that his study was not being given the credibility it deserved because of a bias of his critics against chelation therapy. But both of his publications of his study concluded that the results do not justify routine use of chelation therapy, and that further research is required.\textsuperscript{53,58}

**Fish And Mercury Toxicity In Cardiovascular Disease**

Dariush Mozaffarian, MD, (Associate Professor of Medicine and Epidemiology, Harvard Medical School, Boston, Massachusetts) has researched the benefits and hazards of consuming fish. The main omega-3 fatty acids in fish oil are DHA (docosahexaenoic acid), EPA (eicosapentaenoic acid), and DPA (docosapentaenoic acid).\textsuperscript{60} Omega-3 fatty acids provide multiple health benefits as they are incorporated into cell membranes, modulating the function of enzymes, receptors, and ion-channels embedded in the cell membranes.\textsuperscript{61,62} The omega-3 fatty acids also modify gene expression to reduce inflammation and improve lipid metabolism.\textsuperscript{61}

DHA is incorporated into the membranes of heart muscle cells five to 10 times more than EPA (DPA is also incorporated more than EPA),\textsuperscript{63} which could also be relevant in explaining why DHA was associated with a lower risk of certain arrhythmias.\textsuperscript{61} But EPA and DPA are much more effective than DHA in reducing inflammatory protein (C-reactive protein) and the clotting factor fibrinogen.\textsuperscript{64} And DPA most strongly reduced death from stroke.\textsuperscript{64}

The toxic metal mercury in fish is a concern, especially for pregnant women, but mercury intake can be reduced by eating small, short-lived species rather than larger, predatory, long-lived species (such as swordfish).\textsuperscript{65} Fish oil from supplements rather than from fish reduces mercury ingestion because mercury is tightly bound to the protein in the meat.\textsuperscript{66} Dr. Mozaffarian reports the cardiovascular benefits of fish consumption outweigh the risks,\textsuperscript{63,67} but he did not elaborate on the toxic effects of fish mercury on the nervous system, immune function, reproduction, or cancer.\textsuperscript{68}
Benefits Of Chocolate (Cocoa)

In a separate lecture, Dr. Mozaffarian discussed the cardiovascular benefits of chocolate (cocoa). Cocoa, which is rich in flavonoids, has been shown to significantly reduce blood pressure, insulin resistance, endothelial dysfunction, and fats in the bloodstream. A study of subjects fed dark chocolate (containing cocoa) or white chocolate (no cocoa) for 18 weeks showed a small, but significant reduction in blood pressure for the dark chocolate group, but not for the white chocolate group. An analysis of several studies showed that the highest levels of chocolate consumption were associated with a 37% reduction in cardiovascular disease, and a 29% reduction in stroke compared with the lowest levels of consumption. Despite the sugar and fat content of chocolate, reduced insulin resistance and reduced serum insulin levels were associated with chocolate consumption. The flavanol epicatechin is believed to be the main source of benefit.

Hazards Of Processed Meat And Red Meat

Natalie Castro-Romero, RD, (Chief Dietitian, Baptist Health South Florida, Miami, Florida) cited one study that showed slightly increased death rates for both cancer and cardiovascular disease resulting from the consumption of both processed meat and red meat. However, another study showed that consumption of processed meat, but not red meat, is associated with a higher incidence of coronary heart disease (42% higher), and diabetes (19% higher). Processed meat does not contain more saturated fat, cholesterol, or iron than red meat, but processed meat does contain more sodium and nitrate preservative.

Subclinical Thyroid Disease And Cardiovascular Disease

Irwin Klein, MD, (Professor of Medicine, New York School of Medicine, New York City, New York) spoke of the impact of subclinical hypothyroidism and subclinical hyperthyroidism on cardiovascular disease. These conditions are called subclinical because they are detected in blood tests, but don’t necessarily manifest the clinical symptoms of hypothyroidism or hyperthyroidism.

High levels of thyroid hormone affect the cardiovascular system by increasing heart rate, lowering vascular resistance, and increasing blood volume, whereas low levels of thyroid hormone have the opposite effect. There is controversy about whether patients with subclinical thyroid disease should be treated. But there is more certainty about certain classes of patients. Treatment is recommended for elderly patients having subclinical hyperthyroidism because of the risk of atrial fibrillation (irregular heartbeats in the upper chambers of the heart). Treatment is also recommended for pregnant women because of the risk to the mother and/or fetus.

As people age, there is an increasing incidence of subclinical hypothyroidism. But in the elderly (older than 85 years), subclinical hypothyroidism is protective against cardiovascular disease, whereas for the young and middle-aged, subclinical hypothyroidism increases the risk of cardiovascular disease. The risk of treating subclinical hypothyroidism is that thyroid hormone dosage and blood levels must be frequently monitored. Overdosing occurs in about 20% of patients, leading to atrial fibrillation, cardiac dysfunction, and reduced bone mineral density.

Medications To Control Blood Cholesterol

Peter Toth, MD, PhD, (Professor of Clinical Medicine, Michigan State University, East Lansing, Michigan) said that blood levels of non-HDL cholesterol are a better indicator of cardiovascular disease risk than is LDL cholesterol. Conventional wisdom holds that LDL cholesterol is bad and HDL cholesterol is good in terms of heart disease risk. But this simple description overlooks other forms of cholesterol, such as VLDL (very low density lipoprotein). Only HDL cholesterol reduces cardiovascular disease risk, whereas the other forms...
of cholesterol are all harmful with VLDL being more harmful than LDL.\textsuperscript{81} Combining a statin (which lowers synthesis of non-HDL cholesterols) with an agent that lowers absorption of cholesterol from the intestine (ezetimibe) results in greater reductions of non-HDL cholesterols, and greater increase in HDL cholesterol than statin alone.\textsuperscript{83} Although niacin can raise HDL cholesterol, addition of niacin to statin therapy showed no additional benefit.\textsuperscript{84}

Medications Against Cardiovascular Death From Type II Diabetes

Henry Ginsberg, MD, (Professor of Medicine, Columbia University Medical Center, New York City, New York) said that the vast majority of people with type II diabetes are obese,\textsuperscript{85} but that the vast majority of obese people do not have type II diabetes.\textsuperscript{86} He also supported the view that insulin resistance cannot be separated from type II diabetes or metabolic syndrome.\textsuperscript{87,88}

A 40-year-old patient newly diagnosed with type II diabetes has a life expectancy that is eight years less than that of the general population, largely due to early death from cardiovascular disease.\textsuperscript{87} Administration of the drug pioglitazone (Actos\textsuperscript{89}) to type II diabetes patients significantly reduces all-cause mortality, non-fatal heart attacks, and strokes.\textsuperscript{89} Pioglitazone is a PPAR-\(\gamma\) (peroxisome proliferator-activated receptor-gamma) activator which reduces various inflammatory markers.\textsuperscript{89} He cited a study showing that for patients at risk of developing diabetes due to high blood glucose, the blood glucose-lowering drug metformin reduced the incidence of diabetes by 31\%, whereas lifestyle intervention (weight loss and physical activity) reduced the incidence by 58\%.\textsuperscript{90}

Nonalcoholic Fatty Liver Disease (NAFLD) affects up to 20 to 30\% of the general population, and up to three-quarters of those have insulin resistance or metabolic syndrome.\textsuperscript{91} For type II diabetes patients who lost 8\% of their body weight over a 12-month period, there was a significant reduction of NAFLD.\textsuperscript{91}

Concluding Remarks

Although the above report only includes approximately half the speakers at the Cardiovascular Disease Prevention International Symposium, I believe it provides a good coverage of the flavor and highlights of the presentations. It was inspiring to be with so many medical professionals seeking to prevent disease, rather than to simply treat disease.

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

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Morcellation is a procedure used as a means of extracting a woman’s uterus, largely as a treatment for uterine fibroids. It may also be used to remove other organs.¹ The process leaves only a small scar, while reducing hospital lengths of stay and potential surgical complications.²

This so-called “minimally-invasive” procedure has been found to cause the potentially lethal spread of cancer to unsuspecting women.

Amy Reed, MD, PhD, is an accomplished anesthesiologist at Beth Israel Hospital in Boston who treated many of the victims of the Boston Marathon bombing. She has tragically experienced the risks of morcellation firsthand.

Dr. Reed’s supposedly benign morcellation procedure at Boston’s Brigham and Women’s Hospital to treat her fibroids ended up splattering cancerous cells throughout her abdomen and pelvis, leading to an advanced stage IV cancer diagnosis.³
Life Extension® is publishing this story in the hopes that it will speed action amongst doctors, hospitals, manufacturers, and patients to stop this needless loss of life.
DANGERS OF MORCELLATION

A Routine Procedure Gone Bad

Last October, Dr. Reed had a routine hysterectomy at Boston's Brigham and Women's Hospital to remove her uterine fibroids using the morcellation procedure. Dr. Reed was not informed about the risks that accompany this procedure. She was given no information about the morcellator, nor about the known risk regarding the spreading or upstaging of a hidden malignancy. Overwhelmingly, most women are not told that they will undergo morcellation. It is simply done at the discretion of the physician.

A few days after the procedure, Dr. Reed and her husband Dr. Hooman Noorchashm, a cardiothoracic surgeon at the Brigham and Women's Hospital and a lecturer on surgery at Harvard Medical School, were devastated to discover that she had developed a rare form of uterine cancer. They subsequently learned that, likely due to the morcellation procedure, the cancer cells had spread and Dr. Reed had stage IV cancer.

Yet the risks of spreading cancer cells through morcellation were indeed known, and had been clearly raised in numerous articles and editorials published in prestigious gynecological and cancer journals long before Dr. Reed's procedure. In fact, an article published by a team at Brigham and Women's Hospital in Boston, where Dr. Reed's surgery was done, reported on the risks of spreading an existing cancer by morcellation. The article recommended “...review of current surgical protocols to prevent future seeding of the pelvic region with tumor particles.” That article's publication preceded Dr. Reed's surgery by three years. Indeed, the senior gynecological oncologist who authored the manuscript was the same individual who referred Dr. Reed for an operation he knew would likely involve the use of a morcellator after reassuring her in writing that “this is a clearly benign process.”

How could a procedure with a known risk of disseminating a malignancy not only be cleared by the FDA, but also become a standard gynecological procedure undergone by hundreds of thousands of women annually? Why did so many gynecologists close ranks to defend a flawed procedure and deny the clear and present danger posed by morcellation? Why, after Drs. Reed and Noorchashm drew both professional and public attention to the problem, was the procedure not put on at least a temporary moratorium? And why has Dr. Noorchashm been chastised and isolated, rather than praised and supported, by his peers and colleagues in his effort to make medicine safer?

For many in the medical profession, Dr. Reed may be seen as just another statistic, but as a mother of six young children and a highly respected medical doctor with decades of life and medical practice ahead of her, her illness is catastrophic and beyond calculation.

What Is Morcellation?

Physicians performing hysterectomies, often to remove uterine fibroids, frequently use a tool called a morcellator, a small device with a sharp blade attached to a handle. The tool is inserted into the body to cut and shred fibrous tissue in order to ease its removal. The problem is that the tissue that’s being shredded may contain hidden cancer cells that are then scattered throughout the abdomen where they can take root and quickly spread. Additionally, the rotating blades can injure nearby organs and blood vessels.
Imagine taking a morcellator to an undetected malignant tumor in the abdomen, under the impression that it is a benign fibroid. Among the pieces of material freely scattered about are bits of cancerous tissue. These bits of tissue make the pathologist’s job even more challenging because the tissue’s highly mutilated state makes it very difficult to spot the presence of a malignancy.\textsuperscript{1,3,14}

The result, in oncologic terms, is called “upstaging,” or worsening, of the cancer. And this upstaging may happen as a direct result of the procedure chosen by the gynecologist. A uterine malignancy is ominous even at its lowest stage (stage I), with five-year survival hovering around 60\%. Upstaging the cancer to stage III drops survival to 22\% at five years, and only 15\% of women with stage IV cancers survive that long.\textsuperscript{5,15}

**Hysterectomy**

Hysterectomy (removal of the uterus) is one of the most common surgical procedures in the United States, with roughly 600,000 done annually.\textsuperscript{5} The most frequent indication for hysterectomy is uterine fibroids, also called uterine leiomyoma (lie-oh-my-\textit{om}a).\textsuperscript{5}

Uterine fibroids are clusters of abnormal, but not cancerous, cells in the thick, muscular walls of the uterus. They commonly affect women in their 40s and 50s. Fibroids may occur singly or in clusters. Studies have shown that, while these tumors are not malignant, they often contain abnormal genetic material that predisposes them to growing rapidly and in an uncoordinated fashion. By age 50, between 20 to 80\% of women develop fibroids.\textsuperscript{16-20}

Over time uterine fibroids may grow in size and number.\textsuperscript{21} Women with fibroids may have no symptoms at all, but in many women the symptoms become intolerable, and often include:\textsuperscript{18}

- Heavy and irregular vaginal bleeding (possibly to the extent of producing anemia),
- A feeling of fullness in the lower abdomen, with eventual abdominal swelling,
- Frequent urination if the fibroids press down on the bladder,
- Low back pain, and/or pain during sex,
- Complications of pregnancy and labor, often leading to a higher risk for Caesarean section.

Most women with significant or persistent symptoms wind up with a hysterectomy, or removal of the uterus, which is curative.\textsuperscript{16}

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**What You Need To Know**

**Morcellation**

- A technique for “minimally invasive hysterectomy” known as morcellation threatens the lives of as many as one in 350 women.\textsuperscript{48} With more than 600,000 hysterectomies performed in the US annually, that is the equivalent of two jumbo jet crashes each year.
- When such a tragedy struck a physician couple in Boston—and left a vibrant, 40-year-old mother of six struggling with stage IV uterine cancer—the couple spoke up and took their case to hospital administrators and leading gynecologists.
- Yet the medical community and its regulatory bodies have remained largely silent, and in fact, have pushed back hard, refusing for the most part to alter their procedures and defending their practice.\textsuperscript{49}
- At the root of this completely avoidable catastrophe lies poor physician training, immovable administrators, a “too-big-to-change-now” mentality, and substantial corporate financial interests.
- Do not succumb to a “minimally invasive hysterectomy” that puts your life at unnecessary risk; demand to know your physician’s intent long before you enter the operating room, and if morcellation is scheduled, ask for an alternative.\textsuperscript{50}
A standard hysterectomy is considered major surgery, requiring hospitalization and a recovery period that lasts several weeks.\textsuperscript{16,22} Naturally, patients and their gynecologists have sought easier, less painful, shorter operations.

The rise of so-called “minimally-invasive surgery” has led to many improvements in general surgery procedures, as well as in gynecological surgeries,\textsuperscript{23} although it remains unclear whether these techniques genuinely offer long-term advantages.\textsuperscript{24-27}

Minimally-invasive surgery has been available to women requiring hysterectomies for over two decades.\textsuperscript{28,29} Like all minimally-invasive procedures, the technique involves inserting a laparoscope—a tube with a camera and channels through which to pass surgical instruments—into the abdomen, then performing the procedure either manually or robotically using inputs on a monitor screen.\textsuperscript{14,30,31}

But since an entire uterus, especially one laden with large masses such as fibroids, is too big to pass intact through the endoscope, a morcellator is first used to slice and mince the tissue into pieces fine enough to draw out.\textsuperscript{8} Just as one would expect, bits of morcellated tissue inevitably fall away into the woman’s abdominal cavity.\textsuperscript{9}

And for as many as one out of every 350 women undergoing morcellation in America, that’s where the nightmare begins. While the vast majority of uterine masses are indeed benign fibroids, an estimated one in 350 women instead has a uterine cancer.\textsuperscript{32} However, women with malignant tumors may not be identified before morcellation since symptoms and imaging findings in patients with benign fibroids and uterine sarcomas can be identical.\textsuperscript{5}

**Morcellation Of Hidden Cancers: A Systemic Failure**

To understand this systemic failure, one needs to look at how physicians are educated, how inaccurate or thoughtless use of statistics produces false or misleading conclusions, and how medical devices are approved by regulatory agencies and marketed by manufacturers.

In an interview with *Life Extension*, Hooman Noorchashm, MD, PhD, took pains to reach thoughtful and objective conclusions about these areas, despite his personal grief and pain.

Regarding medical education, Dr. Noorchashm noted that gynecologists, unlike every other surgical specialty, have no extended exposure to general surgical practices and techniques. That means they learn in a “silo,” deprived of the opportunity to share with, and learn from, surgeons in all other fields.\textsuperscript{33}

Physicians who later become cardiac surgeons, orthopedists, neurosurgeons, and such spend at least a full year of residency training in a general surgery environment. There, they learn to embrace certain standard techniques and shun others, including, says Dr. Noorchashm, the notion of chopping up an unknown mass and scattering its debris throughout the surgical field. In a letter to the American Association of
Gynecologic Laparoscopists, he describes “the meticulous care that is taken by other surgeons not to disrupt tissues inside the body, especially when there is a possibility of cancer lurking,” and wonders why there is not greater interchange of information between gynecologists and other surgical specialties.

During our discussion, Dr. Noorchashm also provided insight into the statistics that have been used by both gynecologists and device manufacturers to reassure themselves and their patients about the safety of morcellation in the face of hidden uterine cancer. It has been pointed out that women preparing for fibroid surgery are typically quoted a figure of “one in 10,000” as the risk of having an undiagnosed malignancy. But that number simply represents the risk of uterine cancers in the entire general female population. For women with symptom-producing uterine masses, the figure is in fact believed to be as frequent as one in 350—a much greater risk.

Why is the risk consistently downplayed? That is a more difficult question to answer, says Dr. Noorchashm. It seems likely it has to do at least in part with the ways morcellators are marketed to physicians. Glossy ads appear in trade journals read by gynecologists, touting the device’s “safety, control, and simplicity,” saying it’s an “efficient and time-saving alternative” compared to other techniques, and describing the “simple, fast, and safe morcellation of even large amounts of tissue.” Note that most of the concerns in these promotional materials focus on the surgeon, not the patient. They have to do more with efficiency and speed than they do with patient outcomes.

Another factor is the surprisingly lax oversight of medical devices by the FDA. Medical devices must only demonstrate that they are “substantially equivalent” to existing devices for similar purposes, a surprisingly circular definition. Shockingly, no clinical data at all were deemed necessary for the 2010 FDA approval of a common morcellator.

Finally, Dr. Noorchashm points to the intense pressure felt by physicians in today’s “industrialized” medical system to perform at maximum productivity, as measured in hospital lengths of stay (they should be short), numbers of patients seen daily (they should be large), and return on investment in expensive equipment (naturally it should be great). These factors prejudice doctors and hospitals against choosing any procedure that might take longer, use more resources, and cost the for-profit hospital system any additional money.

Taken together, says Dr. Noorchashm, the combination of inadequate, isolated training of gynecologists, the use of inappropriate statistics, shoddy FDA oversight, and intense financial pressure on physicians all sustain the use of this technology, despite the known risks to which it exposes patients.

No one is suggesting an actual conspiracy in this connection; far from it. Rather, this tragic situation arises from the same kind of institutional inertia, resistance to change, and narrow vision that continue to plague healthcare systems around the world.

Medical Damage Control

In an ideal medical environment where patient care is held to be of paramount importance, where the Hippocratic Oath’s injunction “primum non nocere,” or “first do no harm” is held sacred, and where genuine evidence is used to inform and revise policies and procedures, Drs. Reed and Noorchashm’s personal experiences and professional campaign for change would have led to an immediate halt to morcellation, at least while the issue was being more closely examined. Device manufacturers would rapidly issue warnings on their own, and if they didn’t, regulatory agencies like the FDA would step in to enforce such steps. And clinicians would fully explain to women why an apparent time-saving, scar-reducing procedure was unwise and unsafe.

“Entrepreneurial medicine could be great, if the primary focus is to keep the patient 100% safe. However, if the primary object is to protect the practice of minimally invasive hysterectomy, defend or distract from a severe error in surgical judgment and practice, or to profit from a danger, such entrepreneurship in medicine is ethically suspect.”

—Hooman Noorchashm, MD, PhD
In effect, once the notion of patient safety is raised by a physician, that physician is seen as a traitor, and colleagues, hospitals, and other institutions quickly close ranks, isolating the whistleblower and protecting their own financial self-interests.

Thanks to Drs. Noorchashm and Reed's relentless efforts there has been some minor progress. Four medical centers have now modified their position on open morcellation. Rather than totally discontinue or at least issue a moratorium until a thorough review has been conducted, Temple University Medical Center, University of Rochester Medical Center, Brigham and Women's Hospital, and Massachusetts General Hospital now require that all morcellation be conducted using an “isolation bag” intended to prevent spillage of tumor or tissue. However, this is not a satisfactory solution. Isolation bags can tear during morcellation, spilling their potentially hazardous contents back into the patient. Additionally, bags are cumbersome and doctors cannot always see what they are morcellating, resulting in organ damage. This change in policy fails to ban morcellation entirely, so a certain amount of risks continues. Therefore, patients will continue to undergo this risky procedure.

Other institutions have not been willing to go even that far. Incredibly, after accurately describing the risk of spreading malignant cells throughout the abdomen, and after noting that “Morcellation-induced sarcomatosis (the spread of a type of cancer) will worsen the prognosis for the patient and necessitate additional surgery and chemotherapy,” a medical staff note to the OB/GYN Department at Brigham and Women’s Hospital in Boston (where Dr. Reed’s procedure was done) concludes, anticlimactically, that informed consent forms should make patients aware of the risks of morcellation. In reality, informed consent does
DANGERS OF MORCELLATION

little to protect the patient, but superbly protects the surgeon and hospital.

But the memo does not require that physicians even tell patients that they will use a morcellator. Instead, the memo only suggests it by saying: “Doctors sometimes use a mincing process called ‘morcellation’… mincing the tissue into small pieces may spread the tumor around the abdominal cavity…this may sometimes reduce the patient’s chances of being cured.” It goes on to suggest that spreading cancer this way is thought to occur “infrequently”—and then cites a range of one in 400 to one in 1,000 to support this claim. These statements are repeated in a position statement by the Society of Gynecologic Oncology (SGO) in 2013.3

Not surprisingly, this tepid approach has been strongly criticized by physicians and researchers in other countries. In an editorial, the British journal Lancet Oncology wonders “why the SGO [Society of Gynecologic Oncology] has taken such a soft line,” and recommends cracking down on device manufacturers and regulators to assure warning labels and accurate advertising for morcellators.3 And the National Institute for Health and Care Excellence in the UK, the equivalent of the US FDA, has issued provisional guidelines aimed at reducing the use of power morcellators and improving patient consent procedures.45

Dr. Noorchashm is cautiously encouraged by these changes, but he feels that they go nowhere near far enough. In letters and op-ed pieces to major US newspapers, in a barrage of letters to medical journals and professional organizations, and in approaches to state and federal legislators, he advocates for an immediate moratorium on morcellation.46 He and Dr. Reed have also founded a petition on the www.change.org website which reads: “Place an immediate moratorium on intracorporeal uterine morcellation during minimally invasive hysterectomy, on all gynecological tissue morcellation devices and any devices, used to morcellate the uterus intracorporeally in the United States and Abroad. It is your high duty to first, do no harm.”

Almost daily, Drs. Reed and Noorchashm hear from other couples whose lives and loved ones have been irreparably harmed by morcellation, each couple telling their own version of an eerily similar story: they were not told that morcellation would be used, they were not informed of the risk, alternatives were not discussed, and cancers, when discovered, were at advanced stages. Yet doctors continue to use morcellation on legions of women day in and day out.

Despite a flurry of articles in the gynecologic and general medical literature questioning or condemning the practice, morcellation continues to be used on women daily at hospitals throughout the country. Its proponents have not backed down. In an email received shortly before press time, Dr. Noorchashm repeated his pleas, and directed them to readers of this magazine: “I again ask for your help in keeping this hazard in the public eye until it is resolved.” The gynecological associations have not acted to stop this dangerous procedure.

Due to Drs. Noorchashm and Reed’s herculean efforts, the Food and Drug Administration has finally issued a safety communication on the use of laparoscopic uterine power morcellation in hysterectomy. Yet according Dr. Noorchashm, “…the FDA advisory on morcellation is definitely insufficient in protecting women. In fact, given the extensive analysis performed by the FDA public health specialists revealing a one in 350 mortality hazard, we are astonished that this equipment was not pulled from the marketplace. Functionally, the FDA has left this hazard in the hands of the patient to inform themselves…This is not an acceptable response from a Federal agency entrusted with protecting the public effectively—particularly because these devices are regulated by the FDA.” Yet as we go to press, morcellation and its very real risks continue to be used on uninformed patients.
DANGERS OF MORCELLATION

There is still much work to be done to stop this dangerous procedure from bringing deadly cancer into the lives of even more innocent women.

Summary

Modern technology has delivered some genuinely miraculous techniques capable of relieving suffering, reducing costs, and minimizing complications of surgical procedures. But sometimes newer and faster is not better, and may even be harmful.

Morcellation, chopping up a fibroid-laden uterus for easy removal through a laparoscope, held the promise of shorter operations, smaller scars, and faster returns to everyday activities. But its proponents overlooked, downplayed, or concealed the risk of spreading deadly uterine cancer in a small, but by no means minuscule, proportion of cases.

Morcellation continues to be used in the US, driven by inadequate physician training, institutional inertia, and corporate greed. Even now, few hospitals require that the technique, and associated risks, be revealed to, much less discussed with, patients prior to an elective hysterectomy.47

If you or someone you care about is facing a hysterectomy, it is essential that you know whether morcellation is being contemplated in your case. Ask your physician long before you are faced with signing an informed consent form and the operation is imminent. Demand to know your options. The wisest choice, if this article has moved you, please consider signing Dr. Noorhashem’s online petition at www.change.org.

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

Morcellation

NEWS UPDATE


As we approach press time, Johnson & Johnson announced it will suspend worldwide sales of its power morcellator device. Note that Johnson & Johnson is not removing the device from the market, but rather stopping further sales until there is clarity in the medical community about the safety and use of this device.

Additionally, Dr. William Maisel of the FDA stated on April 17, 2014, “There is no reliable way to determine if a uterine fibroid is cancerous prior to removal. Patients should know that the FDA is discouraging the use of laparoscopic power morcellation for hysterectomy or myomectomy, and they should discuss the risks and benefits of the available treatment options with their health care professionals.”

This summer, the FDA will convene a public meeting of the Obstetrics and Gynecological Medical Devices Panel to discuss laparoscopic power morcellation and hear from patients, physicians, and manufacturers.

Changing medical thinking, practice, and regulation is too often a painfully slow process that allows years of needless suffering for far too many patients. Until Dr. Noorchashm tirelessly and courageously began to sound the alarm morcellation was performed on too many women without concern for the lethal risks perpetuated. Specific hospitals, medical professions, device manufacturers, and the FDA are beginning to respond, albeit somewhat cautiously, to Dr. Noorchashm’s warnings.

In the space of several months, Dr. Noorchashm has created a vital awareness to change a harmful medical practice that normally takes thousands of deaths and years of fighting bureaucracy and manufacturers. His is a remarkable accomplishment. While there are still massive obstacles to overcome—such as medical societies, physicians, and hospitals who continue to endorse morcellation—Dr. Noorchashm has brought a powerful light onto a harmful business-as-usual medical practice. His hopes and ours is that going forward, no woman should unnecessarily be exposed to the life-threatening risk of cancer through morcellation.
Scientists have identified specific extracts from cruciferous vegetables—such as broccoli, cauliflower, cabbage, and Brussels sprouts—that help maintain healthy hormone metabolite balance. Triple Action Cruciferous Vegetable Extract combines some of these plant extracts into a comprehensive formula for optimal DNA protection.

I3C (indole-3-carbinol) and DIM (di-indolyl-methane) favorably modulate estrogen metabolism and induce liver detoxification enzymes to help neutralize potentially harmful estrogen metabolites and xenoestrogens (estrogen-like environmental chemicals).1-4

Extracts of broccoli, watercress, and rosemary provide glucosinolates, isothiocyanates, carnosic acid, and carnosol—bioactive compounds that have a multitude of favorable effects on estrogen metabolism and cell division.5-8 Apigenin, a powerful plant flavonoid found in plants such as parsley and celery, is also added to the formula to boost cell protection,9 while 25 mg of a natural source of benzyl isothiocyanate (BITC), are included to maintain cell health.10

Consumers should be aware that while consumption of cruciferous vegetables is highly recommended, the cooking process depletes many of the beneficial compounds such as I3C.

For those weighing less than 160 pounds, just one capsule a day provides optimal potencies. Those weighing over 160 pounds should consider taking two capsules a day. A bottle containing 60 vegetarian capsules of Triple Action Cruciferous Vegetable Extract retails for $24. If a member buys four bottles, the price is reduced to $22.20 per bottle.

Those who want to obtain the benefits of trans-resveratrol can order Triple Action Cruciferous Vegetable Extract with Resveratrol. Each capsule provides 20 mg of trans-resveratrol in addition to the vegetable extracts and retails for $32 per 60-capsule bottle. When a member buys four bottles, the price is reduced to $22.20 per bottle.

REFERENCES

To order Triple Action Cruciferous Vegetable Extract, 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.
Folate is involved in neurotransmitter synthesis and critical enzymatic reactions throughout the body. By depleting excess homocysteine, folate benefits cardiovascular health and nervous system function.

Those who take ordinary folate supplements, however, may not be experiencing its full spectrum of effects. This is because once ingested, not everyone converts folate to its biologically active form called 5-methyltetrahydrofolate (5-MTHF). Research shows that in a large proportion of the population, genetic enzyme deficiencies prevent the conversion of folate to 5-MTHF, leaving many vulnerable to low blood folate levels (and higher-than-desired homocysteine).

A BIOACTIVE FORM OF FOLATE

A more useful approach is to take the bioactive folate 5-MTHF directly, which has been declassified as a drug and is now available as a dietary supplement. 5-MTHF has been shown to dramatically raise blood serum folate levels compared with folic acid supplementation. This bioactive folate is up to seven times more bioavailable than folic acid. This greater bioavailability is especially important in people who have a genetic enzyme deficiency since it requires no conversion to become metabolically active.

People with elevated homocysteine levels have a greater risk of cognitive decline. Unlike folic acid, 5-MTHF is able to cross the blood-brain barrier, which is especially important for people with cognitive difficulties, to enhance the synthesis of acetylcholine in the brain—the neurotransmitter associated with memory.

Studies also show that the effectiveness of 5-MTHF can be further enhanced by co-supplementing with methylcobalamin (the active form of vitamin B12), vitamin B6, and riboflavin. 5-MTHF is up to seven times more bioavailable than regular folic acid.

A bottle containing 100 vegetarian capsules of Optimized Folate providing 1,000 mcg of bioactive folate in each capsule retails for $28. If a member buys four bottles, the cost is only $18.75 per bottle.

References

Quatrefolic® is a registered trademark of Gnosis S.p.A.
At Life Extension®, we continually update our formulas to reflect the latest research findings. The Ultra Natural Prostate formula provides the latest scientifically validated, standardized botanical extracts shown to promote healthy prostate function. No other prostate protection formula provides such a broad array of nutrients to support the multiple factors involved in supporting the aging prostate gland. Here are the ingredients in the Ultra Natural Prostate formula:

- **Standardized lignans** convert to enterolactone in the intestine, which is then absorbed into the bloodstream to provide support for prostate cells against excess estrogen levels.1,3
- **AprèsFlex®**, supports normal inhibition of 5-LOX, an enzyme that is associated with undesirable cell division changes.4.5
- **Stinging and Dwarf nettle root extracts** help support prostate cells against excess estrogen levels.6
- **Saw Palmetto CO2 extract** helps inhibit dihydrotestosterone (DHT) activity in the prostate, helps support normal urinary flow, and helps regulate inflammatory reactions in the prostate.8,10
- **Pygeum (Pygeum africanum) extract** helps suppress prostat glandin production in the prostate and supports healthy urination patterns.11.13
- **Pumpkin seed oil**, from select pumpkins, enhances the composition of free fatty acids and augments saw palmetto’s benefits.14.16
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life.17.19
- **Graminex® Flower Pollen Extractᵀᴹ** has been shown to help relax the smooth muscles of the urethra and help regulate inflammatory reactions.20.22
- **Boron** has been shown to slow elevation of prostate-specific antigen (PSA).20.22
- **Lycopene** supports efficient cellular communication, helps maintain healthy DNA, regulates hormonal metabolism, and promotes healthy prostate size and structure.24.26

The suggested daily dose of two softgels of Ultra Natural Prostate provides:

- **Saw Palmetto CO2 extract** (fruit) [providing 272 mg total fatty acids] 320 mg
- **Graminex® Flower Pollen Extractᵀᴹ** (from rye) 252 mg
- **Stinging and Dwarf nettle extracts** (root) 240 mg
- **Beta-Sitosterol** (from pine) 180 mg
- **Phospholipid** 160 mg
- **Pyegeum extract** (bark) 100 mg
- **Pumpkin seed oil** (providing 170 mg total fatty acids) 100 mg
- **AprèsFlex® Indian frankincense** (Boswellia serrata) extract (gum resin) (providing 14 mg AKBAᵀᴹ) 70 mg
- **Proprietary Enterolactone Precursors Blend** (HMRlignan™ Norway spruce [Picea abies] [knot wood] and Flax [seed] lignan extracts) 20 mg
- **Lycopene** (from natural tomato extract [fruit]) 10 mg
- **Boron** (as Albion® bororganic glycine) 3 mg

*3-0-acetylated-11-keto-B-boswellic acid

A bottle of 60 softgels of Ultra Natural Prostate retails for $38. If a member buys four bottles, the price is reduced to $26.25 per bottle. If a member buys 12 bottles, the price is $24.

Contains soybeans.

To order Ultra Natural Prostate, call 1-800-544-4400 or visit www.LifeExtension.com

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Jean Braure: No Mountain Too High, No Ocean Too Wide

The title of Jean Braure’s autobiography is *The Sailor Who Climbs Mountains*. It’s a simple, effective title, but Braure’s modesty doesn’t allow him to elaborate on the cover of his book. Only when you flip through the pages do you realize that he’s not just a sailor; rather, he’s a three-time Olympic sailor, having competed in the Soling class in 1984, and the Tornado class in the 1988 and 1992 Summer Olympics. And he’s not just a mountain climber either. He has reached the summit of some of the most impressive peaks in the world, including Mont Blanc in France, the Matterhorn in Switzerland, Kala Patar in Nepal, and Mount Rainier in the United States. Now, at 78 years old, he’s still climbing, with plans to scale the Monte Rosa in Switzerland, which is one of the highest peaks in the country.
A World Traveler

Braure was born in Paris, France, to a French father and a Swiss mother. He served in the French Navy on a training ship for Midshipmen that sailed around the world in one year. When the Algerian War was over, he got his United States citizenship and worked in Miami Beach until he was offered a job in the US Virgin Islands in 1964, where he has lived ever since. Though he had sailing in his blood from his days in the Navy, it took him some time to realize that he wanted to get back on the water.

“Soon after moving to the Virgin Islands, I discovered that I wanted to come back to the sea,” Braure says. “I got my Captain’s license and then started a sailing school as well as a sailing charter boat business, which I still have.”

What Braure also soon discovered was that he had an incredible knack for winning sailing competitions.

“I was very good in competitive sailing,” he says. “I was in excellent physical shape and had the will to run an Olympic Campaign, which meant I had to travel so I could train with the best in the world and also learn from past champions. I also had to cover the expenses of the endeavor.”

He says that his greatest sailing accomplishment was qualifying for the Olympics, although he did win two Rolex Cups in 1981 and 1982. In order to qualify for the Olympics, he had to place in the top 50 sailors in the United States and win the trials in the Virgin Islands, which he did for the first time at 49 years old. It was at this juncture in his life that he discovered Life Extension®.

Maximizing Health

“Maximizing Health

“I got introduced to Life Extension at the time of my training for the Olympics in 1984,” Braure says. “I became a member and realized that the supplements helped me perform better when I was at high altitude climbing or during the endurance of a race. I like omega-3s, Acetyl-L-Carnitine for endurance, and CoQ10 as an antioxidant. These days I take Life Extension glucosamine and chondroitin, and I have very little pain after exercising.”

In general, Braure says he takes supplements to improve his performance, though whether that performance is on the open ocean or the face of a mountain depends on the time of year. During hurricane season, you might find him in Nepal, where he once hiked for two weeks to reach the Mount Everest base camp.
While his efforts to stay young have clearly paid off, even a man with talents as great as Braure still has to know his limits. "I stopped doing solo glacier traversing when my friend died in a crevasse," he says. "And I stopped doing extreme climbs at age 76."

But when he does choose to climb and compete in sports, the number of years he's been on earth stays out of his mind. "I also play tennis in the evening two or three times a week and I listen to my body," he says, "Sometimes I’ll do weight lifting two times a week or more.”

He does all of this to maintain as much activity as he can. "My longevity goals are to function properly as long as possible without much muscular pain or fatal illness,” he says. “I do everything possible to stave off deterioration. I have a good diet, I take supplements from Life Extension, and I exercise.”

Braure even admits to being difficult in restaurants these days, as he only drinks red wines in moderation with less than 13% alcohol content. Also, as he’s read in Life Extension, he pays attention to how his food is cooked. “Cooking fast at high temperatures damages our cells and results in glycation and inflammation,” he says. “I remember my youth when cooking and the preparation of food was slow and served with a lot of veggies. Today I try to eat that way and I avoid most meat, especially red meat.”

While his efforts to stay young have clearly paid off, even a man with talents as great as Braure still has to know his limits. "I stopped doing solo glacier traversing when my friend died in a crevasse,” he says. “And I stopped doing extreme climbs at age 76."

But when he does choose to climb and compete in sports, the number of years he's been on earth stays out of his mind. ●

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

The retail price for a bottle containing 90 softgels is $30. If a member buys four bottles, the price is reduced to $20.25 per bottle.

(The same Super K formula consisting of Vitamin K1, K2 (MK-4) and K2 (MK-7) can be found in the Life Extension® Super Booster. If you take the Super Booster, you do not need additional Super K with Advanced K2 Complex softgels.)

**VITAMIN K1** is the form of vitamin K that is found in green vegetables. K1 is tightly bound to plant fiber, so only a fraction is absorbed into the bloodstream. Supplementation ensures ample K1 blood levels.

**VITAMIN K2** is usually found in meats, dairy, and egg yolks. Since you may be avoiding these foods for health reasons, ingesting a K2 supplement is essential. MK-4 is the most rapidly absorbed form of K2, and MK-7 boasts a very long half-life in the body, making both forms the perfect complement to any vitamin K regimen.

Super K formula provides in just one daily softgel:

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>K2 (MK-7)</td>
<td>200 mcg</td>
</tr>
<tr>
<td>K2 (MK-4)</td>
<td>1000 mcg</td>
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<tr>
<td>K1</td>
<td>1000 mcg</td>
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</table>

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**References**


C O M P R E H E N S I V E  
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F O R M U L A

There are three forms of vitamin K that the human body can utilize to promote arterial health and bone support.1-8

Life Extension®’s Super K with Advanced K2 Complex provides the dynamic trio of vitamin K forms in one softgel, including vitamin K1, vitamin K2 (MK-4), and vitamin K2 (MK-7).

To order Super K with Advanced K2 Complex or Super Booster, call 1-800-544-4440 or visit www.LifeExtension.com

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The scalp and hair follicles play a critical role in the health of the hair, and they're continually challenged by chemical, mechanical, and environmental stressors. A novel plant extract derived from the rare Argan tree—enhanced by supporting compounds—protects and stimulates the activity of self-renewing dermal stem cells. This serves to moisturize the scalp, provide nutrients to every strand of hair, and sustain a strong hair growth cycle.1,2

ARGAN OIL

The new Rejuvenating Scalp Serum contains Argan oil, which is unlike any other oil. It is a “dry” oil, easily absorbed by the skin so it leaves no residue or build-up on the hair or scalp. Argan oil has been shown to be exceptionally effective at targeting scalp skin cells to prevent dry scalp conditions, nourish hair follicles, and revive dull, tired, brittle hair.1,2

The effectiveness of the Argan oil in Rejuvenating Scalp Serum is enhanced by four compounds:

1. Procyanidin B-2 to support hair growth.2-5
2. Biotin to help support hair growth.6
3. Copper to support hair follicles.
4. Tea extracts to inhibit free radicals7 that cause dryness, itchiness, and dullness of the scalp.

SCALP AND HAIR HEALTH

The suggested use of Rejuvenating Scalp Serum is to massage 3-5 drops into the scalp each day. This will:

• Improve the health of the scalp.
• Actively nourish hair follicles.
• Promote natural hair growth cycle.
• Lock in moisture for a silky shine.
• Promote strong hair fibers.
• Improve hair texture and volume.

A 2-ounce bottle of Cosmesis Rejuvenating Scalp Serum retails for $46. If a member buys two bottles, the price is reduced to $29.25 per bottle.

References

To order Cosmesis Rejuvenating Scalp Serum, call 1-800-544-4440 or visit www.LifeExtension.com
As we get older, our eyes become vulnerable to a variety of insults that can cause irritation and dry eye. With just a few drops of the proper eye lubricant, eye irritation stemming from dryness may be alleviated.

Brite Eyes provides a powerful dose of two well-established lubricants in every drop, soothing eye discomfort without irritation.

Hydroxymethyl-cellulose and glycerin are FDA-approved for ophthalmic use and are uniquely preserved with potent antioxidants and anti-glycating agents.

The Brite Eyes formula is buffered in a way to make it soothing to the eye. The suggested use of Brite Eyes III is to apply 1 to 2 drops in each eye every day.

Each box of Brite Eyes III contains two individual vials that provide 5 mL each. The reason for putting Brite Eyes into individual vials is to reduce the risk of bacterial contamination. Having small vials also makes it convenient for consumers to keep Brite Eyes readily accessible at home, the office, in one’s purse or pocket, and other places where access to a soothing eye drop is needed.

The retail price for a box containing two 5 mL vials of Brite Eyes III is $34. If a member buys four boxes, the price is reduced to $24 per box.

To order Brite Eyes III, call 1-800-544-4440 or visit www.LifeExtension.com
Harness The Nutritional Power Of Hemp Seeds

Few foods can match the unique nutrient profile of hemp seeds. Their noteworthy amounts of alpha-linolenic acid (ALA) and gamma linolenic acid (GLA) make hemp seeds a natural anti-inflammatory powerhouse.

Hemp Seed’s Journey

Hemp (Cannabis sativa L.) has been celebrated for thousands of years due to its high quality and durable fibers, which have been used to manufacture boat sails, carpeting, paper, and clothing. It most likely originated in the Himalayas before being brought to the Middle East and Europe by the Aryans and Christopher Columbus. Today, hemp seeds are used for a variety of dietary and medicinal purposes. China, Romania, and Australia are currently among today’s top producers of hemp and its products.¹
Anti-Inflammatory Effects

Chronic inflammation has been associated with age-related disorders including heart disease, diabetes, and cancer. The high intake of omega-6 fatty acids relative to omega-3 fatty acids in the typical Western diet creates an imbalance that drives low-grade chronic inflammation. Reducing omega-6-rich foods like vegetable oils and increasing your intake of hemp seeds, which have an excellent content of omega-6 to omega-3s, might be part of an effective strategy to optimally balance inflammation in the body.

Furthermore, hemp seeds contain a wealth of the rare omega-6 fatty acid GLA that exerts strong anti-inflammatory activity. In the body, GLA is metabolized into dihomogamma-linolenic acid (DGLA), which interferes with the ability of arachidonic acid to make pro-inflammatory molecules. DGLA further modulates inflammation through its conversion to the anti-inflammatory compounds prostaglandin (PGE1). Additional evidence reported in the Journal of Clinical Immunology suggests that DGLA prevents an excessive output of interleukin-1 from monocytes, thereby controlling inflammation.

Cardiovascular Disease Prevention

In a meta-analysis of 61 observational studies involving nearly 900,000 adults between the ages of 40 and 89, scientists discovered that the ratio of total cholesterol to HDL was a far better predictor of ischemic heart disease mortality in comparison with isolated cholesterol values. In fact, this meta-analysis found that the ratio of total cholesterol/HDL was two times better at predicting the risk of dying from ischemic heart disease when compared to total cholesterol alone.

What this means is that if your total cholesterol is 200 mg/dL and your HDL is 65 mg/dL, your ratio is 3.07, which places you at relatively low risk for death from a heart attack. For optimal risk reduction, the total cholesterol/HDL ratio should be less than 3.5. The problem is that as people age, total cholesterol often increases while protective HDL plummets. Ideal HDL levels are over 50-60 mg/dL.

This important total cholesterol to HDL ratio can be positively influenced by hemp seed oil, according to human research published in the European Journal of Nutrition. Scientists reported that participants consuming 1 ounce of hemp seed oil daily for four weeks lowered their ratio of total cholesterol to HDL, thereby protecting against the number one killer of Americans.

Ways To Integrate Hemp Seeds Into Your Diet

1. Sprinkle hemp seeds onto salads, cereals, oatmeal, and yogurt.
2. Add into smoothies and other shakes.
3. Eat them raw as a snack.
4. Use hemp seeds in baked goods such as breads, granola bars, and muffins.
Hemp seeds possess an abundance of the amino acid arginine. Arginine is a precursor to nitric oxide, a signaling molecule that protects against endothelial dysfunction, which underlies the development of atherosclerosis. Additionally, scientists at the Medical University of South Carolina observed a strong association between dietary arginine intake and C-reactive protein (CRP), an inflammatory marker associated with heart disease. They found that those consuming the highest amount of dietary arginine were 30% less likely to have elevated CRP.

A separate study published in the Journal of Thrombosis and Haemostasis indicates that hemp seeds can help prevent the formation of dangerous blood clots that cause heart attacks and stroke. Scientists observed that rats fed 4 grams of dietary hemp seeds for 12 weeks increased blood levels of the omega-3 fatty acid ALA, which in turn inhibited platelet aggregation.

In addition to decreasing the likelihood of a heart attack, hemp seeds might favorably alter cardiac performance after a heart attack has occurred. Restoration of blood flow to cardiac tissues (reperfusion) after a heart attack contributes to the generation of reactive oxygen species that induce contractile dysfunction and arrhythmias, which further damage the heart in a process referred to as ischemia-reperfusion injury. Researchers demonstrated that rats fed hemp seed oil daily for 12 weeks had better post-recovery performance from this serious damage compared to a control group, as the result of significant improvements in heart muscle function.

Eases Eczema Symptoms

Atopic dermatitis, also known as eczema, is a chronic inflammatory skin disorder affecting an estimated 17 million US adults and children. Skin dryness and itchiness are hallmark symptoms of the condition, with persistent scratching leading to additional complications such as a rash and other opportunistic infections. With their favorable fatty acid profile and high concentration of vitamin E, hemp seeds might provide the perfect mixture to enhance skin quality in those with atopic dermatitis.

To test the effects of hemp seed oil on the clinical symptoms of atopic dermatitis, Finnish researchers performed a randomized, controlled crossover trial wherein participants ingested either 2 tbsp of hemp seed oil or olive oil daily for eight weeks, followed by four weeks of no treatment. Participants then switched to the opposite treatment for another eight weeks. Subjects were instructed to maintain their normal diet and avoid skin creams.

During the hemp seed oil phase, participants experienced a statistically significant decrease in skin dryness of 29.4% and skin itchiness of 39%, whereas no significant changes were seen during the olive oil phase. These positive changes in skin quality are believed to be related to the beneficial improvements in subjects’ plasma fatty acid profiles.

Summary

Few seeds can match the nutrient profile of hemp seeds as a rich source of the omega-3 precursor ALA and hard-to-find beneficial GLA. Together, these health-promoting nutrients quell inflammation, enhance cardiovascular protection, and ease eczema symptoms.

Although hemp is derived from the marijuana plant (Cannabis sativa L.), it contains minuscule
concentrations of the psychoactive ingredient tetrahydrocannabinol (THC). Therefore, hemp seeds can be enjoyed as a regular part of your daily diet without the worry of experiencing psychoactive effects.3

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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What Went Wrong?

As a long-time and avid follower of *Life Extension Magazine*, I realize its knowledgeable readers won’t be surprised to hear of another example of academic bias toward a promising “alternative” cancer therapy that doesn’t fit the prevailing medical model. But I am in a unique position to write about this subject because my colleague Linda Isaacs, MD, and I battled for eight years against the entrenched interests of the National Cancer Institute (NCI), the National Institutes of Health (NIH), and unfortunately, even the National Center for Complementary Medicine (NCCAM) to have our nutritional approach to cancer fairly tested in a controlled clinical study. In my latest book *What Went Wrong*, I document how bias, indifference, and incompetence at the highest levels of the academic medical world nearly allowed our promising therapy to be discredited.¹
To sum up our therapy, we offer an aggressive nutritional approach for the treatment of cancer and other degenerative diseases. Our program involves three basic components: individualized diet, individualized supplement programs with large doses of specially formulated pancreatic enzymes for cancer patients, and detoxification routines such as coffee enemas—which, despite the controversy, come right out of the traditional medical literature.2-4

We base our therapy on the work of the controversial alternative practitioner William Donald Kelley, DDS, who during the 1960s developed his enzyme-based nutritional approach to cancer. My book One Man Alone details my formal five-year investigation of Dr. Kelley’s work, begun in 1981, and includes 50 case reports of patients who experienced long-term survival (and in many cases complete tumor regression) while under Kelley’s care.5 For example, one patient had been diagnosed at surgery in August 1982 with stage IV adenocarcinoma of the pancreas with a liver biopsy confirming metastatic cancer; all later confirmed at the Mayo Clinic. This patient is alive and well today, some 31 years from her original diagnosis, far exceeding the typical three- to six-month survival expectancy reported for the disease.

Despite such findings, in the mid-1980s I was unable to get support for further research. Kelley, in great frustration (and not a little anger) closed his office down. In 1987, intending to keep Kelley’s therapy available for those who wanted it, Dr. Isaacs and I opened a practice in New York, and from the beginning we witnessed the same type of successes I had uncovered in Kelley’s files. For example, just recently I saw for routine follow-up a patient who started with me in early December 1987. Initially diagnosed with inflammatory breast cancer with 17/17 positive nodes, she had developed skeletal metastases while on aggressive multi-agent chemotherapy. She decided to try our approach and today, more than 25 years later, she is alive and well, her disease having long ago completely regressed.

In 1993, after presenting a series of case reports at the National Cancer Institute, the then-Associate Director, Dr. Michael Friedman, suggested Dr. Isaacs and I proceed with a phase II pilot study, evaluating our therapy in patients diagnosed with advanced pancreatic cancer. We eventually published the findings of this effort in 1999, in the peer-reviewed research journal Nutrition and Cancer, describing, to our knowledge, the most positive data for the treatment of inoperable pancreatic cancer in the history of medicine.6 Even before this article appeared, in 1998, based on the preliminary data, the then-National Cancer Institute Director, Dr. Richard Klausner, approved funding for a large-scale controlled Phase III study, in which my therapy would be compared to the best available chemotherapy in the treatment of patients diagnosed with inoperable pancreatic cancer. The trial was to be supervised by the NCI and run out of Columbia University in New York City.

Initially, we had great hope that the study would be a fair, honest, and comprehensive evaluation of our treatment, as well as an opportunity to bridge the gap between conventional and alternative medicine. But from the beginning, problems plagued the study. The initial randomized design of the trial alienated potentially suitable study candidates who feared they would be told to get chemotherapy. Dr. Isaacs and I had no say on patient entry, many approved patients did not meet the entry criteria, and most patients sent to us for treatment could not or would not follow the protocol. And, many patients were kept waiting weeks as their disease progressed, before a decision about their eligibility was rendered at Columbia. The problems with the study’s management were so pervasive that after a particularly contentious meeting and exchange of letters, Dr. Linda W. Engel, the Program Officer at NCCAM in charge of overseeing the project grant, wrote in her official capacity:

> There have been numerous and very difficult scientific, operational, and procedural challenges in carrying out this trial. These have been well documented and frequently discussed…

> We discussed at considerable length his [my] concerns about the probable accrual of patients unable to comply fully with the nutrition arm of the protocol. It was our impression that everyone in the room basically agreed that, despite best efforts, there is in fact, reason to be concerned about this issue, and that it clouds interpretation of the data…7

> Said differently…many of the enrolled patients who were supposed to follow my protocol did not follow my protocol.

Despite these admitted shortcomings, the researchers at Columbia eventually terminated the trial, stating that the data demonstrated the superiority of the chemotherapy regimen used—which we later discovered...
had been developed by a group at Columbia that included the Principal Investigator of our trial, a clear conflict of interest.\(^6\)\(^\text{11}\)

Principal Investigators on a clinical trial are chosen to be the ultimate managers and referees of the study, and to be fair and objective, should have no tie intellectually or financially to any treatment under evaluation.

The Principal Investigator of our clinical trial, as we were to learn, worked closely with the Columbia research team developing the very chemotherapy regimen being used as a counter to our treatment. This relationship should have disqualified him from serving such an important role.

This connection had never been declared to us...we had to discover on our own. As the study drew to a close, my colleague Dr. Isaacs and I became increasingly concerned that the Principal Investigator seemed far too enthusiastic about the chemotherapy regimen. We began searching the peer-reviewed literature and discovered multiple articles directly linking him to the chemotherapy researchers, and specific treatment, used in our trial.

We also discovered he had failed to obtain proper informed consent for many patients, a basic requirement for any legitimate clinical study.\(^2\)\(^\text{12}\) Two federal agencies, the Office of Human Research Protections and the Food and Drug Administration, largely as a result of our complaints, have investigated the trial and reported serious mismanagement by the Columbia team. Because of these investigations, an article written by the Columbia group about the study—without, I might add, our knowledge—was rejected by the Journal of the American Medical Association. Nonetheless, they were able to get the paper into the Journal of Clinical Oncology,\(^3\) a journal previously distinguished by its publication of a fraudulent article supporting bone marrow transplantation for breast cancer.\(^4\)

In my book, What Went Wrong, I describe in detail the study’s development beginning in 1997, our initial hope for a fair and honorable study, its gradual deterioration, and our dogged fight to keep our promising therapy from being tarnished by a poorly conceived, poorly executed clinical trial. Our experiences provide yet another cautionary tale of bias and indifference toward a therapy that doesn’t fit the academic model, coupled with mismanagement and incompetence at the highest levels of the conventional medical world. For anyone wishing to learn what it’s like to battle the powers that be, this book will be an eye-opener.

**Editor’s note:** Compliance with Dr. Gonzalez’s program is challenging and the digestive problems encountered by pancreatic cancer patients can preclude them from being able to take the 200 pills a day that may be prescribed.

Those with pancreatic cancer are urged to review Life Extension’s pancreatic cancer protocol that involves a somewhat different treatment regimen. This can be accessed at www.lef.org/pancreatic

### References


Blood testing provides the ultimate information regarding correctable risk factors that may predispose you to disorders such as cancer, diabetes, cardiovascular disease, and more. Information about general health and nutritional status can also be gained through standard blood analysis. Standing behind the belief that blood testing is an essential component of any program designed to attain optimal health and longevity, Life Extension® offers this innovative and convenient service at a very affordable price. Not only is comprehensive blood testing an important step in safeguarding your health, it is a simple process from virtually anywhere in the United States.

Five Easy Steps:
1. Call 1-800-208-3444 to discuss and place your order with one of our knowledgeable health advisors. (This order form can also be faxed to 1-866-728-1050 or mailed. Online orders can also be placed at www.lifeextension.com.)
2. After your order is placed, you will be mailed either a requisition form to take to your local LabCorp Patient Service Center or a Blood Draw Kit; whichever is applicable (Please note: If a blood draw kit is used, an additional local draw fee may be incurred.)
3. Have your blood drawn.
4. Your blood test results will be sent directly to you by Life Extension.
5. Take the opportunity to discuss the results with one of our knowledgeable health advisors by calling 1-800-226-2370; or review the results with your personal physician.

It’s that simple! Don’t delay—call today!

For Our Local Members:
For those residing in the Ft. Lauderdale, Florida area, blood-draws are also performed at the Life Extension Nutrition Center from 9:00 am to 2:00 pm Monday through Saturday. Simply purchase the blood test and have it drawn with no wait! Our address is 5990 North Federal Highway, Ft. Lauderdale, FL, 33308-2633.

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**COMPREHENSIVE PANELS**

**MALE LIFE EXTENSION PANEL (LC222582)**

- Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes: C-Reactive Protein
- DHEA-S
- Homocysteine
- TSH for thyroid function
- Free Testosterone
- Estradiol
- Total Testosterone
- Vitamin D 25- hydroxy
- PSA (prostate-specific antigen)
- Hemoglobin A1c

**FEMALE LIFE EXTENSION PANEL (LC322535)**

- Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and kidney function tests PLUS 20 additional tests. CBC includes immune (white) cell count, red blood cell count and platelet count. Also includes: C-Reactive Protein
- DHEA-S
- Homocysteine
- TSH for thyroid function
- Free Testosterone
- Estradiol
- Total Testosterone
- Progesterone
- Vitamin D 25- hydroxy
- Hemoglobin A1c

**WEIGHT LOSS LOSS COMPREHENSIVE PANEL**

- CBC/Chemistry Profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-reactive protein (high sensitivity), and Ferritin.

**WEIGHT LOSS LOSS PANEL**

- CBC/Chemistry Profile (see description above), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Insulin and Hemoglobin A1c.

**MALE HORMONE ADD-ON PANEL**

- Pregnenolone and Dihydrotestosterone (DHT)
- To provide an even more in-depth analysis of a man’s hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.

**FEMALE HORMONE ADD-ON PANEL**

- Pregnenolone and Total Estrogens
- To provide an even more in-depth analysis of a woman’s hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.

**LIFE EXTENSION THYROID PANEL**

- TSH, Free T4, Free T3, T4, T3, Reverse T3, TPO, ATA

**COMPREHENSIVE THYROID PANEL**

- TSH, Free T4, Free T3, T4, T3, Reverse T3, TPO, ATA

**FOOD SAFE ALLERGY TEST**

- This test measures delayed (IgG) food allergies for 95 common foods.

**ADRENAL FUNCTION PANEL**

- DHEA-S, AM/PM Cortisol, Glucose, Insulin, Lipid Panel, RBC magnesium

**OMEGA SCORE**

- Provides valuable information on your risk of developing heart disease, sudden heart attack, and cardiac death. The Omega Score™ also includes your AA:EPA ratio, allowing you to determine and track a major factor in total body inflammation.

**HEALTHY AGING PANEL-COMPREHENSIVE**

- CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Homocysteine, Vitamin D 25-hydroxy, Hemoglobin A1c, Ferritin, Uric acid, Fibrinogen, and Insulin.

**HEALTHY AGING PANEL-BASIC**

- CBC/Chemistry profile (see description above), C-reactive protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, Ferritin, and Insulin.

**VAP™ TEST**

- The VAP™ cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclass.

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* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional $35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.
** This test is packaged as a kit, requiring a finger stick performed at home.
**GLYCOMARK** (LC500115) $99
This test measures your average maximum glucose over the past two weeks and is an effective tool in monitoring postmeal glucose control.

**NUTRIENT PANEL** (LC100024) $349
- Vitamin B12, Folate, Vitamin D-25 hydroxy
- Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC magnesium.

**MALE HEALTH**

**PSA (PROSTATE-SPECIFIC ANTIGEN)** (LC010322) $31
Can provide an early warning sign for prostate disorders and possible cancer.

**HORMONES**

**DHEA-SULFATE** (LC004020) $61
This test shows if you are taking the proper amount of DHEA. This test normally costs $100 or more at commercial laboratories.

**MALE BASIC HORMONE PANEL** (LC100012) $75
- DHEA-S, Estradiol, Free and Total Testosterone, PSA

**FEMALE BASIC HORMONE PANEL** (LC100013) $75
- DHEA-S, Estradiol, Free and Total Testosterone, Progesterone

**DIHYDROTESTOSTERONE (DHT)** (LC500142) $99
Measures serum concentrations of DHT.

**ESTRADIOL** (LC004515) $33
For men and women. Determines the proper amount in the body.

**INSULIN FASTING** (LC004333) $25
Can predict those at risk of diabetes, obesity, and heart and other diseases.

**PREGNADIONE** (LC140707) $116
Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing’s syndrome.

**PROGESTERONE** (LC004317) $55
Primarily for women. Determines the proper amount in the body.

**SEX HORMONE BINDING GLOBULIN (SHBG)** (LC082016) $33
This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.

**BONE HEALTH**

**VITAMIN D (25OH)** (LC081950) $47
This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.

**OSTEOCALCIN** (LC010249) $91
Osteocalcin is often used as a biochemical marker, or biomarker, for the bone formation process. It has been routinely observed that higher serum osteocalcin levels are relatively well correlated with bone diseases characterized by increased bone turnover, especially osteoporosis.

**DPD CROSS LINK URINE TEST** (LC51105) $79
The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis.
# PRODUCTS

## AMINO ACIDS
- Acetyl-L-Carnitine
- Acetyl-L-Carnitine-Arginate
- Branched Chain Amino Acids
- D, L-Phenylalanine Capsules
- Glycine Capsules
- L-Arginine Capsules
- Arginine/L-Omithine Capsules
- L-Carnitine Capsules
- L-Glutathione, L-Cysteine & C
- L-Glutamine Capsules
- L-Glutamine Powder
- L-Tyrosine Tablets
- Mega L-Glutathione Capsules
- N-Acetyl-L-Cysteine Capsules
- Optimized Carnitine with GlycoCarn®
- Pharma QABA®
- Super Carnosine Capsules
- Tyrosine Capsules

## BONE & JOINT HEALTH
- ArthroMax® with Theaflavins and AprèsFlex®
- ArthroMax® Advanced with UC-II® and AprèsFlex®
- Bone-Up™
- Bone Restore
- Bone Restore w/Vitamin K2
- Bone Strength Formula w/KoAct™
- Dr. Strum’s Intensive Bone Formula
- Fast Acting Joint Formula
- Glucosamine Chondroitin Capsules

## BRAIN HEALTH
- Acetyl-L-Carnitine
- Acetyl-L-Carnitine-Arginate
- Brain Shield™
- CDP Choline Capsules
- Cognitex® with Brain Shield™
- Cognitex® with Pregnenolone & Brain Shield™
- Cognitex® Basics
- DMAE Bitartrate
- Ginkgo Biloba Certified Extract™
- Huperzine A
- Lecithin Granules
- Methylcobalamin Lozenges
- Migra-Mag with Brain Shield™
- Neuro-Mag™ Magnesium L-Threonate
- Optimized Ashwagandha Extract
- Phosphatidylserine Capsules
- Rhodiola Extract
- Super Ginkgo Extract
- Vinpocetine

## DIGESTIVE
- Bifido GI Balance
- Carnosoothe w/PicroProtect
- Digest RO™
- Esophageal Guardian
- Enhanced Super Digestive Enzymes
- Extraordinary Enzymes
- FiorAssist®
- Gutsy Chewy Digestive Tablets
- Pancreatin
- Regimint
- Theracol Probiotics

## DURK AND SANDY PRODUCTS
- Blast™
- Inner Power™

## EYE CARE
- Bilberry Extract
- Brite Eyes III
- Eye Pressure Support with Mirtogenol®
- MacuGuard™ Ocular Support
- MacuGuard™ Ocular Support with Astaxanthin
- Solarshield Sunglasses

## FIBER
- AppleWise Polyphenol
- Fiber Food
- TruFiber®
- WellBet PXG® plus Mulberry

## FOOD
- Rich Rewards™ Black Bean Vegetable Soup
- Rich Rewards™ Spicy Cruciferous Vegetable Soup
- Rich Rewards™ Cruciferous Vegetable Soup
- Rich Rewards™ Lentil Soup
- Rich Rewards™ Mung Bean Soup with Tumeric
- Rich Rewards™ Coffee (Available in mocha, vanilla and decaffeinated)
- Rich Rewards™ Dark Chocolate
- Rich Rewards™ Protein Creamer
- Rich Rewards™ Whole Bean Coffee

## HAIR CARE
- Dr. Proctor’s Advanced Hair Formula
- Dr. Proctor’s Shampoo
- Super-Absorbable Tocotrienols

## HEART HEALTH
- AppleWise Polyphenol
- Advanced Lipid Control
- Aspirin (Enteric Coated)
- Cardio Peak® w/Stanadized Hawthorn and Arjuna Cho-Lees™
- D-Ribose Tablets
- D-Ribose Powder
- Endothelial Defense™ with Full-Spectrum Pomegranate™
- Fibrinogen Resist
- Forskolin
- Homocysteine Resist
- Natural BP Management
- Olive Leaf Vascular Support
- Peak ATP® with GlycoCarn®
- PhosphOmega®
- Policosanol
- PROVINAL® Purified Omega-7
- Pycnogenol® French Maritime Pine Bark Extract
- Red Yeast Rice
- Super Absorbable CoQ10™ with d-Limonene Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
- Super Omega with Krill & Astaxanthin
- Super Ubiquinol CoQ10
- Super Ubiquinol CoQ10 with BioPQQ®
- Super Ubiquinol CoQ10 with Enhanced Mitochondrial™ Support
- Theaflavin Standardized Extract
- TMG Powder
- TMG Liquid Capsules

## HERBAL/PHYTO PRODUCTS
- Artichoke Leaf Extract
- Asian Energy Boost
- Astaxathin w/Phospholipids
- Berry Complete
- Blueberry Extract
- Blueberry Extract w/Pomegranate
- Butterbur Extract w/Stanadized Rosmarinic Acid
- Calcium D-Glucarate
- Enhanced Berry Complete with Acai Full-Spectrum Pomegranate™
- Grapeseed Extract with Resveratrol & Pterostilbene
- Huperzine A
- Kyoic® Garlic Formula 102 + 105
- Kyoic® Reserve
- Mega Green Tea Extract
- Mega Green Tea Extract (Decaffeinated) (also w/CoffeeGenic® Green Coffee Extract)
- Mega Lycopene Extract
- Optimized Ashwagandha Extract
- Optimized Garlic
- Pomegranate Extract
- Pomegranate Juice Concentrate
- Pycnogenol

## IMMUNE ENHANCEMENT
- AHCC® (Active Hexose Correlated Compound)
- Black Cumin Seed Oil
- Black Cumin Seed Oil w/Bio-Curcumin®
- Buffered Vitamin C Powder
- Echinacea Extract
- FlorAssist™ Probiotic
- i26 Hyperimmune Egg
- Immune Modulator w/Tinofend®
- Immune Protect with PARACTIN™
- Lactoferrin
- Norwegian Shark Liver Oil
- Optimized Fucoidan w/Maritech® 926
- Peony Immune
- ProBoost™ Thymic Protein A
- Reishi Extract Mushroom Complex
- Vitamin C w/Dihydromyricetin
- Winter Wellness™
- Zinc Lozenges

## INFILAMATORY REACTIONS
- Arthro-Immune Joint Support
- ArthroMax® with Theaflavins
- Boswellia
- Bromelain (Specially-coated)
- Cytokine Suppress™ w/EGCG
- DHA (Vegetarian Sourced)
- Fast Acting Joint Formula
- Ginger Force
- Krill Healthy Joint Formula
- 5-LOX Inhibitor w/AprèsFlex®
- Mega EPA/DHA
- Mega GLA with Sesame Lignans
- MSM
- Omega-3 Whirl
- Organic Golden Flax Seed
- Serrafflazyme
- SODzyme™ w/GlISOdin® and Wolfberry
- Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
- Tart Cherry w/Stanadized CherryPURE®
- Zyflamend® Whole Body

## LIVER HEALTH
- Branch Chain Amino Acids
- Certified European Milk Thistle
- N-Acetyl Cysteine
- Liver Efficiency Formula
- European Milk Thistle
- Advanced Phospholipid Delivery
- Hepatopro
- SAMe
- Silymarin
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<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<td>ADVANCED LIPID CONTROL - 60 veg. caps</td>
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<td>Buy 4 bottles, price each</td>
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<td>APPLEWISE POLYPHENOL EXTRACT - 600 mg, 30 veg. caps</td>
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<td>ARGinine/ORINToNE - 500/250, 100 caps</td>
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<td>ARGinine/ORINToNE POWDER - 150 grams</td>
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<td>(L)-ARGININE CAPS - 700 mg, 200 veg. caps</td>
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<td>ARTHROMAX w/ THEAFLAVINS &amp; APRESFLEX - 120 veg. caps</td>
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<tr>
<td>ARTTHRO-IMMUNE JOINT SUPPORT - 60 veg. caps</td>
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<td>ARTICHOKE LEAF EXTRACT - 500 mg, 180 veg. caps</td>
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<td>16.88</td>
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<td>ASCORBYL PALMITATE - 500 mg, 100 veg. caps</td>
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<td>00888</td>
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<tr>
<td>ASHWAGANDHA EXTRACT (OPTIMIZED) - 60 veg. caps</td>
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<td>Buy 4 bottles, price each</td>
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<tr>
<td>ASIAN ENERGY BOOST - 90 veg. caps</td>
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<tr>
<td>Buy 4 bottles, price each</td>
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<td>ASPIRIN - 81 mg, 300 enteric coated tablets</td>
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<td>BERRY COMPLETE - 30 veg. caps</td>
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<td>BIDATIVE MILK PEPTIDES - 30 caps</td>
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<td>BIO-COLLAGEN w/PATENTED UC-II - 60 caps</td>
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<td>01006</td>
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<td>BISIL™ - 5 mg, 30 veg. caps</td>
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<td>SUB-TOTAL OF COLUMN 2</td>
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<td>To order call: 1.954.766.8433 or 1.800.544.4440</td>
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<tr>
<td>JULY 2014</td>
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<tr>
<td>LIFE EXTENSION MEMBERS RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS</td>
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<td>No.</td>
<td>Description</td>
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<td>Member Each</td>
<td>Qty</td>
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<td>01653</td>
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<td>01651</td>
<td>CALCIUM D-GLUCARATE - 200 mg, 60 veg. caps</td>
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<td>01693</td>
<td>CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEGENIC® GREEN COFFEE EXTRACT</td>
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<td>01700</td>
<td>CARDIO PEAK® w/STANDARDIZED HAWTHORN &amp; ARJUNA - 120 veg. caps</td>
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<td>00916</td>
<td>CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps</td>
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<td>01532</td>
<td>L-CARNITINE - 500 mg, 30 veg. caps</td>
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<td>01258</td>
<td>CARNOSOOTHE w/MICROPRIOTECH™ - 60 veg. caps</td>
<td>$29.95</td>
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<td>CARNOSINE (SUPER) - 500 mg, 90 veg. caps</td>
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<td>01003</td>
<td>CAT MIX - 100 grams powder</td>
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<td>CDP CHOLINE CAPS - 250 mg, 60 veg. caps</td>
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<td>01391</td>
<td>CHILDREN’S FORMULA LIFE EXTENSION MIX® - 100 chewable tablets</td>
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<td>00550</td>
<td>CHOLARELLA - 500 mg, 200 tablets</td>
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<td>01571</td>
<td>CHLOROPHYLLIN - 100 mg, 100 veg. caps</td>
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<td>01359</td>
<td>CHI-LESH® - 90 capsules</td>
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<td>01477</td>
<td>CHROMIUM ULTRA - 100 veg. caps</td>
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<td>$18.00</td>
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<td>01504</td>
<td>CHROMIUM w/CROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps</td>
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<td>$6.75</td>
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<td>01503</td>
<td>CINSULIN® w/WINESE® AND CROMINEX® 3+- 90 veg. caps</td>
<td>$38.00</td>
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<td>01818</td>
<td>CITRUMAX® (SUPER) - 180 veg. caps</td>
<td>$40.00</td>
<td>$30.00</td>
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<tr>
<td>00818</td>
<td>CLA BLEND W/SESAME LIGNANE (SUPER) - 1,200 mg, 120 softgels</td>
<td>$36.00</td>
<td>$27.00</td>
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<td>00819</td>
<td>CLA BLEND w/GUAHARA &amp; SESAME (SUPER) - 1,000 mg, 120 softgels</td>
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<td>$31.50</td>
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<tr>
<td>01707</td>
<td>COFFEGENIC® WEIGHT MANAGEMENT® w/GREEN COFFEE EXTRACT - 90 veg. caps</td>
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<td>$30.00</td>
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<td>01896</td>
<td>COGNITEX® w/BRN SHIELD® - 90 softgels</td>
<td>$60.00</td>
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**SUB-TOTAL OF COLUMN 3**

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<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<td>01199</td>
<td>COPPER CAPSULES - 2 mg, 100 caps</td>
<td>$9.91</td>
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<td>00949</td>
<td>COQ10 w/α-LIUMONENE (SUPER-ABSORBABLE) - 50 mg, 60 softgels</td>
<td>$25.00</td>
<td>$18.75</td>
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<tr>
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<td>COQ10 w/α-LIUMONENE (SUPER-ABSORBABLE) - 100 mg, 100 softgels</td>
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<td>$49.50</td>
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<tr>
<td>01226</td>
<td>COQ10 (SUPER-UBIQUINOL) - 100 mg, 60 softgels</td>
<td>$56.00</td>
<td>$42.00</td>
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<tr>
<td>01733</td>
<td>COQ10 w/NIPOQ® (SUPER-UBIQUINOL) - 100 mg, 30 softgels</td>
<td>$54.00</td>
<td>$40.50</td>
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<tr>
<td>01426</td>
<td>COQ10 w/ENH MITOCHONDIAL SUPPORT™ (SUPER-UBIQUINOL) - 100 mg, 60 softgels</td>
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<td>$46.50</td>
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<tr>
<td>01425</td>
<td>COQ10 w/ENH MITOCHONDIAL SUPPORT™ (SUPER-UBIQUINOL) - 60 mg, 100 softgels</td>
<td>$58.00</td>
<td>$43.50</td>
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<tr>
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<td>CORIOLUS SUPER STRENGTH - 600 mg, 100 veg. caps</td>
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<td>COSMESIS ADVANCED TRIPLE PEPTIDE SERUM - 1 oz bottle</td>
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<td>COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - 33 oz</td>
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<tr>
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<td>COSMESIS ANTI-AGING MASK - 2 oz</td>
<td>$72.00</td>
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<td>COSMESIS ANTI-AGING REJUVENATING FACE CREAM - 2 oz</td>
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<td>COSMESIS ANTI-AGING REJUVENATING SCALP SERUM - 2 oz</td>
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<td>COSMESIS ANTI-GLYCATION SERUM - 1 oz</td>
<td>$33.00</td>
<td>$24.75</td>
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**SUB-TOTAL OF COLUMN 4**

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

JULY 2014
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<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<td>Buy 2 jars, price each</td>
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<tr>
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**SUB-TOTAL OF COLUMN 5**

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**SUB-TOTAL OF COLUMN 6**

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

**To order call: 1.954.766.8433 or 1.800.544.4440**
**Buyers Club Order Form**

To order online visit: www.LifeExtension.com

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<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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**SUB-TOTAL OF COLUMN 7**

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

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**SUB-TOTAL OF COLUMN 8**

JULY 2014
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**SUB-TOTAL OF COLUMN 9**

**SUB-TOTAL OF COLUMN 10**

**L**

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<td>GRAPE SEED EXTRACT w/RESVERATROL &amp; PYEROSTILBENE - 100 mg, 60 veg caps</td>
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To order call: 1.954.766.8433 or 1.800.544.4440
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<td>Macuguard™ Ocular Support w/Astaxanthin - 60 softgels</td>
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<td>Methylcobalamin - 1 mg, 60 lozenges (vanilla)</td>
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<td>Natural Estrogen w/Pomegranate Extract - 60 caplets</td>
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<td>Neuro-Mag™ Magnesium L-Threonate - 90 veg. caps</td>
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<td>Neuro-Mag™ L-Threonate w/Calcium &amp; Vitamin D 225 grams - Lemon flavor</td>
<td>40.00</td>
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<tr>
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<td>No-Flush niacin - 800 mg, 100 caps</td>
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<td>01800</td>
<td>Olive Leaf Cardiovascular Support - 500 mg, 60 veg caps</td>
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<td>01819</td>
<td>Omega with Krill &amp; Astaxanthin (Super) - 120 softgels</td>
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<td>Omega 3 EPA/DHA w/Sesame Lignans &amp; Olive Fruit Extract (Super) - 60 softgels</td>
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**Sub-total of Column 11**

**Sub-total of Column 12**

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

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<thead>
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<th>No.</th>
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<td>OMEGA 3 LEMON WHIRL - 16 oz bottle</td>
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<td>OMEGA 3 TROPICAL WHIRL - 16 oz bottle</td>
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<td>ONE-PER-DAY - 60 tablets</td>
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<td>01328</td>
<td>ONLY TRACE MINERALS - 90 caps</td>
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<td>PALMETTOGUARD® SAW PALMETTO w/BETA SITOSTEROL - 30 softgels</td>
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<td>PANCREATIN - 500 mg, 50 caps</td>
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<td>PEONY IMMUNE - 60 veg. caps</td>
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<td>PRELIDX® NATURAL SEX FOR MEN® - 60 tablets</td>
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**SUB-TOTAL OF COLUMN 13**

**To order call: 1.954.766.8433 or 1.800.544.4440**

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<td>PROBOOST HYMIC PROTEIN A™ - 4 mcg, 30 packets</td>
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<td>PROGESTACARE FOR WOMEN - 4 oz cream</td>
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<td>PROSTATE FORMULA (ULTRA NAT) - 60 softgels</td>
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<td>PROTEIN-ISOLATE (WHEY) VANILLA - 1 lb. powder</td>
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<td>PROVINAL® PURIFIED OMEGA-7 - 30 softgels</td>
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<td>PTEROPURE™ - 50 mg Pterostilbene - 60 veg. caps</td>
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<td>PURE PLANT PROTEIN - Veg. Vanilla 540 grams powder</td>
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<td>PYCHORESIN® FRENCH MARITIME PINE BARK EXTRACT - 100 mg, 60 veg. caps</td>
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<td>RED YEAST RICE (Bluebonnet) - 600 mg, 60 veg. caps</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>REJUVENEX® FACTOR firming serum - 1.7 oz</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>(D) RIBOSE POWDER - 150 grams</td>
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<td>(D) RIBOSE TABLETS - 100 veg. tabs</td>
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<td>RICH REWARDS® BREAKFAST BLEND WHOLE BEAN COFFEE - 12 oz. bag</td>
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<td>RICH REWARDS® DECAFFEINATED ROAST GROUND COFFEE - 12 oz. bag</td>
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<td>RNA CAPSULES - 150 mg, 100 caps</td>
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<td>THERIALAC PROBIOTICS - 30 caps</td>
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**SUB-TOTAL OF COLUMN 15**

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

JULY 2014
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References

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

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.

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- Olive Extract (fruit and leaf) 600 mg
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