Lose Weight by Inhibiting Cellular Fat Storage

Human Data Support Calorie Restriction Benefit

California’s Absurd Label Law for DHEA

Potent Anti-Cancer Effects of Citrus Pectin

PLUS—
Astaxanthin’s Broad-Spectrum Benefits
Blueberries Inhibit Fat Formation
Shocking data just released reveal that someone in America develops an age-related brain disorder every 70 seconds! Within 20 years an astounding 71 million aging individuals will be at risk for cognitive problems. Thankfully, new research indicates that some of the factors behind this alarming trend may lie within your control. The key is to maintain a steady supply of special nutrients clinically shown to support brain health as you age.

FOOD FOR THOUGHT
A healthy adult brain has about 100 billion nerve cells. Each cell requires specific dietary support for optimum performance. Most aging individuals, however, are unwittingly starving their brains of these critical nutrients.

You may be one of them. The reason? Healthy dieting. Many of the foods you should rightfully avoid to protect against cardiovascular disease—eggs, red meat, cheese—contain these vital brain-boosting nutrients.

To remedy this deficiency, Life Extension® developed the comprehensive Cognitex® formula back in 1982 to provide optimal support for the aging brain. Cognitex® Basics is a simplified, low-cost formula featuring two important compounds missing from a healthy diet—for maximum cognitive support and lifelong mental power. These two nutrients are:

1. ALPHA-GPC: A PRESCRIPTION DRUG IN EUROPE
   The neurotransmitter acetylcholine is critically involved in memory, cognition, sleep, and motor control. The nutrient Alpha-GPC (alpha-glyceryl phosphoryl choline) is an acetylcholine “precursor.” Your brain needs it to produce optimal amounts of acetylcholine. Owing to the clinical studies validating its brain-supporting power, Alpha-GPC is sold as an expensive prescription drug in Europe. The suggested serving of two softgels of Cognitex® Basics supplies 600 mg of Alpha-GPC.

2. AN FDA-SUPPORTED BRAIN HEALTH PROMOTER
   Found in human milk, phosphatidylserine is essential in helping brain neurons support memory and promoting healthy nerve cell division and repair. Research shows it can benefit people of all ages. So much so that since 2003, the FDA has recognized that phosphatidylserine consumption may reduce the risk of dementia and cognitive dysfunction in the elderly. The suggested daily serving of Cognitex® Basics provides 100 mg of phosphatidylserine.

Age-related cognitive decline is often referred to as a “senior moment,” “brain fog,” or “drawing a blank.” These problems lie in store for anyone who lives long enough. Taking precautionary measures can yield huge neurological health dividends in the future.

A bottle containing 60 softgels of Cognitex® Basics retails for $38. If a member buys four bottles, the price is reduced to just $26.25 per bottle. Contains soybeans.

Two softgels of Cognitex® Basics provide:
Sharp-GPC™ Active Alpha-Glyceryl .......... 600 mg
Phosphoryl Choline (A-GPC)
Sharp-PS® Phosphatidylserine ............... 100 mg

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

Sharp-PS® is a registered trademark and Sharp-GPC™ Active is a trademark of Enzymotec Ltd.
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.
IN THE NEWS
CoQ10 supplementation improves endothelial function; fish oil enhances effects of tamoxifen; high C-reactive protein levels associated with memory decline; and more.

SUPERFOODS: THE AWESOME APPLE
An apple a day keeps the doctor away isn’t just a phrase—it’s a medical fact. Apples contain triterpenoids, compounds with potent anti-cancer activity, especially in preventing cancers of the breast, colon, and liver.

As we see it: Epidemic denial about obesity
Nearly two-thirds of Americans are now medically classifiable as overweight or obese. Yet 30% of overweight individuals believe they’re at a healthy weight, and 70% of obese individuals feel they’re simply overweight. Scientists have discovered a novel blend of plant extracts that can safely induce significant fat loss in humans.

California decrees absurd label law for hormones
A plethora of medical evidence substantiates the safety and efficacy of DHEA and pregnenolone. That has not stopped relentless governmental assaults on your right to obtain them. The latest comes from the state of California, where alarmist warning labels are now law.

Astaxanthin’s broad-spectrum benefits
Celebrity physician Dr. Oz recently touted astaxanthin as “The #1 Supplement You’ve Never Heard of That You Should Be Taking.” Life Extension® members have been taking it for years to combat eye fatigue. An abundance of fresh scientific evidence reveals astaxanthin may also combat cancer, heart disease, and more.

Anti-cancer power of citrus pectin
Cancer cells must communicate with one another in order to proliferate and metastasize. Avante-garde researchers are finding that a specific form of modified citrus pectin disrupts their lines of communication, slowing cancer’s progress and improving prognosis.

Human data support calorie restriction’s benefits
For the past 76 years, scientific studies have confirmed the pro-longevity effects of calorie restriction. Most people erroneously believe adhering to a reduced calorie diet while staying optimally nourished is nearly impossible. Find out how easy it really is—and the latest supportive human data.

Profile: Dr. Life
At 59 years old, fitness celebrity Dr. Jeffry Life was obese and pre-diabetic, with high cholesterol and low energy. Today, at a robust 72, the former Grand Champion in the 1998 Body-for-LIFE Contest boasts a rock-hard physique and the know-how to apply the principles of body transformation to his medical practice. Here he reveals the cornerstones of his fitness regime, including supplementation with vitamin D3, CoQ10, saw palmetto, lycopene, and French maritime pine bark extract and hormone replacement.

NOVEL PLANT EXTRACTS BLOCK FAT CELL STORAGE
Official warnings about the dire consequences of obesity have done little to help Americans lose weight. Even most doctors remain ignorant of the cellular mechanisms behind age-related weight gain. In a major advance, two cutting-edge plant extracts have been identified that target the pathways involved in fat cell storage.
They are not intended to replace the attention or advice of a physician or other health-care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle changes to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health-care professional.

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The following table compares the daily dosage of key nutrients included in both the Life Extension® Two-Per-Day Tablet and Centrum™’s Daily Tablet:

<table>
<thead>
<tr>
<th>SAMPLE INGREDIENT COMPARISON</th>
<th>LIFE EXTENSION TWO-PER-DAY</th>
<th>CENTRUM®</th>
</tr>
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<tbody>
<tr>
<td>Vitamin C</td>
<td>500 mg</td>
<td>60 mg</td>
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<tr>
<td>Vitamin D</td>
<td>2,000 IU</td>
<td>400 IU</td>
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<td>Vitamin B1</td>
<td>75 mg</td>
<td>1.5 mg</td>
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<td>Vitamin B2</td>
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<td>1.7 mg</td>
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<tr>
<td>Vitamin B6</td>
<td>75 mg</td>
<td>2 mg</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>300 mcg</td>
<td>6 mcg</td>
</tr>
<tr>
<td>Niacin (as niacinamide)</td>
<td>50 mg</td>
<td>20 mg</td>
</tr>
<tr>
<td>Pantothenic acid</td>
<td>100 mcg</td>
<td>10 mg</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>200 IU (natural)</td>
<td>30 IU (synthetic)</td>
</tr>
<tr>
<td>Natural Folate</td>
<td>400 mcg</td>
<td>400 mcg</td>
</tr>
<tr>
<td>Zinc</td>
<td>30 mg</td>
<td>11 mg</td>
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<tr>
<td>Selenium</td>
<td>200 mcg</td>
<td>55 mcg</td>
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<tr>
<td>Lutein</td>
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<td>(none)*</td>
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<tr>
<td>Lycopene</td>
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<td>(none)*</td>
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<tr>
<td>Biotin</td>
<td>300 mcg</td>
<td>30 mcg</td>
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<tr>
<td>Boron</td>
<td>3 mg</td>
<td>75 mcg</td>
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<tr>
<td>Chromium</td>
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<tr>
<td>Molybdenum</td>
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<td>45 mcg</td>
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<tr>
<td>Magnesium</td>
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<td>50 mg</td>
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<tr>
<td>Manganese</td>
<td>2 mg</td>
<td>2.3 mg</td>
</tr>
<tr>
<td>Iodine</td>
<td>150 mcg</td>
<td>150 mcg</td>
</tr>
<tr>
<td>Potassium</td>
<td>25 mg</td>
<td>80 mg</td>
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<tr>
<td>Vitamin A (preformed)</td>
<td>500 IU</td>
<td>1,015 IU</td>
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<tr>
<td>Vitamin A (as beta-carotene)</td>
<td>4,500 IU</td>
<td>2,485 IU</td>
</tr>
<tr>
<td>Choline (as bitartrate)</td>
<td>20 mg</td>
<td>(none)</td>
</tr>
<tr>
<td>Inositol</td>
<td>50 mg</td>
<td>(none)</td>
</tr>
<tr>
<td>PABA</td>
<td>30 mg</td>
<td>(none)</td>
</tr>
<tr>
<td>Calcium</td>
<td>12 mg</td>
<td>200 mg</td>
</tr>
</tbody>
</table>

The most comprehensive nutrient formula in the world is Life Extension Mix™. Some Foundation members, however, prefer to take their nutrients separately and need only a basic multi-nutrient supplement to fill the missing gaps. For many years, these members had to rely on commercial “one-a-day” supplements that provide very low potencies.

In response to requests for a science-based multi-nutrient, a special formula was compounded to provide the greatest potencies that can fit into two tablets. When compared to conventional “one-a-day” products, Life Extension Two-Per-Day contains up to 50 times more potency!

The box on this page reveals how much more potent the Two-Per-Day formula is compared to the leading commercial multi-vitamin. Few consumers realize that commercial supplements often contain the cheapest form of nutrients that don’t provide optimal benefits. For example, the 30 IU of synthetic vitamin E contained in Centrum® may provide relatively little vitamin E to the bloodstream. The 200 IU of natural vitamin E contained in Two-Per-Day provides about 14 times more vitamin E activity than does Centrum® because natural vitamin E is twice as bioavailable as synthetic.

Compared to Centrum®, Two-Per-Day Tablets provide about:

- 5 times more Vitamin D
- 8 times more Vitamin C
- 7 times more Vitamin E
- 10 times more Biotin
- 40 times more Boron
- 4 times more Selenium
- 37 times more Vitamin B6
- 50 times more Vitamin B1
- 50 times more Vitamin B12
- More than twice as much niacin, zinc, and many other nutrients

Life Extension Two-Per-Day Tablets provide much higher potencies of key nutrients and represent a better value than many commercial brands.

A bottle of 120 Life Extension Two-Per-Day Tablets retails for $18.95. If a member buys four bottles, the price is reduced to $12.75 per bottle. (The retail price for 180 tablets of Centrum® is around $14.)

To order Life Extension Two-Per-Day Tablets, call 1-800-544-4440 or visit www.LifeExtension.com

Contains soybeans, rice, and corn.

* Centrum® no longer contains significant amounts of lycopene nor lutein.
Dr. John Crisler, DO, is an osteopathic physician and president of The All Things Male Center for Men’s Health in Lansing, MI. Dr. Crisler is a distinguished leader in the field of anti-aging medicine.

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

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

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

Ricardo Bernales, MD, is a board-certified pediatrician and general practitioner in Chicago, IL, focusing on allergies, bronchial asthma, and immunodeficiency.

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John Crisler, DO, is an osteopathic physician and president of The All Things Male Center for Men’s Health in Lansing, MI. Dr. Crisler is a distinguished leader in the field of anti-aging medicine.

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Lucius M. Marholin, DDC, DO, is a licensed osteopathic physician and chiropractor. He completed a NIH Fellowship in Nutrition at UAB. Board certified in family medicine with a CNS in nutrition, he is currently the medical director at Leon County Jail. He is responsible for 1,100–1,200 inmates’ medical needs.

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

Achieving Total Health (PATH Medical and the PATH Anti-Aging Center. She is triple board-certified in inter-
cancer therapy,
cancer research corporation that studies mixtures of
dimethyl sulfoxide (DMSO).
cancer drugs. He conducted his postdoctoral training
numerous journal articles and three books (Excitotox-
s: The Taste That Kills, Health and Nutrition Secrets
of the Cancer Patient) and currently publishes a monthly
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Russell L. Blaylock, MD, is a board-certified
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s: The Taste That Kills, Health and Nutrition Secrets
That Can Save Your Life, and Natural Strategies for
the Cancer Patient) and currently publishes a monthly

John Booth, PhD, is the author of two books on
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did his doctorate at the University of Texas
Graduate School of Biomedical Sciences with re-
search at the MD Anderson Cancer Center, focusing
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Frank Eichorn, MD, is a urologist specializing in
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network of experts to improve treatment outcomes for
prostate cancer patients with special focus on natural
and translational medicine.

Deborah F. Harding, MD, is founder of the Harding
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nal medicine, sleep disorder medicine, and anti-aging
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and the University of Southern California (Los Angeles).
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to replace the crystalline lens. He is currently involved
in projects relating to glaucoma, cataract extraction, and
facilitating eyesight for the totally blind.

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duced 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
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Ralph W. Moss, PhD, is the author of books such as
Antioxidants Against Cancer, Cancer Therapy,
Questioning Chemotherapy, and The Cancer Industry, as
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Reports, an updated library of detailed reports on more
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Michael D. Ozner, MD, FACC, FAHA, is a board-certified cardiologist who specializes in
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Mediterranean Diet (2008, Benbella Books). For more
d information visit www.drozner.com.

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Academy of Sciences, and the American Association
of Pharmaceutical Scientists.

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Currently, he directs a practice for prostate cancer patients in Ashland, OR.

Jonathan Treasure, AHG, MNIMH, is a British
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Ashland, OR. Originally a medical sciences graduate
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at the UK School of Phytotherapy. His clinical specialty
is integrative botanical medicine for cancer, and his principal
research interest is herb/drug interactions.

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.

JULY 2011 | LIFE EXTENSION | 5
Feeble bones severely hamper quality of life and put aging humans at risk for injury due to possible breaks or fractures.

Bone Restore combines critical bone boosting nutrients into one superior formula.

Bone Restore includes highly absorbable forms of calcium, a bioavailable form of boron, along with vitamin D3, magnesium, zinc, manganese, and silicon.

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

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

To order Bone Restore, call 1-800-544-4440 or visit www.LifeExtension.com

Contains corn.

Fruitex B® and OsteoBoron® are registered trademarks of VDF Futureceuticals, 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.

Just five capsules of Bone Restore provide:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
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<tr>
<td>Highly-Absorbable Calcium</td>
<td>1,200 mg</td>
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<tr>
<td>(as DimaCal® dicalcium malate, TRAACS® calcium glycininate chelate, calcium fructoborate)</td>
<td></td>
</tr>
<tr>
<td>Vitamin D3</td>
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<tr>
<td>Magnesium</td>
<td>340 mg</td>
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<tr>
<td>Boron</td>
<td>3 mg</td>
</tr>
<tr>
<td>(calcium fructoborate as patented Fruitex B® OsteoBoron®)</td>
<td></td>
</tr>
<tr>
<td>Zinc</td>
<td>2 mg</td>
</tr>
<tr>
<td>Manganese</td>
<td>1 mg</td>
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<td>Silicon</td>
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Item #00811

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.
About 65% of Americans are now overweight or obese, and this excess weight costs our nation an estimated $93 billion in annual medical bills.¹

According to a recent survey, about 30% of overweight individuals think they are normal size, and 70% of Americans classified as obese felt they were simply overweight.² Since it has become “normal” to carry excess body fat, we understand why so many are in a state of denial regarding their corpulence.

The problem is that excess body fat is more than a cosmetic issue. The words overweight and obese are medical terms. They mean a person’s surplus body fat increases risks of illnesses like cancer,³-⁹ diabetes,¹⁰-¹² heart disease,¹³-¹⁸ and stroke.¹⁹-²³

A study by the Organization for Economic Cooperation and Development predicts that by the year 2020 nearly 75% of the American population will be overweight or obese.²⁴ This exploding epidemic has led to the shocking prediction that in less than nine years, half of all Americans will be either pre-diabetic or suffer full-blown type 2 diabetes.²⁵
Our early warning of an out-of-control health care crisis caused by so many overweight Americans is turning into a stark reality.

The challenge facing most people is how to remove surplus body fat stores.

There is encouraging news. In a series of meticulously conducted studies, researchers have demonstrated that a novel blend of plant extracts can simultaneously attack the fundamentals of obesity and induce significant fat loss in humans.

Scientists long ago discovered that people gain weight because their bodies accumulate too many bloated fat cells (adipocytes).26,27 Up until now, however, little could be done to reverse this deadly trend of adipocyte expansion.

Most medical disorders can be traced to surplus fat mass. This can range from an infection (related to obesity-induced immune suppression) to crippling arthritis.28-35 Obesity has been shown to impede the activity of natural killer cells, a type of white blood cell that reduces viral spread by killing infected cells.29,36-38 In fact, obesity has been shown to increase the risk for complications of the dreaded H1N1 influenza infection.39,40

I tell doctors that common symptoms their patients present with are often caused by excess body weight and that it is impossible to optimally treat these patients without helping them to shed fat pounds. My objective is to enlighten physicians about the power of their prescription pads to introduce medications (such as acarbose41,42 and metformin43-46) that can safely help facilitate weight loss.

To fully inform physicians about the weapons at their disposal, I often give them a copy of our Life Extension® Weight Loss Guide that discusses the use of certain prescription medications, hormones, nutrients, and lifestyle changes that have clinically demonstrated benefits.

It is imperative that physicians don’t fall into the same lethal state of denial that overweight individuals have. Doctors are seeing so many obese patients in their office that they too often overlook the obvious necessity to implement aggressive fat loss interventions.
What Causes Fat to Accumulate on our Bodies?

Few people understand what is happening in their bodies as they accumulate fat pounds. To state it in the simplest terms, we become overweight because:

1. Fat cells (adipocytes) become bloated in our bodies from storage of surplus calories from food as body fat, and

2. Fat cells become dysfunctional, resulting in metabolic derangements including impairments in burning of fatty acids for energy.48

There are many reasons why we accumulate dysfunctional, bloated adipocytes as we age, especially in the abdominal area. The ultimate target of any obesity reversal program is to target bloated, dysfunctional fat cells.

Interventions focused upon bloated, dysfunctional adipocytes have been attempted by indirect methods, such as speeding up metabolic rate to burn excess fat mass stored in the body. Scientists have found limited success when employing certain adipocyte-reducing approaches—yet the obesity epidemic worsens each year nonetheless.

The problem has been that up until now, little has been available to directly target critical mechanisms responsible for bloated, dysfunctional adipocytes.

Herculean Effort Leads to Discovery of Anti-Adipocyte Plant Extracts

A group of scientists screened over one thousand plant extracts with the objective of identifying ones able to:

1. Reduce the differentiation of pre-adipocytes into bloated, dysfunctional adipocytes (fat storage cells).
2. Reduce excessive fatty acid uptake of existing adipocytes.
3. Enhance lipolysis—the breakdown of stored fat in adipocytes.

Extensive testing uncovered two plant extracts that function via multiple mechanisms to reverse the metabolic dysfunction associated with bloated fat cells.49

New Study Confirms Overweight People Die Sooner

The lethal impact of carrying surplus fat pounds may seem obvious. Until recently, however, no one could point to a study that did not have confounding flaws such as including those with pre-existing heart disease, cancer, etc.

A pooled analysis involving 1.46 million men and women was published in the New England Journal of Medicine that measured risk of dying with body mass index (BMI).47 Those with pre-existing illness and smokers were excluded.

The findings showed that compared with women of normal weight during the study period:

- Overweight women (BMI between 25.0 and 29.9) were 13% more likely to die;
- Moderately obese women (BMI between 30.0 and 34.9) were 44% more likely to die;
- Severely obese women (BMI between 35.0 and 39.9) were 88% more likely to die;
- Morbidly obese women (BMI between 40.0 and 49.9) were 151% more likely to die.

The body weight/risk of dying pattern was similar for men. The lowest mortality risks were for the people who had a body mass index (BMI) of 20 to 24.9.

The “body mass index” or BMI is based on how much someone weighs in relationship to their height. The BMI is not a completely accurate mortality predictor as a large waist circumference even in those in the normal BMI range can increase one’s risk of early death.
In one of the laboratory tests, fat accumulation in cells was inhibited by a remarkable 48.5% when treated with one of these plant extracts compared to control cells. The other component of this dual plant extract was shown to reduce fat accumulation in cells by a stunning 65.9% compared with control.49

When measuring the breakdown of stored fat (lipolysis), 55.8% more fat was broken down in adipocytes using one of the components of this dual plant extract compared to control.49

These in vitro studies showed the potent efficacy of these plant extracts to reduce fat accumulation in cells and promote fat burning (breakdown) in adipocytes. The next step was to study the effects of this novel blend of plant extracts in the whole animal (in vivo) model.49

Using these Plant Extracts to Prevent Obesity in Rats

A group of healthy young adult rats were fed a high-fat diet for eight weeks. As expected, those that did not take the plant extracts (the control group) rapidly gained weight.

The rats taking the plant extracts showed a reduced body weight gain of 700% compared to the controls at the end of eight weeks.49 These were the same plant extracts that blocked fat accumulation by 48.5% and 65.9% in the cellular model.

This study showed that these plant extracts decreased diet-induced obesity in young adult rats.49

The final and obvious question is what effect these plant extracts will have on aging humans who are already overweight or obese...which represents the majority of the adult American population today!

Humans accumulate surplus fat because of multiple changes that occur as a result of normal aging—in addition to poor lifestyle choices. When simplistic methods to reduce body fat are utilized, the results often prove disappointing.

As you will learn in this month’s issue, scientists have identified many of the factors that conspire to cause unwanted weight gain and preclude it from being removed.

What has us most excited are the brand new findings showing that a novel blend of two plant extracts functions via six different mechanisms to:

- Target progenitor fat cells (pre-adipocytes) to keep them from producing dysfunctional fat cells;
- Reduce fat accumulation (adipogenesis) in adipocytes;
- Break down excess fat (lipolysis) in existing adipocytes.

These cellular anti-fat functions are critical for weight loss success, though most dieters don’t yet understand this.

In this key human clinical study using these plant species, 60 obese adults were recruited and divided into two groups. One arm of 30 patients functioned as the placebo while a second group of 30 patients received the two plant extracts. Both groups followed a 2,000 calorie-a-day diet and were asked to walk 30 minutes five days a week.50

After eight weeks the group receiving this novel blend of two plant extracts experienced statistically significant improvements in many parameters including:

- Reduction of 4.05 inches in the abdomen—which was 2 times greater than the placebo arm.
- Reduction in body mass index (BMI) of 2.05—which was 3.9 times greater than placebo.
- Reduction in total body weight of 11.4 pounds—which was 3.7 times greater than the placebo arm.
What impressed the researchers who conducted this randomized, double-blind, placebo-controlled study was that noticeable reduction in waist and hip circumference, as well as body weight, occurred within the first 14 days!

The dual plant extract group also showed significant reduction in the waist-to-hip ratio, 2.2 times greater than the placebo group. This is important because improvements in the waist-hip ratio indicate the more dangerous visceral belly fat is being lost.

Also impressive was the trend toward improvement in the hormone adiponectin in the group taking the plant extracts. A higher level of adiponectin is encouraging because this hormone is known to improve insulin sensitivity and potentially protect cardiovascular health. Trends toward reduced levels of glucose and cholesterol in the dual plant extract arm reflect improved status of fat metabolism and reduced body fat stores.

A Second, Key Human Study

The findings from the first study described are supported by a second, similarly designed trial.

In the second human study, 60 obese subjects were evaluated at baseline. They were then divided into three groups that consisted of a placebo arm, an active arm receiving one plant extract, and another active arm that received a dual plant extract.

All participants followed a 2,000 calorie-per-day diet and were asked to walk for 30 minutes five times a week for 8 weeks.

After eight weeks the group receiving the dual plant extract experienced statistically significant changes in their abdominal circumference, total body weight, and their hip circumference similar to those seen in the first study mentioned above.

These confirmatory findings indicate that this novel dual plant extract may enable aging humans to safely shed unwanted body fat stores.

Obesity arises from the increased size of individual adipocytes (fat cells) due to enhanced lipid (fat) accumulation. It worsens as adipocytes transform into dysfunctional, bloated adipocytes.

This novel blend of plant extracts has been shown in cell cultures to reduce the ability of progenitor fat cells (pre-adipocytes) to transform into bloated fat cells. Cell data also shows that components of this dual plant extract reduce the amount of fatty acids taken up by adipocytes and facilitates the breakdown of fat stored in existing adipocytes.

When tested in obese human study subjects, this dual plant extract produced noticeable effects at 14 days and significant benefits at eight weeks compared with placebo.

There has never been a formulation available that directly functions via these specific anti-adipocyte mechanisms. The first article in this month’s issue describes in molecular detail how this new dual plant extract can help aging people remove excess body fat stores.

Chronically Bloated Bloodstreams an Obesity Culprit

Another culprit involved in age-related weight gain is that our bloodstreams become chronically bloated with glucose, insulin, and triglycerides. One reason for this is that aging people lose their sensitivity to insulin.

Physicians Urged to Recognize Today’s Obesity Epidemic

As I was writing this editorial, a commentary appeared in the Journal of the American Medical Association (JAMA) discussing the difficulties of examining obese patients because of the thick layer of adipose (fat) tissue that envelopes their vital tissues. It suggested that physicians better educate themselves in order to ensure good care of obese patients.

The JAMA article opened up by stating, “The notion of the standard 70 kilogram (154 pound) patient is outdated.”

The sad fact is that this deadly epidemic is spreading across all ages including one-third of 9-month-olds who are already obese or overweight.
As glucose accumulates in the bloodstream, the pancreas secretes insulin to reduce blood glucose. (Type 2 diabetes results when the pancreas can no longer produce enough insulin to control blood sugar levels as cells throughout the body lose sensitivity to insulin.) In the presence of high fasting insulin (hyperinsulinemia), sustained weight loss can become difficult to achieve.

A diet high in unhealthy fats and simple carbohydrates results in chronically elevated blood triglyceride levels. These triglycerides further impair insulin sensitivity and contribute to glucose dysregulation and elevated insulin levels.65

Life Extension’s longstanding position is that diabetes and obesity prevention begins by eating less calories. Furthermore, blocking the negative impact of excess amounts of simple carbohydrate and fat calories by taking certain nutrients and/or drugs before heavy meals can also reduce the calorie burden.

Further steps to improve systemic insulin sensitivity can result in a reversal of metabolic derangements associated with obesity, including the insulin resistance observed in the majority of patients with type 2 diabetes mellitus.

Study subjects taking the new dual plant extract showed reductions in triglyceride and glucose blood levels.50 This indicates these plants are functioning across a broad spectrum of biological activities to correct underlying metabolic imbalances that predispose aging humans to weight gain.

A Powerful New Weapon...

According to the US Department of Agriculture, Americans consumed an extra 331 calories each day in the year 2006, compared with 1978. That translates into roughly 34 pounds of stored body fat.66

Virtually everyone consumes excess calories that they could cut out without depriving themselves. It is not unreasonable for a doctor to ask an overweight patient to determine which calories are the least important and to delete these from one’s normal diet. Examples are eliminating bread and butter before a meal or a dessert after a meal if these are not vital to achieving satiety. Once one gets used to cutting calories that are not that important, it is easy to stay away from them over the long term. An article in this month’s issue by the founders of the CR Way Program sheds new light on the multiple benefits that occur when humans reduce their calorie burdens.

A problem most in the Western world face is that they consume too many calories even when trying to cut back. This is why it is so important for anyone seeking to lose weight (and live longer) to reduce the number of ingested calories that make it into the bloodstream. Fortunately, there are nutrients and safe medications that neutralize enzymes in the digestive tract that break down food for rapid absorption into the bloodstream. We urge any overweight member to take nutrients and/or medications before meals that impede calorie absorption to lower blood glucose, insulin, and triglycerides.

You might think that cutting back a bit on how much you eat and impeding absorption of fats and carbohydrates would induce considerable weight loss.
For some individuals, significant weight loss will occur. For most overweight and obese individuals, however, they need to improve calorie utilization at the cellular level and mobilize their surplus fat stores in order to achieve a safe body weight.

Fortunately, a novel dual plant extract technology has been developed that functions to inhibit the development of bloated, dysfunctional adipocytes, impede the uptake of fatty acids into adipocytes, and facilitate the breakdown of stored lipids in existing adipocytes.

The dual plant extract described in the first article in this month’s issue provides a powerful new weapon for those seeking to achieve healthier body weight, especially when it comes to reducing stubborn visceral fat that accumulates in the bellies of so many aging individuals.

For longer life,

William Faloon

References


In 2003, the Life Extension Foundation® introduced a standardized extract of resveratrol shown to favorably alter genes implicated in the aging process—many of the same genes that respond to calorie restriction or CR.

Since then, we have gone to extraordinary lengths to identify 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.

For example, initial research funded by Life Extension® showed that resveratrol induced many of the favorable gene expression changes observed in calorie-restricted animals.

We have since uncovered compelling evidence that certain compounds found in berries, such as pterostilbene and fisetin, also 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,1-10 thus extending its beneficial effects.

High-Potency Resveratrol with Synergistic Activators

Life Extension members gain access to standardized trans-resveratrol combined with plant extracts that favorably influence longevity gene expression. Unlike many commercial formulas, Life Extension standardizes to trans-resveratrol, which researchers contend is the most active constituent.

A bottle containing 60 vegetarian capsules of Optimized Resveratrol with Synergistic Grape-Berry Actives retails for $46. If a member buys four bottles, the price is reduced to just $31 per bottle. The suggested dose of one capsule a day provides:

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<td>Fisetin</td>
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</table>

Contains yeast.

References

10. Xenobiotica. 2000 Sep;30(9):857-66
Cutting-Edge Support for Healthy Glucose Metabolism

Dietary carbohydrates are nearly impossible to avoid in today’s “grab-and-go” world. The result? Countless aging Americans find themselves under constant assault from excess glucose calories. Even health-conscious, active people can experience higher-than-desired blood sugar levels as they age. Life Extension® offers an enhanced, all-natural, multipronged approach called CinSulin® with InSea2™ and Crominex® 3+.

An Extract Clinically Validated by the USDA!

Excitement has been building among scientists around the world over the clinically proven power of a novel form of cinnamon to support healthy glucose metabolism. Scientists at the US Department of Agriculture have been quietly studying it for more than a decade.1,2 Government experts have been amazed by compelling in vitro results documenting its ability to induce a twenty-fold increase in sugar metabolism.3

Studies in humans have proven just as impressive. In a recent double-blind, placebo-controlled clinical trial,4 a group of maturing individuals (average age 61) taking 500 mg per day of the cinnamon extract contained in the CinSulin® formula experienced an average decline of 12 mg/dL in fasting blood glucose after only two months. This novel cinnamon extract also produced a significant decrease in after-meal glucose spikes (an average of 32 mg/dL) after ingestion of 75 g of carbohydrates!

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.
An objective of those who practice **calorie restriction** is to maintain **fasting glucose** levels around 80 mg/dL of blood and after-meal glucose spikes to no greater than 40 mg/dL. CinSulin® may help more longevity enthusiasts accomplish their glucose control objective.

**Standardized for Purity and Safety**

The danger with cinnamon is the presence of naturally occurring, toxic fat-soluble compounds known as aldehydes. Life Extension® has identified a highly purified “type-A” water-soluble cinnamon extract using a patented process that eliminates these dangerous toxins.

**Carb Blockers from the Sea**

Researchers have known of the many health benefits of seaweed extracts for years. Only recently has it come to light that a proprietary form of seaweed extract called InSea™ blocks the action of glucosidase and amylase—enzymes your body uses to break down carbohydrates into glucose, facilitating its transport into the bloodstream.

Derived from brown seaweed and bladderwrack, a single 500 mg dose of this proprietary compound triggered a 48.3% decline in after-meal blood sugar spikes in a recent double-blind, placebo-controlled trial.5

**Better Glucose Absorption with Novel Chromium Complex**

Chromium has long been known for its role in maintaining healthy glucose metabolism in those already within normal range. It has been **optimized** with standardized extract of Indian gooseberry and shilajit, Life Extension* also now offers a standalone version of **Optimized Chromium with Crominex® 3+**.

A bottle containing 60 500 mcg vegetarian capsules of Optimized Chromium with Crominex® 3+ retails for $9. If a member buys four bottles, the cost is just $6 per bottle. Contains rice.

**References**
5. J Metab. Submitted for publication.
18. Phytother Res. 2007 May;21(5):401-5.

Combined with CinSulin® and InSea™, the result is an unrivalled formula that affords optimal support for healthy glucose metabolism in aging individuals. The suggested serving of 1 vegetarian capsule of CinSulin® with InSea™ and Crominex® 3+ taken 20-30 minutes before three meals of the day supplies:

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A bottle containing 90 vegetarian capsules of CinSulin® with InSea™ and Crominex® 3+ retails for $38. If a member buys four bottles, the price is reduced to just $25.50 per bottle. Contains rice.

**To order CinSulin® with InSea™ and Crominex® 3+ or Optimized Chromium with Crominex® 3+ call 1-800-544-4440 or visit www.LifeExtension.com**

**For Those Who Want Only Extra Chromium**

For those wishing to obtain the unique benefits of the novel chromium complex (chromium plus Indian gooseberry and shilajit), Life Extension* also now offers a standalone version of Optimized Chromium with Crominex® 3+.

A bottle containing 60 500 mcg vegetarian capsules of Optimized Chromium with Crominex® 3+ retails for $9. If a member buys four bottles, the cost is just $6 per bottle. Contains rice.

CinSulin® is a registered trademark of Tang-An Medical Ltd., manufactured under US patent #6,200,569.
InSea™ is a trademark of innoVactiv™.
Crominex® 3+ is a registered trademark of Natreon, Inc.
Overstressed? Anxious? Losing sleep?
Left unchecked, the inner turmoil created by these issues can lead to heart palpitations, muscle weakness, headaches, and even increased blood pressure. You need to take action to halt these symptoms immediately.

Fortunately, Life Extension® has created Natural Stress Relief, a calming formula made with lemon balm and L-theanine, two ingredients clinically proven to help with anxiety, insomnia, and overall mood.1,2

The Cyracos® lemon balm extract used in this product is prepared from a special lemon balm chosen for its high concentrations of hydroxycinnamic and rosmarinic acids. These potent constituents may be mood enhancers that relieve everyday stress and alleviate sleep problems.1

L-theanine, an amino acid derived from green tea, is a natural relaxant that has been used by the Japanese for years. Those who have taken L-theanine compare it to a massage, meditation session, and aromatherapy rolled into one.2

Based on a tremendous amount of published data, Life Extension® combined these two ingredients with the idea of providing the ultimate calming experience. Try it today.

Each vegetarian capsule of Natural Stress Relief provides:

300 mg of Cyracos® lemon balm extract
200 mg of Suntheanine® L-Theanine

Note that the amount of L-theanine in this product is double that of most L-theanine stand-alone supplements. The reason for this potency increase is reports of greater benefit when at least 200 mg of L-theanine are taken.

The retail price of a 30 count bottle of Natural Stress Relief is $28. If a member buys four bottles, the price of this potent stress-relieving formula is reduced to just $18 per bottle.

Beware of imitations. The L-theanine used in the new Natural Stress Relief is Suntheanine®, the only pure form of L-theanine available worldwide and the only form protected by 40 internationally recognized patents and scientifically proven in clinical studies to be safe and efficacious. Independent laboratory analysis has verified that certain other products on the market claiming to contain “L-theanine” are only half L-theanine, the other half being a different form of theanine known as “D-theanine” that has not been scientifically evaluated in published studies. Suntheanine® is a registered trademark of Taiyo International, Inc. Use of Suntheanine® is protected by US Trademark Registration No. 2,548,957. Cyracos® is a registered trademark of Natures, Inc.

References:

Contains rice.
Comprehensive Pomegranate Protection!

FULL-SPECTRUM
POMEGRANATE
FORMULA

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 for the first time 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, a member of the triterpene family of essential oils that provides cellular support to help with inflammation,² and pomegranate, to combat age-related metabolic changes.⁵

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 (or 24 pomegranates) plus a proprietary blend of seed oil and flower extract.

One softgel of Full-Spectrum Pomegranate™ contains:

POMELLA® Pomegranate……………………………………………… 400 mg
(Punica granatum) Extract (fruit) [std. to 30% punicalagins (120 mg)]
PomComplete™ Pomegranate ………………………………………. 137.5 mg
(Punica granatum) Blend [flower extract and seed oil (standardized to 22% (30 mg) punicic acid)]

Full-Spectrum Pomegranate™
A bottle containing 30 softgels of Full-Spectrum Pomegranate™ retails for $24. If a member buys four bottles, the price is reduced to just $15.75 per bottle. Item# 01423

To order Full-Spectrum Pomegranate™, call 1-800-544-4440 or visit www.LifeExtension.com

References:

POMELLA® extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Science, Inc. Isocell SA, France is the owner of U.S. Patents Nos. 6,045,808 and 6,426,881 and trademark of GliSodin®.

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.
Huge Savings on Generic Drugs

High-cost prescription drugs are bankrupting the United States, but you can fight back by switching to equivalent generic drugs.

The Life Extension Pharmacy® charges such LOW prices for generics that they are often less than what your co-pay would be if you went through your own insurance.

To find out how much you can save on your prescription medications, call the courteous staff at the Life Extension Pharmacy today at: 1-877-877-9700

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Antioxidants May Protect the Body from CT Radiation

At the Society of Interventional Radiology’s 36th Annual Meeting, Kieran J. Murphy, MD, reports that a combination of antioxidants consumed prior to medical imaging studies involving ionizing radiation could help protect against their damaging effects.*

Dr. Murphy and his colleagues tested the effects of antioxidants on blood samples drawn from two volunteers. Vitamin C and glutathione were administered to the samples prior to irradiation and DNA damage was assessed. Additional samples were tested with higher concentrations of vitamin C prior to receiving diagnostic doses of ionizing radiation. The subjects then were given vitamin C, glutathione, and uric acid orally for five days during which blood was drawn daily and subjected to CT radiation, and DNA injury to white blood cells was evaluated.

The researchers observed a reduction in DNA injury in blood treated with vitamin C and glutathione compared with control samples. Oral administration of the antioxidants also resulted in a reduction in DNA injury.

Editor’s note: These findings indicate that when X-rays and CT scans are medically necessary, consumption of high doses of vitamin C and glutathione precursors like cysteine and SAMe hours and days before may confer some protection against the DNA-damaging, carcinogenic effects of ionizing radiation.

—D. Dye

* Society of Interventional Radiology’s 36th Annual Scientific Meeting, April, 2011, Chicago.

Low Coenzyme Q10 Associated with Increased Breast Cancer Risk

An article published in the journal Cancer Epidemiology, Biomarkers and Prevention reveals an association between decreased levels of CoQ10 and a greater risk of breast cancer in women.*

The investigation involved participants in The Shanghai Women’s Health Study. Robert V. Cooney at the University of Hawaii and his colleagues matched 340 women with breast cancer to 653 subjects who were free of the disease. Plasma samples were analyzed for coenzyme Q10 and tocopherols.

Women with higher CoQ10 also had higher plasma alpha- and gamma-tocopherol levels. After excluding patients diagnosed within a year of blood draw, a significant relationship was observed between declining plasma CoQ10 levels and increased breast cancer risk. There was a 90% greater risk of breast cancer among those whose levels were among the lowest one-fifth of participants compared to those whose levels were among the third-fifth and higher.

—D. Dye

* Cancer Epidemiol Biomarkers Prev. 2011 Apr 5.
IN THE NEWS

**Omega-3 Fatty Acids Protect Against Obesity-related Disease**

An article published in the *European Journal of Clinical Nutrition* reveals a protective effect for high omega-3 fatty acid intake against the development of diseases related to obesity, including cardiovascular disease and diabetes.*

Zeina Makhoul, PhD, and colleagues evaluated data from 330 Yup’ik Eskimos. Omega-3 fatty acid intake among the Yup’iks averages twenty times higher than most Americans.

Triglycerides, glucose, insulin, leptin, and C-reactive protein were measured in the participants’ blood samples, and dietary questionnaire responses were analyzed for the intake of the omega-3 fatty acids EPA and DHA. Among subjects with lower blood levels of EPA and DHA, having a high body mass index was correlated with high triglycerides and C-reactive protein, both of which are associated with an increased risk of cardiovascular disease and possibly diabetes. “The new finding was that obesity did not increase these risk factors among study participants with high blood levels of omega-3 fats,” senior author Alan Kristal, DrPH, revealed.

*Editor’s note:* The researchers recommend that a clinical trial be conducted to help confirm whether increased omega-3 fatty acids reduce obesity’s effect on triglycerides and inflammation.

—D. Dye


**Greater Levels of Some Antioxidants Associated with Lower Risk of Metabolic Syndrome**

A report published online in the *Journal of Nutrition* reveals the results of a study that found a lower risk of metabolic syndrome among those with higher serum levels of vitamin C and carotenoids.*

May A. Beydoun of the NIA and her associates evaluated data from up to 11,845 men and women enrolled in NHANES 2001-2006. Anthropometric measurements and blood pressure were assessed upon enrollment, and blood samples were analyzed for the antioxidant nutrients retinol, retinyl esters, carotenoids, vitamin C and vitamin E, as well as glucose, lipids, C-reactive protein, and other factors.

Participants with metabolic syndrome had significantly lower vitamin D and higher total homocysteine levels. Having higher serum carotenoids or vitamin C was associated with a lower adjusted risk of metabolic syndrome in men and women, while retinol and retinyl esters were associated with a protective effect only in men.

*Editor’s note:* Metabolic syndrome is a cluster of risk factors that increase the risk of developing diabetes and/or cardiovascular disease.

—D. Dye


**Reduced Vitamin D Levels Linked to Arterial Stiffness**

A presentation by Ibhar Al Mheid, MD, at the annual American College of Cardiology meeting revealed the finding of a protective effect for vitamin D against arterial stiffness and impaired blood vessel relaxation.*

Dr. Al Mheid, along with Arshed Quyyumi, MD, evaluated data from participants in the Emory/Georgia Tech Predictive Health Institute’s Center for Health Discovery and Well Being. Endothelial function was evaluated via brachial artery flow-mediated dilation, and microvascular function and arterial stiffness were assessed. Blood samples were analyzed for serum 25-hydroxyvitamin D, a form of the vitamin that reflects dietary intake and skin production.

Reduced levels of vitamin D correlated with increased arterial stiffness and vascular function impairment. Among those whose vitamin D levels were normalized over a six month period, vascular health improved and blood pressure measurements declined. “We found that people with vitamin D deficiency had vascular dysfunction comparable to those with diabetes or hypertension,” Dr. Al Mheid observed.

*Editor’s note:* “We are hoping to conduct a study where we have participants take a defined regimen of vitamin D,” Dr. Al Mheid stated.

—D. Dye

* Annual American College of Cardiology meeting, April 2, 2011.
Marker of Inflammation Associated with Memory Decline

A presentation at the American Academy of Neurology’s annual meeting in Honolulu revealed the finding of researchers at the University of California, San Francisco, of a link between higher levels of C-reactive protein (CRP, a marker of inflammation) and memory loss in older individuals.*

Joel H. Kramer, PsyD, and his associates compared 76 men and women who had detectable levels of C-reactive protein to 65 adults of a similar age with undetectable levels. Word list tests evaluated the participants’ verbal recall, and magnetic resonance imaging of the brain measured the volume of the medial temporal lobe, including the hippocampus, entorhinal cortex, and parahippocampal cortex.

Men and women with detectable CRP levels had smaller medial temporal lobes and decreased verbal recall compared to those whose levels were undetectable. “These findings support our working model by associating brain inflammation with alterations in brain structure and cognition,” the authors write.

Editor’s note: It is not known whether the increased inflammation revealed by CRP is a cause of the memory loss observed in this study or if it indicates the presence of another disease process. If confirmed as a causative factor in cognitive decline, simple treatments could be used to combat the condition.

—D. Dye

* American Academy of Neurology annual meeting, April 13, 2011, Honolulu.

Blueberries Inhibit Fat Formation

In addition to numerous other recently revealed benefits, blueberries may confer an inhibitory effect on the development of adipocytes (fat cells) according to research presented at the recent Experimental Biology 2011 meeting in Washington, DC.*

Texas Woman’s University graduate student Shiwani Moghe, MS, reported the results of an experiment in which three doses of blueberry polyphenols were administered to pre-adipocyte tissue cultures derived from mice. The tissue cultures were analyzed for polyphenols’ effect on adipocyte differentiation, which is the process by which unspecialized cells acquire the features of adipocytes that synthesize and store fat.

Moghe found a dose-dependent effect of blueberry polyphenols on adipocyte differentiation. Compared to control cultures that did not receive polyphenols, those that received the low, middle, and high dose showed a 27%, 63%, and 74% reduction in lipid content, without any significant difference in lipid breakdown observed.

Editor’s note: “Determining the best dose for humans will be important,” Dr. Moghe remarked. “The promise is there for blueberries to help reduce adipose tissue from forming in the body.”

—D. Dye

* Experimental Biology 2011 meeting, April, 2011, Washington, DC.

Higher Vitamin D Levels Associated with Reduced Risk of Macular Degeneration Among Women

The results of a study reported in a recent issue of the journal Archives of Ophthalmology suggest that having a high level of vitamin D could be protective against the development of early age-related macular degeneration (AMD), a leading cause of vision loss in adults.*

The study involved 1,313 women participants in the Carotenoids in Age-Related Eye Disease Study (CAREDS). Serum samples were analyzed for 25-hydroxyvitamin D. Dietary questionnaires administered upon enrollment were analyzed for vitamin D intake from food and supplements.

Although no significant association was found between vitamin D and early macular degeneration risk in the entire group, when subjects younger than 75 years of age were analyzed, a protective association emerged. Intake of vitamin D from food and supplements was also found to be protective against early disease in participants under the age of 75.

Editor’s note: “The take-home message from this study is that having very low vitamin D status (25-hydroxyvitamin D blood concentrations lower than 38 nanomoles per liter [15 ng/mL]) may be associated with increasing your odds of developing age-related macular degeneration,” Dr. Millen concluded.

—D. Dye

**Fish Oil Pumps Up Responses to Breast Cancer Drug Tamoxifen**

Researchers at Fox Chase Cancer Center in Philadelphia, Pennsylvania, have found that omega-3 fatty acids, which are found in fish, may be a safe and beneficial booster for tamoxifen therapy.*

Jose Russo, MD, director of the Breast Cancer Research Laboratory at Fox Chase, recently presented the new findings at the AACR 102nd Annual Meeting 2011. Russo worked in collaboration with a team led by Andrea Manni, MD, from Pennsylvania State University. Together, they induced mammary tumors in rats and then divided the animals into four groups.

They fed the groups either a 17% fish oil diet, with or without tamoxifen, or a 20% corn oil diet, with or without tamoxifen, for eight weeks. They then analyzed gene expression patterns in the tumors. Omega-3 fatty acids produced a greater expression of genes related to cellular specialization, or differentiation, compared to corn oil. The combination of fish oil and tamoxifen reduced the expression of genes linked to tumor growth and spreading.

"If a tumor was being treated with tamoxifen, the addition of an omega-3 fatty acid diet seemed to make the tumor, at least at the molecular level, more benign and less aggressive and responsive to tamoxifen," Russo said.

*Editor's note:* This is a very important study in support of fish oil as adjuvant therapy with tamoxifen for breast cancer. This also supports Life Extension®’s long-held belief that an overabundant intake of omega-6 PUFAs has negative health effects. The traditional American diet contains copious levels of omega-6 PUFAs in comparison with omega-3 PUFAs.

—J. Finkel


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**Reduced Vitamin D Levels Could Help Explain High Blood Pressure in African Americans**

An article published online in the *Journal of General Internal Medicine* provides one explanation for the greater incidence of hypertension that occurs among African Americans in comparison with Americans of European descent.*

Ken Fiscella, MD, and colleagues compared data from 5,156 Caucasian and 1,984 adult African American participants in the National Health and Nutrition Examination Survey (NHANES) 2001-2006. Blood pressure was measured upon enrollment and serum samples were analyzed for 25-hydroxyvitamin D levels.

An average 4.0 mmHg adjusted increase in systolic blood pressure was observed in African Americans in comparison with Caucasian subjects. While 25% of the Caucasian population had vitamin D levels that were among the highest one-fifth of participants, only 2% of African Americans had levels this high. However, when the lowest fifth was analyzed, 61% of African Americans had levels that were in this range, compared to 11% of Caucasians.

*Editor's note:* “We believe that simple interventions such as taking vitamin D supplements might have a positive impact on racial disparities,” Dr. Fiscella stated.

—D. Dye

Behind every process your body needs to survive and thrive are the cellular energy generators known as mitochondria. Their function is so crucial that a growing number of scientists now believe mitochondrial longevity may determine overall longevity in aging humans. That’s why Life Extension® has remained at the forefront in identifying innovative compounds that specifically support mitochondrial health.

In addition to the more comprehensive Mitochondrial Energy Optimizer with BioPQQ™ and standalone PQO products, we now offer a one capsule per day formula for individuals seeking a simplified, low-cost option called Mitochondrial Basics with BioPQQ™.

The reason? We want all members to have access to targeted nutrients required to support mitochondrial function and the generation of healthy new mitochondria.

Three Premium Compounds in One Low-Cost Formula

The new Mitochondrial Basics with BioPQQ™ brings together cutting-edge mitochondrial energizers, including the most exciting nutrient to emerge in recent years called pyrroloquinoline quinone or PQO. The three ingredients in value-priced Mitochondrial Basics with BioPQQ™ are:

1. PQO. This breakthrough micronutrient has recently been shown to trigger mitochondrial biogenesis—the growth of new mitochondria in aging cells. PQO also activates genes involved in protecting the delicate structures within the mitochondria.

2. R-lipoic acid. The detrimental effects of free radicals comprise one of the chief obstacles to optimal mitochondrial energy production. Published studies confirm R-lipoic acid’s power to promote mitochondrial bioenergetics while simultaneously blunting free radical activity.

Mitochondrial Basics with BioPQQ™ contains the superior Bio-Enhanced® R-lipoic acid and is in a proprietary microencapsulated form for better absorption.

3. Acetyl-L-carnitine arginate. Fats are shuttled into the mitochondria for metabolic combustion by the amino acid carnitine. The acetylated form of carnitine helps to facilitate more efficient utilization of fats than carnitine alone.

Life Extension® members continue to enjoy access to a full range of targeted supplements clinically shown to optimize energy production in the mitochondria. Just one capsule a day of Mitochondrial Basics with BioPQQ™ supplies:

A bottle containing 30 capsules of Mitochondrial Basics with BioPQQ™ retails for $52. If a member buys four bottles, the price is reduced to just $34.50 per bottle.

PQQ can also be obtained as a low-cost standalone or in the Mitochondrial Energy Optimizer with BioPQQ™ formula.

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

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

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

### Which VITAMIN D is Right for You?

#### Vitamin D3 1,000 IU
250 capsules
Retail: $12.50
Four-bottle Member Price: $8.44 ea.
Commercial companies offered only 400 IU vitamin D products when Life Extension long ago introduced this 1,000 IU version. For most people, this 1,000 IU potency is insufficient to attain optimal vitamin D blood levels. For smaller individuals who obtain 2,000-3,000 IU in their multi-nutrient formulas (and children), this potency of vitamin D may be suitable.

*Item # 00251

Please refer to website for allergen information.

#### Vitamin D3 5,000 IU
with Sea-Iodine™
60 vegetarian capsules
Retail: $14
Four-bottle Member Price: $9.38 ea.
Most people do not ingest enough vitamin D and iodine, especially those seeking to reduce their salt intake. Combining 5,000 IU of vitamin D3 and 1,000 mcg of iodine into one capsule makes taking these two nutrients economical and convenient.

*Item # 01372

Please refer to website for allergen information.

#### Vitamin D3 Liquid Emulsion 2,000 IU
1 ounce
Retail: $28
Four-bottle Member Price: $18.75 ea.
For those rare individuals who have difficulty absorbing enough vitamin D3 from powdered capsules, this liquid emulsion of vitamin D can be used.

*Item # 00864

#### Vitamin D3 5,000 IU
60 capsules
Retail: $11
Four-bottle Member Price: $7.43 ea.
For those obtaining 1,000-3,000 IU of vitamin D in their multi-nutrient formulas, this 5,000 IU potency is what most need to achieve optimal vitamin D blood levels.

*Item # 00713

Please refer to website for allergen information.

#### Vitamin D3 7,000 IU
60 capsules
Retail: $14
Four-bottle Member Price: $9.45 ea.
Some individuals (such as those weighing more than 180 pounds) may require higher potencies of vitamin D. When combined with 1,000-3,000 IU obtained from multi-nutrient formulas, this 7,000 IU vitamin D3 capsule should enable these individuals to attain 25-hydroxyvitamin D blood levels above the desired range of 50 ng/mL.

*Item # 01418

Please refer to website for allergen information.

### To order any of these high-potency vitamin D3 supplements, call 1-800-544-4440 or visit www.LifeExtension.com

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

These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.
In 2008, Life Extension® introduced Berry Complete, a unique, high-potency blend of extracts from Nature’s most powerful free radical fighters. The antioxidant strength of just one capsule equaled more than 50% of the recommended five daily servings of fruits and vegetables.

Today, we introduce an even more powerful antioxidant formula. A single capsule of the new Enhanced Berry Complete with RZD™ Açaí delivers an antioxidant value equivalent to more than 100% of the recommended daily fruit and vegetable intake.

It is also the first antioxidant formula to use a cutting-edge extraction technology called Radiant Zone Drying™. This patented process delivers the most complete nutritional profile of the açaí berry—for a breakthrough in antioxidant defense.

ORAC: A Measure of Antioxidant Power
To measure the antioxidant strength of various foods, scientists use what is known as the ORAC index. While berries score higher than most fruits and vegetables, açaí boasts one of the highest ORAC values known to modern science.

Unfortunately, most commercial products containing açaí do not reflect the full nutritional content of the fruit. Only a fraction of its phenolic content survives industrial processing, handling, and storage.

RZD™ extraction technology allows for optimal delivery of açaí polyphenols, including highly beneficial anthocyanins, proanthocyanidins, and flavonoids, along with essential fatty acids and other vital compounds.

Why should this matter to you? It’s more than a matter of antioxidant potency. In 2010, a team of researchers reported for the first time that açaí, blueberry, and strawberry polyphenols may provide targeted support for cellular metabolic processes that promote neural and cognitive health in the aging brain. But you need the complete polyphenolic profile to get the benefit.

To order Enhanced Berry Complete with RZD™ Açaí, 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.
SHED POUNDS BY INHIBITING CELLULAR FAT STORAGE

ILLUSTRATION OF ADIPOCYTES.
Health authorities are warning about the devastating consequences of obesity, yet doctors remain in the dark about what causes people to accumulate so many fat pounds as they age.

Through a series of well-designed studies, scientists investigating certain plant extracts found they can block fat storage at the cellular level.

In a significant scientific advance, a potent new weapon has been identified to help safely induce weight loss.

This article describes how a novel dual plant extract favorably modulates six pathways that fat cells use to trigger weight gain.

When tested on humans in a placebo-controlled study, those taking this dual plant extract lost 4.05 inches of abdominal fat and dropped 11.4 pounds after eight weeks...with weight loss observed as early as 14 days.¹
Cells that store fat are called adipocytes. They are deposited throughout our bodies. As we age, adipocytes tend to expand and congregate in areas that are cosmetically unsightly and detrimental to our health.

Of greatest concern are the adipocytes that deposit deep in our abdomens. This “visceral fat” represents more than fat stored on our waistlines. Visceral fat is chemically active tissue that churns out a torrent of pro-inflammatory cytokines.

Those with bulging belly fat suffer constant bombardment from toxic cytokines that trigger the metabolic syndrome and its deadly consequences.

This widespread problem led scientists to seek out plant extracts that specifically interfere with adipocyte fat storage in our abdominal anatomy.

How Unwanted Fat Storage Occurs

Excess calories transform to fat deposits in adipocytes through a multi-step process known as adipogenesis.

When fewer calories are consumed, fat is released from adipocytes to meet the body's energy needs. This is known as lipolysis.

A dual plant extract has been studied based on its ability to simultaneously inhibit adipogenesis (fat storage) and enhance lipolysis (fat breakdown and release).

Like any other cell, adipocytes develop from undifferentiated stem cells. Premature, developing fat cells are called pre-adipocytes. When you ingest more calories than your body needs, “young” pre-adipocytes respond by maturing into “adult” adipocytes.

“Adult” adipocytes take up excess fatty acids from your bloodstream and begin expanding. It is this process of fatty acid uptake and adipocyte expansion that ultimately results in obesity and its pathologic consequences. Every excess calorie contributes to the maturation and growth of fat cells in this way. Past a certain point, adipocytes distend and become bloated, much in the same way your belly does.

Not all adipocytes are the same. While fat cells distribute throughout your body, those that store in your abdomen—producing so-called visceral fat or belly fat—are more than just storage “containers.”

Belly fat cells are chemically active. They form fatty tissue capable of releasing detrimental pro-inflammatory cytokines.

In obese individuals, the mass of excess visceral fat deposits generates a pro-inflammatory flood of cytokines. This cytokine release then incites a cascade of harmful effects that, if left unchecked, contributes to the onset of multiple degenerative diseases.

So unwanted body fat storage happens when pre-adipocyte stem cells mature in order to store excess dietary fat (adipogenesis) while the ability to break down stored fat (lipolysis) diminishes.

Combating Surplus Body Fat Storage

Searching for natural interventions that would effectively inhibit fat accumulation (adipogenesis) and enhance fat burning (lipolysis), scientists evaluated more than a thousand plants for evidence that would meet this criteria.

Two plants whose extracts demonstrated significant biological effects were:

1. Sphaeranthus indicus flower (S. indicus)
2. Mangosteen fruit (Garcinia mangostana)

In the laboratory, S. indicus and mangosteen extracts powerfully impeded adipogenesis.
When cells were treated with *S. indicus* alone, fat storage was inhibited by as much as 65%, compared with control cells. Photographs (below) show a markedly visible difference between the two cell groups. The control cells show a bloated, “foamy” appearance, bulging with fat droplets, compared to the smaller, more naturally contoured cells treated with the *S. indicus* extract.13

Control adipocyte cells not treated with *S. indicus* display lipid accumulation.

Adipocyte cells treated with *S. indicus* inhibited fat accumulation.

Inhibiting Cellular Fat Storage

- An obesity epidemic continues to rage in this country, with more than **two-thirds** of the American population overweight or obese.
- Conventional medicine has yet to offer any safe, long-term, practical solution.
- Cutting-edge researchers continue to identify novel **natural** weight loss–inducing agents.
- Among the most recent is a dual plant extract containing extracts of the flower *S. indicus* and the mangosteen fruit, both native to Asia.
- When **combined**, the resulting **dual extract blend** was found to favorably influence **six** distinct biomolecular pathways by which fat cells trigger weight gain. In placebo-controlled clinical trials involving obese subjects, this dual extract safely induced total weight loss of **11.4 pounds**, a decline of **2.05** in body mass index (BMI), and a reduction of **4.05 inches** in harmful visceral fat after just **eight** weeks.1
Each of these extracts also enhanced lipolysis (or fat burning), by as much as 56% compared to control cells.13

Having identified these unifying properties in the two extracts, the researchers set out to determine if they would exhibit enhanced effects when used in combination.

They found that the S. indicus and mango-steen extracts favorably modulate the activity of six genomic pathways involved in fat cell formation and breakdown.13

Remarkably, these extracts reduced gene expression that promotes adipogenesis while favorably influencing a gene involved in desirable lipolysis.

The box on this page shows how these plant extracts, used alone and in combination, positively modulated the markers involved in unwanted cellular fat accumulation by inhibiting adipogenesis and promoting lipolysis.

Given these observations, researchers recognized that this novel blend of plant extracts could result in significant weight loss via three distinct mechanisms:

1. Preventing “young” fat cells (pre-adipocytes) from developing into “mature” fat cells (adipocytes);
2. Reducing the amount of fatty acids adipocytes could absorb;

The next step was to determine if these plant extracts would induce weight loss in experimental animals and—more importantly—obese humans.

**Preventing Obesity in Rodents**

When young adult rats are fed a high-fat diet they rapidly gain weight—just as humans often do.

To investigate the effects of the plant extracts that worked in cell studies, scientists fed a group of young adult rats a high-fat diet. Half the rats received the dual plant extract while the other half served as the control group.13

The novel blend of S. indicus and mangosteen extracts inhibit expansion of new fat cells while promoting breakdown of lipids in existing adipocytes. Laboratory studies demonstrate the following molecular mechanisms that enable these two plants to combat adipocyte overload:

1. Adipocyte differentiation-related protein (ADRP): Stimulates lipid accumulation and lipid droplet formation in fat cells. Reducing levels of ADRP is considered a novel strategy for preventing or reducing dangerous fat accumulation, especially in the liver. Reducing PPAR-gamma activity helps prevent fat cells from becoming bloated and dysfunctional.
2. Adipocyte fatty acid binding protein 4: Also known as aP2, this transports fatty acids into fat cells for storage. Increased levels of aP2 are associated with lipid profile abnormalities that lead to atherosclerosis; they may also be an independent risk factor for metabolic syndrome and cardiovascular disease.
3. Perilipin: A protein that coats lipid droplets in adipocytes, thereby protecting their fat contents from being broken down. Inhibiting perilipin thus promotes lipolysis, contributing to a reduction in adipocyte fat content.
4. Plasminogen activator inhibitor-1 (PAI-1): Produced primarily by endothelial (artery-lining) cells, PAI-1 plays a key role in blood clot formation and breakdown. It is also secreted by adipose tissue. High levels of PAI-1 thus correlate directly with abdominal obesity, body weight, and body mass index or BMI. In the presence of this novel plant extract blend, PAI-1 levels were ultimately found to decline significantly.
5. PPAR-gamma (peroxisome proliferator-activated receptor-gamma): A primary metabolic “sensor” that triggers adipogenesis in the presence of excess calories. Reducing PPAR-gamma activity helps prevent fat cells from becoming bloated and dysfunctional.
6. Beta-3-adrenergic receptor (β3AR): Gene expression for this recently discovered receptor was increased by the dual plant extract. It regulates fat breakdown (lipolysis) when an energy boost is needed. Switching on the beta-3 receptor spontaneously and dramatically increases fat cells’ energy expenditure, burning up unused fat in the process.

Researchers have demonstrated that the six genomic pathways involved in fat cell formation and breakdown (described above) are favorably modulated when exposed to S. indicus and mangosteen extracts. This provides a scientific basis to explain the anti-obesity effects observed in human clinical trials.
At the end of eight weeks, the control group rapidly gained weight. The rats fed a high-fat diet and given the dual plant extract, on the other hand, reduced body weight gain by an impressive 700%.13

This is not surprising considering these same plant extracts blocked fat accumulation by 48.5% and 65.9% in the cellular model.13

This study demonstrated that these plant extracts decrease diet-induced obesity in young adult rats. The real challenge, however, is whether these same plant extracts are effective in humans who are already obese.

Weight Loss Findings in Humans

Human weight loss studies comprise an active arm that received the potentially effective fat-reducing agent and a similar group that received an inactive placebo.

To evaluate the effects of these two plant extracts, 60 obese adults were recruited and divided into two groups. One arm of 30 patients functioned as the placebo group while a second group of 30 patients received 800 mg per day of a combination of the two plant extracts. Both groups followed a 2,000-calorie-per-day diet and were asked to walk 30 minutes five days a week.

At the end of eight weeks, the group receiving the two plant extracts showed the following improvements:1

1. Reduction in total body weight of 11.4 pounds. This was 3.7 times greater than the placebo group.
2. Reduction of 4.05 inches in the abdomen. This was 2 times greater than the placebo group.
3. Reduction in body mass index (BMI) of 2.05. A decrease 3.9 times greater than the placebo group.

This was a randomized, double-blind, placebo-controlled study, the kind the FDA mandates before it approves new drugs. The charts on this page reveal the magnitude of the weight loss and belly fat reduction that occurred in the group receiving the dual plant extract compared to placebo.1 (See Charts 1 and 2)

In addition to the favorable results seen at eight weeks, researchers were impressed with the reduction in waist and hip circumference, as well as lost body weight that occurred within the first 14 days! In fact after only two weeks, the average weight reduction was 4.6 pounds.1
At eight weeks, the dual plant extract group showed reduction in the waist-to-hip ratio that was 2.2 times greater than the placebo group. This is an important improvement as it indicates dangerous visceral belly fat is being lost.

These findings are supported by a second, similarly designed trial involving 60 obese subjects. They were divided into three groups that consisted of a placebo arm, an active arm receiving one plant extract, and another active arm that received a dual plant extract. All participants followed a 2,000-calorie-per-day diet and were asked to walk for 30 minutes five times a week for 8 weeks.13

After eight weeks the group receiving the dual plant extract experienced statistically significant changes in their abdominal circumference, total body weight, and hip circumference similar to those seen in the first study mentioned above.13

These confirmatory findings indicate that this novel dual plant extract may enable aging humans to safely shed unwanted body fat stores. No major adverse events or side effects were reported in either study.

**Protection against Coronary Thrombosis**

Most sudden death heart attacks occur when a blood clot forms in a coronary artery, choking off oxygenated blood to a portion of the heart muscle.

A protein called plasminogen activator inhibitor-1 (PAI-1) inhibits the normal breakdown of arterial blood clots.29 High levels of PAI-1 are observed in obese individuals and are associated with increased heart attack risk.30,31

When studying the dual plant extract, researchers measured serum levels of plasminogen activator inhibitor-1 (PAI-1). Those receiving the dual plant extract showed a 24.3% reduction in dangerous PAI-1 levels, while the placebo group showed a 2.4% increase.1 (See Chart 3)

Those supplemented with the dual plant extract had a 60% drop in triglyceride levels compared to baseline.4

Subjects given the dual plant extract increased levels of the key metabolic hormone adiponectin.1 Adiponectin regulates how much sugar is in your bloodstream and how quickly your body breaks down fat. In terms of fat loss, high adiponectin levels are desirable. Higher levels of adiponectin are associated with decreased deposits of body fat and a reduced susceptibility to diabetes and metabolic syndrome.42

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**Chart 3**

Adapted from: FASEB J. April 2011; 25:(Meeting Abstract Supplement) 601.9.
The dual plant extract group showed trends toward reduced glucose and cholesterol, which are expected to occur in response to loss of belly fat and body weight.¹

The loss of visceral fat in the dual extract group—4.05 inches, amounting to twice the decline observed in the placebo group—is compelling.¹ This is important because visceral fat releases a storm of pro-inflammatory cell-signaling molecules. Excess visceral fat is a known risk factor for a number of serious health threats, ranging from systemic inflammation to increased risk of hypertension, atherosclerosis, type 2 diabetes, and coronary artery disease.⁴³-⁴⁵

Taken together, these findings indicate markedly reduced vascular disease risk in obese individuals taking 800 mg a day of this dual plant extract.

Summary

Obesity arises from the increased size of individual adipocytes (fat cells) due to enhanced lipid (fat) accumulation. It worsens as greater numbers of pre-adipocytes transform into dysfunctional, bloated adipocytes.

The novel blend of plant extracts described in this article favorably influences six distinct pathways by which fat cells trigger weight gain.

In cell culture, these plant extracts reduce the ability of progenitor fat cells (pre-adipocytes) to transform into bloated fat cells. These studies also show that components of this dual plant extract reduce the amount of fatty acids taken up by adipocytes (adipogenesis) and facilitate the breakdown (lipolysis) of fat stored in existing adipocytes.

In a placebo-controlled clinical trial involving obese humans, this blend of S. indicus and mangosteen plant extracts safely induced weight loss of 11.4 pounds, along with a decline of 2.05 in body mass index (BMI) and a reduction of 4.05 inches in harmful visceral fat.¹

While our medical establishment has failed to offer any safe, long-term, practical solutions for today’s obesity epidemic, natural agents are now available that substantively augment the effects of a sensible weight loss program. ●

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

Potent Anti-Diabetic Properties

Long prized in traditional Ayurvedic medicine for their weight loss-inducing properties, scientists confirmed that extracts from Sphaeranthus indicus (S. indicus) and the mangosteen fruit (Garcinia mangostana) exert an anti-diabetic effect in humans.

S. indicus has been used for centuries to combat diabetic symptoms, protect the liver, quell inflammation, boost mood, and aid in digestion.⁴⁶

Diabetic lab animals treated with S. indicus extracts exhibit substantial reductions in blood glucose, along with enhanced liver and pancreatic function.⁴⁷,⁴⁸ In insulin-resistant mice, S. indicus extracts lower blood sugar and triglyceride levels while facilitating more efficient uptake of glucose in muscle tissue.⁴⁹ Diabetic animals treated with S. indicus exhibit significantly lower levels of tissue oxidation,⁵⁰ a major underlying factor in most life-threatening diabetic complications.⁴⁸,⁴⁹

The mangosteen is an edible fruit that grows throughout South Asia. Like S. indicus, parts of the fruit and its juice have been used for centuries to combat diabetes and obesity. One vital mechanism is its ability to block the critical metabolic enzyme alpha-amylase that breaks down starches into sugar.⁵¹ Alpha-amylase blockers limit the spike in blood glucose levels that would normally follow a carbohydrate-rich meal. Mangosteen extracts also inhibit enzymes involved in synthesizing fat molecules.³³ It is this combination of blocking sugar uptake and blocking fat production that accounts in part for its weight loss–inducing properties.

Mangosteen extracts have an additional, noteworthy benefit. They have been shown to effectively limit the inflammation that typically accompanies fat cell accumulation.⁵,⁵² This inflammation contributes directly to insulin resistance. In one compelling study, levels of the inflammatory marker C-reactive protein declined significantly⁵³ in obese individuals consuming mangosteen juice after only 8 weeks.
References


13. Results based on initial analyses of unpublished research data.


35. Oben JE, Ngondi JL, Blum K. Inhibition of Irvingia gabonensis seed extract (OB131) on adipogenesis as mediated via down regulation of the PPARgamma and leptin genes and up-regulation of the adiponectin gene. Lipids Health Dis. 2008;7:44.


Since Life Extension® introduced CoQ10 in 1983, our scientists have continued to develop increased potency and absorbability. Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ contains PrimaVie® shilajit that doubles levels of CoQ10 in the mitochondria.1 Combining CoQ10 and shilajit produced a 56% increase in cellular energy production in the brain, and in muscle there was a 144% increase in cellular energy production.2 Shilajit boosts CoQ10’s beneficial effects by stabilizing CoQ10 in the superior ubiquinol form, which prolongs its action at the cellular level.3,4 Additionally, shilajit facilitates the more efficient delivery of CoQ10 into the mitochondria, which results in enhanced cellular energy.5-9 Shilajit helps the mitochondria convert fats and sugars into the body’s main source of energy, ATP (adenosine triphosphate).5-9

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ Combining ubiquinol CoQ10 with shilajit generates a powerful synergy that supports more youthful cellular energy production than CoQ10 alone.2,4,5

References:

PrimaVie® is a registered trademark of Natreon, Inc. Kaneka QH® is a registered trademark of Kaneka Corporation.
Take a Bite Out of your Appetite

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

The fantastic news is that a proprietary extract of saffron, called Satiereal®, is clinically proven to deal with nearly all of the above issues. In fact, women involved in Satiereal® studies experienced the following amazing results:

- 100% reduction in the desire to snack
- 50% fewer instances of eating between meals
- Less hunger
- Moderate weight loss
- More energy
- Better mood

Say goodbye to “kitchen raids” and say hello to “weight control” with Optimized Saffron with Satiereal®.

A bottle containing 60 vegetarian capsules of Optimized Saffron with Satiereal® retails for $36. If a member buys four bottles, the cost is just $24 per bottle.

References

To order Optimized Saffron with Satiereal®, call 1-800-544-4440 or visit www.LifeExtension.com

Satiereal® is a registered trademark of INORÉAL. International patents pending.

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

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Results may vary. 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.

AdipoStat is the first dietary intervention to support healthy body weight using these innovative approaches. Through multiple pathways, it targets the mechanisms by which fat-storing cells or adipocytes become bloated and metabolically dysfunctional.

This widely overlooked cellular condition leads to excess fat accumulations in the belly and throughout your body.

After careful scientific analysis of over 1,000 plant extracts, researchers identified the two species included in AdipoStat that target adipocytes: Sphaeranthus indicus flower (S. indicus) and the mangosteen fruit (Garcinia mangostana).

Optimal results were shown in studies when these two plant extracts were combined.
Three Ways to Fight Fat Cell Derangements

AdipoStat functions via the following mechanisms to support healthy body weight:

1. AdipoStat targets adipocyte (fat cell) creation.
3. AdipoStat induces fat in adipocytes to break down (lipolysis).

Success in Clinical Trials

AdipoStat’s performance in clinical studies indicates it can safely deliver impressive results.

In a key study, 30 adults with difficulty maintaining healthy body weight ingested 800 mg per day of AdipoStat while following a 2,000-calorie-per-day diet and were asked to walk just 30 minutes five days a week. A group of equal size was given placebo.

After just eight weeks, the AdipoStat group:

- Lost 4.05 inches of harmful belly fat—2.0 times the placebo group.
- Experienced a 2.05 drop in body mass index (BMI)—3.9 times over placebo.
- Shed 11.4 pounds of total body weight—3.7 times over placebo.

These improvements began to emerge after just 14 days.

After eight weeks, the AdipoStat group saw a noticeable drop in waist-to-hip ratio, indicating they experienced fat loss in the abdominal area, where excess fat mass is associated with serious health issues.

They also exhibited favorably elevated levels of a hormone called adiponectin. Adiponectin sends command signals that determine how big your fat cells get, how much they break down (lipolysis), and how often they are produced (adipogenesis).

A second human clinical trial yielded similar results, confirming AdipoStat’s beneficial effects.

The New AdipoStat Formulas

There are two ways you can easily incorporate AdipoStat into your daily supplement program.

The first option is to take AdipoStat by itself. The daily dose of one capsule of Advanced Anti-Adipocyte Formula taken 30 minutes before each of the two heaviest meals of the day provides:

AdipoStat Proprietary Blend ............................... 800 mg
(Sphaeranthus indicus extract and Garcinia mangostana extract)

The second option enables consumers to obtain the same dose of AdipoStat along with the highly popular Integra-Lean® (Irvingia gabonensis). Irvingia operates via additional mechanisms to combat surplus fat storage, including inhibition of glycerol-3-phosphate dehydrogenase, an enzyme involved in the conversion of glucose and triglycerides into adipocyte fat storage.

The Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean® supplies 800 mg of AdipoStat and 300 mg of proprietary Irvingia extract in the same suggested daily serving of one vegetarian capsule before each of the two heaviest meals.

Advanced Anti-Adipocyte Formula with AdipoStat
Item # 01510

A bottle containing 60 vegetarian capsules of Advanced Anti-Adipocyte Formula with AdipoStat retails for $35. If a member buys four bottles, the price is reduced to just $24 per bottle.

Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean® African Mango Irvingia
Item # 01509

A bottle containing 60 vegetarian capsules of Advanced Anti-Adipocyte Formula with AdipoStat and Integra-Lean® African Mango Irvingia retails for $39. If a member buys four bottles, the price is reduced to just $27 per bottle.

Integra-Lean® Irvingia is protected by U.S. Patent No. 7,337,790. Other patents pending.

AdipoStat is a proprietary ingredient derived from natural plant extracts exclusively distributed by InterHealth N.I.

References
2. Results based on initial analyses of unpublished research data.
5. Lipids Health Dis. 2008 Nov 13;7:44.

To order either of the new Advanced Anti-Adipocyte Formulas call 1-800-544-4440 or visit www.LifeExtension.com

Caution: These products are designed to target several critical factors involved in age-related weight gain. Those who ingest more calories than what their body has the metabolic capacity to utilize will not see results. This is because some people are ingesting so many excess calories that no matter how much their metabolic rate is increased, or how much improvement occurs in their after-meal blood sugar and triglyceride levels, or by how much youthful insulin sensitivity and other body fat-regulating systems are restored, they are overwhelming the metabolic capacity to utilize these calories. This will result in excess calories being stored in adipocytes. One cannot consume limitless calories and expect to shed fat pounds by taking drugs, nutrients, and/or hormones that demonstrate weight loss in clinical studies.

*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.
Life Extension® started recommending DHEA to members in 1981 and pregnenolone in 1996.

Our review of the scientific literature decades ago indicated that when used appropriately, these bioidentical hormones may slow the onset of multiple degenerative diseases and sustain optimal cognitive function in maturing individuals.

Since then, an armada of published studies has validated our position. Just last year, there were 380 newly published papers about DHEA.

This wealth of incontrovertible medical evidence has not stopped the government from erecting regulatory barriers that would deny you the ability to replenish DHEA and pregnenolone to youthful levels.

The latest governmental assault comes out of California. The sale of DHEA and pregnenolone is now illegal unless accompanied by a fear-mongering, scientifically baseless warning label.

We think the State of California should have consulted enlightened, reputable scientists before imposing such onerous statutory burdens. In this instance, this legislative mandate only serves to misinform and frighten the public about the health-promoting properties of hormones made by our own bodies.

Once again, it is time to set the record straight regarding the medically established benefits of DHEA and pregnenolone.
STATE OF CALIFORNIA DECREES STRONG WARNING LABELS MUST BE PUT ON DHEA AND PREGNENOLONE

WARNING: NOT FOR USE BY INDIVIDUALS UNDER THE AGE OF 18 YEARS. DO NOT USE IF PREGNANT OR NURSING. Consult a physician or licensed qualified healthcare professional before using this product if you have, or have a family history of, breast cancer, prostate cancer, prostate enlargement, heart disease, low "good" cholesterol (HDL), or if you are using any other dietary supplement, prescription drug, or over-the-counter drug. Do not exceed recommended serving. Exceeding recommended serving may cause serious adverse health effects. Possible side effects include acne, hair loss, hair growth on the face (in women), aggressiveness, irritability, and increased levels of estrogen. Discontinue use and call a physician or licensed qualified healthcare professional immediately if you experience rapid heartbeat, dizziness, blurred vision, or other similar symptoms. KEEP OUT OF REACH OF CHILDREN.

Separate cautions for pregnenolone must now include the statements that: “Pregnenolone may affect levels of other hormones, such as progesterone, estrogen, testosterone, and/or DHEA. Do not take this product if you have a history of seizures. Do not take this product if you have breast cancer, prostate cancer, or other hormone-sensitive diseases.” And the caution for DHEA now must read, “Do not use DHEA if you are at risk for or have been diagnosed as having any type of hormonal cancer, such as prostate or breast cancer.”

The published literature on DHEA and pregnenolone as supplements paints a rather different picture.

Supplementation with DHEA and/or Pregnenolone—The Scientific Truth

Cancer Risk

Both pregnenolone and DHEA are “parent” hormones of the sex hormones estrogen, progesterone, and testosterone. Taking pregnenolone or DHEA supplements, therefore, may indeed raise levels of those sex hormones; in fact, that is considered one of the desired effects. Mainstream physicians, however, continue to express concern about boosting sex hormone levels late in life, citing the theoretical risk of hormone-dependent malignancies such as breast and prostate cancers.
The truth, as always, is more nuanced. Important work by Harvard urologist Abraham Morgentaler and others has revealed that low testosterone levels increase prostate cancer risk.\textsuperscript{2,3} Morgentaler himself has become a strong proponent of supplementation with testosterone in older men.\textsuperscript{3} He was also the lead researcher on a study demonstrating that DHEA supplementation in rats enhanced total testosterone levels without producing any deleterious changes in prostate tissue.\textsuperscript{4}

Similar theoretical risks apply for breast cancer. But no increased risk of breast cancer has been demonstrated in large studies of combinations of natural estradiol and progesterone (the natural products of DHEA and/or pregnenolone).\textsuperscript{5} Furthermore, natural progesterone alone may reduce cancer risk, again suggesting that boosting sex hormone levels with precursors such as DHEA and pregnenolone is safe.\textsuperscript{6} One recent animal study demonstrates a direct anti-cancer effect of DHEA in obese rats.\textsuperscript{7}

To date, no study has convincingly shown an increase in human hormone-dependent cancer risk as a result of DHEA or pregnenolone supplementation.\textsuperscript{8} Naturally, any individual who is known to have cancer of any kind should consult with his/her physician when using any new supplement or medication.

Heart Disease or Low HDL

One of the most perplexing features of the California label requirement is the caution about a family history of heart disease or low high-density lipoprotein (HDL) cholesterol.

DHEA is in fact known to decrease cardiovascular risk factors by improving vascular remodeling in the face of high blood pressure, improving insulin sensitivity and reducing obesity, and increasing HDL levels.\textsuperscript{9-12} No studies have been published demonstrating that pregnenolone raises any cardiovascular risk factors.

Rapid Heartbeat, Dizziness, or Blurred Vision

The California label requirement explicitly warns against continuing supplementation in the face of rapid heartbeat, dizziness, blurred vision, or other “similar symptoms.” This, like the general cardiovascular precaution, is mystifying in the face of the published literature.

There are no published, peer-reviewed articles suggesting that either DHEA or pregnenolone supplements are associated with rapid heartbeat, tachycardia, or atrial or ventricular fibrillation. In fact, men with atrial fibrillation were shown in one study to have abnormally low DHEA levels.\textsuperscript{13}
Similarly, there is no published report of either DHEA or pregnenolone in association with any visual disturbance or glaucoma. Just two reports exist on age-related macular degeneration and DHEA levels. The older one suggests that higher DHEA levels might be associated with increased risk, but the more recent article demonstrates a protective effect of higher DHEA levels. And a single French study demonstrated that higher DHEA levels are associated with reduced risk of cataracts.

Just one study, from 1998, shows in an animal study that pregnenolone produces an excitatory effect on nerve cells in the inner ear, where balance is maintained. This could produce a theoretical risk of dizziness or vertigo, but no report of such an effect in humans has been published.

Virilization

Because both DHEA and pregnenolone boost natural levels of testosterone as well as estrogen, there is some concern that women who take the supplements might express more masculine traits such as male pattern baldness, hair growth on the face, and aggressive behaviors. In practice, however, these effects appear infrequently and are mild and reversible when they do occur.

A sensible recommendation for anyone taking DHEA or pregnenolone is to monitor oneself for any of these mild side effects, and to discontinue use or reduce dose if those effects outweigh the benefits of continued supplementation.

Seizure History

Some of the beneficial neurosteroid effects of pregnenolone result from an increased activity of brain cells. But in people with known seizure disorders (epilepsy), and in animal studies where the steroid is directly injected into the brain, this effect can lower the seizure threshold and make a seizure more likely. There are no published studies, however, suggesting an increased risk of seizures from pregnenolone supplementation in humans without a prior seizure history.

Summary

California’s warning label requirement significantly overstates any risks associated with DHEA and pregnenolone as supplements. Despite the dire wording on the required label, there remains no convincing evidence that either supplement, taken at recommended doses, increases cancer risks in humans.
The other risks mentioned in the required warning label either occur rarely or are reversible (hair growth), occur in well-defined populations who should avoid using the supplements (seizure patients), or have no credible basis in the peer-reviewed literature (cardiovascular risk, lipid disturbances, vision disturbances, dizziness).

On the other hand, millions of people worldwide have been using both supplements for more than two decades, during which time no serious adverse events have ever been reported in the world literature or in the FDA’s intense adverse event monitoring system.11

Readers should understand that the cautions on labels of DHEA and pregnenolone supplements reflect an “abundance of caution” on the part of the California rule-makers...or perhaps the wishes of pharmaceutical lobbyists who fear too many people are protecting themselves against age-related disease by maintaining youthful hormone balances.

The overwhelming evidence in the global, peer-reviewed literature suggests exactly the opposite, namely that these supplements are safe and effective when used as directed by health-conscious adults.

What is Pregnenolone?

Like DHEA, pregnenolone is a naturally produced steroid hormone that acts as a “parent” to a variety of other hormones, including the sex steroids and hormones vital for controlling blood mineral content and metabolism. Pregnenolone is also a potent neurosteroid, protecting brain cells from age-related damage and preserving their function.36 In fact, pregnenolone is being explored for use in acute management of brain injury and stroke.40,41

Normal brain tissue contains large amounts of pregnenolone, and animal studies reveal that the steroid enhances development of new brain cells.42,43 In humans, pregnenolone supplementation produces significant improvements in both depression and schizophrenia.44-47 And pregnenolone shows promise in mitigating memory loss and even some of the abnormal structural findings in Alzheimer’s disease.48-50

Pregnenolone also has calming, anti-stress effects in humans, attributed to its ability to modulate brain receptors for certain neurotransmitters. Remarkably, when used in conjunction with the common anti-anxiety drug diazepam (Valium®), pregnenolone reduced the sedative side effects without affecting the anti-anxiety effects.51

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

Here is an example of a published abstract of a study on DHEA from a German scientific journal. Apparently, the authors at the Department Trauma Surgery, University Hospital of Essen in Germany know something that the California authorities don’t know. First of all, the study states that “DHEA...is free of major side effects...”. Secondly, they point out that DHEA may be a significant therapy for trauma and that “several data demonstrate the beneficial effect of DHEA in situations of critical illness including trauma hemorrhage and sepsis. Accordingly DHEA improved the survival rate and clinical situation in several animal models of trauma hemorrhage and systemic inflammation.”

Dehydroepiandrosterone (DHEA): a steroid with multiple effects. Is there any possible option in the treatment of critical illness?23

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ABSTRACT

DHEA is the major circulating steroid in human blood and it is a central intermediate in the metabolic pathway of sex steroid hormone formation. Although the specific effect of DHEA is still unclear it was demonstrated that DHEA modulates several physiologic processes including metabolism and cardiovascular function. Furthermore, a profound immunomodulatory effect of DHEA was reported. Several data demonstrate the beneficial effect of DHEA in situations of critical illness including trauma hemorrhage and sepsis. Accordingly DHEA improved the survival rate and clinical situation in several animal models of trauma hemorrhage and systemic inflammation. This effect was paralleled by profound changes of immunologic parameters, organ function, and heat shock protein production. Therefore, it was claimed that DHEA may be a new alternative/additive in the treatment of trauma and sepsis. In line, DHEA is a frequently used drug in the field of anti-aging medicine, it is an over-the-counter drug in several countries, and it was reported that DHEA medication is free of major side effects. Therefore, DHEA could easily be used in a clinical trial investigating its effects in critical ill patients. This article reviews the reported effects of DHEA on the base of the literature with the specific focus on trauma and sepsis/critical illness including its clinical perspectives.

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

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

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

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

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

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

A 2 oz jar of **Amber Self MicroDermAbrasion** retails for $49. If a member buys two jars, the price is just **$31.50** per jar.

To order **Amber Self MicroDermAbrasion**
call 1-800-544-4440 or visit www.LifeExtension.com
Fish Oil Blend with Sesame Lignans and a MORE Concentrated Olive Fruit Extract

A Comprehensive Fatty Acid Formula

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

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

Sesame Lignans and Standardized Olive Fruit Extract for Enhanced Benefits

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

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

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

Super Omega-3 supplies the equivalent content of 6 ounces of extra virgin olive oil. Take two softgels twice daily with meals.
**WHAT DO THESE TWO DHEA STUDIES HAVE IN COMMON?**

1. **STUDY**

   “DHEA enhances effects of weight training on muscle mass and strength in elderly women and men”

   *American Journal of Physiology Endocrinology Metabolism*
   2006 Nov;291(5):E1003-8

2. **STUDY**

   “Effect of DHEA on abdominal fat and insulin action in elderly women and men: a randomized controlled trial”

   *Journal of the American Medical Association*
   2004 Nov;292(18):2243-8

**LIFE EXTENSION® DHEA WAS USED IN BOTH STUDIES!**

DHEA (dehydroepiandrosterone) has demonstrated many benefits, including positive effects on body composition. Regrettably, our natural production of this hormone diminishes by about 80% between the ages of 25 and 75 years. This has been associated with a decrease in muscle mass and strength and an increase in abdominal girth.

In the first of the two studies sponsored in part by the National Institutes of Health, researchers sought to determine the effect of DHEA replacement in DHEA-deficient elderly individuals. They randomized 56 men and women to receive either 50 mg/day of Life Extension’s DHEA before bedtime or a placebo. Both groups then underwent a program of resistance training for four months. At the end of the study, DHEA replacement produced a significantly greater effect in enhancing the benefits of weight training on muscle mass and strength in both men and women compared with the placebo group."}

The second study cited was conducted by the same research team. The effects of DHEA-replacement therapy or a placebo on abdominal fat were investigated for the first time in 56 DHEA-deficient elderly men and women who did not exercise regularly. Using the same DHEA-dosing regimen as in the previous study, the researchers found that DHEA levels rose to youthful ranges in both men and women. This increase was accompanied by changes in body composition. Compared with miniscule changes in weight loss in the placebo group, women taking DHEA lost an average of 10.2% of their visceral (intra-abdominal) fat, while men shed an average of 7.4%. Subcutaneous fat (under the skin) losses averaged 6% in both men and women taking DHEA.

DHEA is widely available as a dietary supplement. These two studies utilized Life Extension’s DHEA formulation to safely restore DHEA levels to youthful ranges in these elderly individuals, which helped maximize lean tissue mass, maintain healthy abdominal weight, and support insulin sensitivity.

**References:**

To order DHEA 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.*
CHOOSE THE DOSE THAT’S RIGHT FOR YOU:

DHEA 15 mg, 100 Capsules, Item #00454
While published studies show the greatest benefit occurs when 50–75 mg of DHEA is consumed each day, some women only need a low dose of DHEA. Just one of these 15-mg capsules a day is all some women need to bring DHEA levels back to youthful levels. A bottle containing 100 15-mg capsules of DHEA retails for $12; if a member orders four bottles, the price is reduced to just $7.50 per bottle. Contains rice.

DHEA 25 mg, 100 Capsules, Item #00385
The minimum dose of DHEA for most healthy aging people is 25 mg a day, though optimal doses are 50–100 mg daily. These 25-mg capsules are a popular way to consume the precise amount of DHEA your body may need. A bottle containing 100 25-mg capsules of DHEA retails for $15; if a member orders four bottles, the price is reduced to just $9.38 per bottle. Contains rice.

DHEA 25 mg, 100 Dissolve-in-Mouth Tablets, Item #00607
A bottle containing 100 25-mg dissolve-in-mouth tablets of DHEA retails for $14; if a member orders four bottles, the price is reduced to just $8.81 per bottle. Contains corn.

DHEA 50 mg, 60 Capsules, Item #00882
The optimal daily dose of DHEA for most people is 50 mg. These economical 50-mg capsules enable most people to conveniently consume the optimal dose of DHEA in just one capsule. A bottle containing 60 50-mg capsules of DHEA retails for $16; if a member orders four, the price is reduced to just $10.50 per bottle. Contains rice.

7-Keto® DHEA 100 mg, 60 vegetarian Capsules, Item #01271
7-Keto® DHEA is a metabolite of DHEA that safely increases fat-burning enzymes in the liver. Human subjects who consumed 200 mg of 7-Keto® DHEA a day in conjunction with a diet and exercise program lost more total weight and body fat than those who took a placebo. Since 7-Keto® DHEA does not convert to estrogen or testosterone in the body, it can be used by those with hormone-sensitive cancers such as breast and prostate cancer. This 7-Keto® DHEA supplement contains a potent antioxidant blend to protect against free radicals that might be formed in response to increased fat-burning. A bottle containing 60 100-mg vegetarian capsules of 7-Keto® DHEA, along with a special antioxidant blend, retails for $40; if a member orders four bottles, the price is reduced to only $27 per bottle. Contains rice.

DHEA Complete (25 mg DHEA+100 mg 7-Keto® DHEA), 60 vegetarian Capsules, Item #01250
To obtain optimal potencies of both forms of DHEA, the DHEA Complete formula provides 25 mg of DHEA, 100 mg of 7-Keto® DHEA, and a potent antioxidant blend in each capsule. For those seeking to combine the multiple benefits of DHEA and 7-Keto® DHEA, this is the ideal single-formula supplement. A bottle containing 60 vegetarian capsules of DHEA Complete retails for $48; if a member orders four bottles, the price is reduced to only $32.40 per bottle. Contains rice.

DHEA 100 mg, 60 Capsules, Item #00883
Some people produce so little DHEA that they need to take high doses. These 100-mg capsules provide high-potency DHEA at a very low cost. A bottle containing 60 100-mg capsules of DHEA retails for $22.50; if a member orders four bottles, the price is reduced to just $14.25 per bottle. Contains rice.

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.

7-Keto® is a registered trademark of Humanetics Corporation. These supplements should be taken in conjunction with a healthy diet and regular exercise program. Results may vary.
BEYOND EYE HEALTH

How Astaxanthin Combats Degenerative Disease
Earlier this year, celebrity physician Dr. Oz touted a compound vital to preserving visual acuity in maturing individuals. He called it “The #1 Supplement You’ve Never Heard of That You Should Be Taking.”

The name of this compound is astaxanthin, and Life Extension members have obtained a potent dose of it in a popular eye health formula.

While the naturally occurring carotenoid astaxanthin may have finally attained mainstream recognition for its crucial role in protecting aging eyes, scientists are discovering it possesses broad-spectrum, systemic properties that combat multiple diseases of aging.

In this article, you will discover the latest findings on astaxanthin’s multimodal ability to target risk factors for cancer, cardiovascular disease, metabolic syndrome, immune disorders, and other forms of degenerative disease.2,3

You will also learn of the drug industry’s predictably corrupt efforts to develop patentable synthetic forms of astaxanthin to treat heart disease—and reap windfall profits.4-8
Astaxanthin is a red-orange carotenoid pigment derived from microalgae, fish, and crustaceans. Scientists have repeatedly demonstrated that high consumption of carotenoids is protective against many oxidative stress-induced, age-related conditions. Astaxanthin stands out among the carotenoids for its exceptional antioxidant capabilities. Researchers estimate that astaxanthin's antioxidant activity ranks up to ten times as high as other carotenoids. Astaxanthin is also unique among the antioxidants in that it spans both layers of the cell membrane, allowing it to trap free radicals outside and inside the cell.

In addition to its formidable antioxidant capability, astaxanthin provides direct anti-inflammatory, immune-boosting, and DNA-protective effects.

Together these capabilities give astaxanthin the kind of multi-targeted actions modern humans need to protect themselves against the onslaught of chronic, age-related diseases, all of which involve oxidative stress, inflammation, and their consequences. Its underlying mechanisms of action effectively slow physiological processes associated with onset of degenerative disease.

**Fighting Metabolic Syndrome**

At the root of many age-related chronic conditions lies the cluster of disorders known as the metabolic syndrome, which includes insulin resistance, obesity, elevated triglycerides, low high-density lipoprotein (HDL), and hypertension. Astaxanthin lowers blood sugar and reduces insulin resistance. It also scavenges the oxygen free radicals that damage lipids and reduce insulin sensitivity, while preserving the capacity of the pancreas to produce more of its own insulin.

Astaxanthin has been shown to potently reduce harmful triglycerides and raise levels of HDL in both animal and human studies, while reducing the size of individual fat cells in an animal model of metabolic syndrome. Animal studies show that astaxanthin also blocks the massive weight gain and elevation in blood lipids triggered by a high-fat diet. Astaxanthin also proved capable of lowering blood pressure and increasing insulin sensitivity in rats.

**Anti-Cancer Mechanisms**

Astaxanthin’s multiple mechanisms of action make it an ideal candidate for prevention and adjuvant treatment of many different kinds of cancer. By quenching free radical production in oxidatively stressed tissues, astaxanthin can prevent the DNA damage that is required to initiate many forms of cancer. By subduing inflammatory mediators such as COX-2 and NF-kB, astaxanthin may prevent cancer promotion, the step that allows potentially cancerous cells to blossom into full-blown tumors. By supporting healthy intercellular communication, astaxanthin improves tissue resistance to cancers. And by impairing enzymes like matrix metalloproteinases (MMPs) that cancer cells use to break down tissue barriers, astaxanthin can help prevent tumor invasion and metastatic spread.

Astaxanthin has shown beneficial effects in preventing colon, breast, and bone cancers in a variety of animal models. In humans, astaxanthin not only reduces markers of DNA damage and inflammation, but it also enhances immune function of the kind that destroys nascent cancer cells before they can grow up into dangerous tumors. Laboratory studies demonstrate that astaxanthin has multiple beneficial effects on the immune system, boosting function of natural killer cells that patrol for abnormally developing cells that could turn cancerous.

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Targeting Cardiac Risk Factors

Heart disease and stroke are among the leading killers of older adults; like cancer, these diseases have origins in oxidative stress and inflammation. Astaxanthin’s powerful antioxidant characteristics are producing compelling results in cardioprotection and improving vascular health.

In laboratory studies, astaxanthin improves endothelial function, allowing arteries to respond normally to stimuli that get them to relax. That effect helps normalize blood pressure, especially in animals bred to be hypertensive. Astaxanthin also reduces the number of inflammatory cells that infiltrate into developing atherosclerotic plaques, the dangerous accumulations of cholesterol and damaged tissue that ultimately reduce blood flow.

Astaxanthin promotes the strength of the heart muscle’s “squeeze,” which may help the heart to maintain normal blood flows both before and after an injury to the tissue. This effect may help the heart muscle limit the size of the area that is injured when blood flow is too low. By battling the effects of advanced glycation end products (AGEs), the dysfunctional proteins that form in the presence of high blood sugar, astaxanthin may help prevent cardiovascular damage in diabetes.

Even after a vascular “event” such as a heart attack or stroke, astaxanthin helps mitigate the damage by reducing the burst of oxygen free radicals generated in the destructive “ischemia-reperfusion” injury. That kind of injury actually accounts for much of the long-term loss of function following those vascular events.

Human studies of astaxanthin have demonstrated reduced markers of oxidative stress and inflammation, along with improvements in the way blood flows through vessels. An astaxanthin supplement reduced systolic blood pressure in older adults with metabolic syndrome. A human trial to investigate astaxanthin’s effects on arterial stiffness is underway.

Astaxanthin

- Astaxanthin has long been shown to defend aging eyes against the threat of cataracts, age-related macular degeneration, and glaucoma.
- New research has shed light on its capacity to target multiple degenerative diseases, including metabolic syndrome, cardiovascular disease, cancer, cognitive decline, and deteriorating immune function.
- Astaxanthin also supports stomach, eye, and skin health.
Enhanced Cognition and Memory

Astaxanthin is becoming known in scientific circles as “a potent candidate for brain food,”54 with the potential for slowing or stopping chronic neurodegenerative conditions like Alzheimer’s and Parkinson’s diseases. Astaxanthin protects neurons by preventing oxidative damage and quenching free radicals that injure brain cells in these conditions.54 Additionally, it works by blocking the inflammation and excitatory neurotransmitter release that further contribute to those neurodegenerative diseases.55 Astaxanthin also modifies gene expression, upregulating genes for natural antioxidant systems24 while downregulating those for inflammatory cytokines; this has been shown to help prevent brain cell death induced by the amyloid-beta.56,57 A recent human study found that astaxanthin reduced the accumulation of a toxic dementia-related metabolite in the red blood cells of healthy older adults.58

Astaxanthin’s powerful antioxidant properties also make it protective against acute ischemia-reperfusion injury to the brain following a stroke.59 It also mitigates the more chronic damage caused by sustained low-level impairments in blood flow such as those seen in micro-infarct dementia. Both animal and human studies indicate that these effects translate into improved memory and information-processing capacity in aging brains.54,69 Animal studies further demonstrate an intriguing anti-anxiety effect.60

Immune Support

The aging immune system gradually loses its ability to produce protective antibodies against invading organisms. The aging immune system also has a propensity to produce harmful autoimmune reactions.61 Astaxanthin boosts antibody production in response to invading microbes.62 Astaxanthin also favorably modifies the way various immune system cells respond in the face of an attack, which has the potential to make infections both less likely and less serious.63-65 Human studies demonstrate enhanced immune responses in humans supplemented with astaxanthin.28

Better Physical Performance

Astaxanthin may help you capture the benefits of regular moderate exercise, which in turn can improve your cardiovascular, metabolic, cognitive, and immunologic health. Astaxanthin can limit the impact of the cardiac and skeletal muscle damage that accumulates with strenuous exercise, potentially allowing for a longer, more comfortable workout.66 It improves muscle cells’ ability to use fat as a fuel source, making them more efficient and helping to burn body fat.67,68 Those enhancements can lead to improved exercise endurance and reduced fatigue as well.67,69

Gastric Health

The clinical importance of astaxanthin’s multi-targeted immune-modulating effects is clearly evident in the ways that astaxanthin fights off the bacterium called Helicobacter pylori (H. pylori). About half the world’s population is infected with this pathogen, which produces a spectrum of stomach disorders ranging from chronic gastritis and ulcers to gastric cancer.70

Astaxanthin mitigates the inflammation associated with H. pylori infection of the stomach.70 Animal studies indicate that astaxanthin inhibits the growth of H. pylori in the stomach.70,71 Astaxanthin has proven its efficacy in reducing symptoms of gastroesophageal reflux (heartburn, or GERD), especially in people with H. pylori infections.72
Loss of vision is a terrifying reality for millions of aging Americans. Three major age-associated causes of blindness are cataracts, age-related macular degeneration, and glaucoma. All of these are associated with chronic oxidative damage, and most involve some degree of inflammation. That makes powerful antioxidants such as astaxanthin of natural interest to prevention-oriented physicians.

Astaxanthin decreases UV light-induced fat oxidation in cells of the human lens, which can help prevent cataract formation. That antioxidant effect helps prevent retinal damage. Astaxanthin also inhibits the pro-inflammatory nuclear factor-kappaB (NF-kB) signaling pathway in the eye. Early, preventive treatment with a combination of antioxidants including astaxanthin, lutein, zeaxanthin, vitamin C, vitamin E, zinc, and copper in humans at risk for age-related macular degeneration demonstrated improvement in vision near the important central part of the retina. Astaxanthin also helped reduce markers of inflammation and cell death in an animal model of glaucoma.

Another promising application of astaxanthin is the prevention of eye fatigue or asthenopia, particularly in people who work long hours viewing a computer screen. In a study of 26 individuals who work at computer terminals, those who were randomly selected to receive astaxanthin each day for one month had a 54% reduction in complaints of eye fatigue, along with improvements in accommodation (your eyes’ ability to change optical power to focus on objects at different distances). A similar study showed that one month of astaxanthin reduced eye fatigue and increased accommodation power in healthy subjects. Researchers believe that astaxanthin may help fight eye fatigue in part by increasing blood flow to the retina.

Natural UV Protection

A lifetime of exposure to ultraviolet (UV) light can trigger wrinkles and skin sagging, and it also dramatically increases the risk of skin cancer. Preliminary laboratory findings suggest that astaxanthin may represent a potential sun-protective agent that can be taken internally to block the damaging effects of UV radiation. Human skin cells in culture rapidly accumulate astaxanthin following treatment, and their vulnerability to UV light-induced oxidative damage is sharply reduced. That effect is accompanied by increased activity of cellular antioxidant systems and reduced cell membrane damage, while production of wrinkle- and sag-inducing skin enzymes is markedly reduced. It is little wonder that astaxanthin has been praised as promoting “beauty from within” in recent press releases.
Summary

Astaxanthin has long been shown to protect aging eyes from cataracts, age-related macular degeneration, and glaucoma. More recent scientific findings indicate astaxanthin as a multimodal intervention for numerous forms of degenerative disease. These include cardiovascular disease, cancer, metabolic syndrome, cognitive decline, age-related immune dysfunction, stomach and eye conditions, and skin damage. Astaxanthin is safe in a wide range of doses. As little as 4-6 mg per day has been shown to effectively support eye health. Between 6 and 18 mg are indicated for management of metabolic syndrome. As much as 40 mg per day mitigates *H. pylori*-induced gastritis, with no side effects reported at any of these doses.18,33,78,85

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 older eyes get, the more susceptible they become to an array of debilitating issues that can hamper eyesight and cripple quality of life. With just a few drops of the proper eye lubricant, eye irritation stemming from dryness or structural dysfunctions may be alleviated.

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

Eye support is essential to preventing age-related vision problems.

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
PRESSURE SUPPORT with Mirtogenol®
Clinically Studied in Europe

As you grow older, the fluid contained within the chambers of your eyes may gradually and unnoticeably increase. This has been shown to contribute to a host of unwanted age-related vision issues encountered by millions of aging Americans.

In a significant scientific advance, researchers have found that a proprietary blend widely available in Europe called Mirtogenol® may effectively support eye pressure already within healthy range as you age.1

Two Potent Nutrients in One Innovative Formula

At the core of Mirtogenol®’s eye health-promoting power are two standardized, proprietary phytoneutrient (plant-based) compounds: Mirtoselect® European bilberry extract and Pycnogenol® French Maritime Pine bark extract.

In a 2010 human study, Mirtogenol® induced up to a 24% reduction in already-healthy eye pressure.1

Extracts of French Maritime Pine bark and bilberry have long been shown to promote healthy blood flow in multiple areas of the body.2-6 The new Eye Pressure Support with Mirtogenol® formula may support healthy blood flow within the tiny vessels (microvasculature) of your eyes, helping to promote healthy fluid pressure inside the ocular chamber.

A daily serving of just one vegetarian capsule of Life Extension®’s new Eye Pressure Support formula contains 120 mg of Mirtogenol®, delivering optimal amounts of both Mirtoselect® European bilberry fruit extract and Pycnogenol® dried French Maritime pine extract.

A bottle containing 30 vegetarian capsules of Eye Pressure Support with Mirtogenol® retails for $38. If a member buys 4 bottles, the price is only $25.50 per bottle.

Mirtogenol® is a registered trademark of Horphag Research, Ltd.
Mirtoselect® is a registered trademark of Indena, S.p.A., Milan, Italy.
Pycnogenol® is a registered trademark of Horphag Research, Ltd.
Pycnogenol® is protected by U.S. patents #5,720,956 and #6,372,266 and other international patents.

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.

To order Eye Pressure Support with Mirtogenol® call 1-800-544-4440 or visit www.LifeExtension.com

Contains rice.
A natural carotenoid called astaxanthin may play an important part in proper eye care and prevention. It not only does astaxanthin help prevent eye fatigue and improve visual acuity—studies suggest that its properties may also hold important applications in promoting cardiovascular health, enhancing athletic endurance, and beautifying the skin.

Super Zeaxanthin contains three plant extracts to help maintain macular density, a berry extract to assist with night vision, and a potent dose of astaxanthin to protect the eye and other tissues from oxidative damage.

Maintain Macular Density

The macular pigment is composed of lutein, zeaxanthin, and meso-zeaxanthin. The density of the macula is essential to proper vision. Macular density declines naturally over time. Eating lots of lutein- and zeaxanthin-containing vegetables can help maintain the structural integrity of the macula. However, since meso-zeaxanthin is not part of the typical diet, it cannot be easily replaced. Young people convert lutein into meso-zeaxanthin inside their macula. Some aging people, however, lose their ability to convert lutein into meso-zeaxanthin.

The Super Zeaxanthin formula provides zeaxanthin, lutein, and meso-zeaxanthin to help maintain macular density.

Combat “Eye Fatigue”

Staring at a fixed-distance object such as a computer screen for a long period of time can cause the muscles that focus your eyes (called the ciliary body) to tire or go into spasm. This can result in physical symptoms such as head discomfort, sensitivity to glare, tiredness, soreness, dryness, and blurry vision.

Super Zeaxanthin contains a potent dose of astaxanthin, a carotenoid found in red algae. Studies show that taking astaxanthin with other carotenoids protects against free radical induced DNA damage, repairs UVA-irradiated cells, and inhibits inflammatory cell infiltration. Astaxanthin also helps support vascular health within the eye and improves visual acuity. Its fat-soluble nature offers protection to sensitive cells inside the eye.

Enhanced Night Vision!

Falling down is responsible for 70% of accidental deaths in older people. Poor lighting conditions are often the culprit. Fortunately, C3G derived from black currant supports eyesight in dark conditions by promoting the healthy function of delicate structures within the retina that support night vision.

Super Zeaxanthin now contains a potent dose of C3G to nourish cells throughout the body.

Comprehensive Ocular Protection in One Daily Capsule

The new Super Zeaxanthin formula provides natural plant extracts that have been shown to promote healthy eyesight. Just one softgel of Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G provides:

- OptiLut®, Lutein Plus® and MZ® [free lutein equivalent 10 mg]
- Zeaxanthin & Meso-zeaxanthin blend [micronized zeaxanthin, OptiLut®, Lutein Plus® and MZ® Marigold Extract (flower)]
- Natural Astaxanthin (AstaREAL® and Zanthin® CO2 extracts of Haematococcus pluvialis algae) [Astaxanthin is not part of the typical diet, it cannot be easily replaced]
- C3G (Cyanidin-3-glucoside) [from European black currant (Ribes nigrum) extract (fruit)]

The retail price for a bottle containing 60 softgels of Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G is $42. If a member buys four bottles, the price is reduced to just $28.50 per bottle.

To order Super Zeaxanthin with Lutein, Meso-Zeaxanthin Plus Astaxanthin and C3G, call 1-800-544-4440 or visit www.LifeExtension.com

References:
NOVEL CITRUS EXTRACT BLOCKS DEADLY CANCER CELL SIGNALING
Cancer cells must communicate with one another in order to infiltrate nearby tissues and to metastasize to distal areas of the body, where they often inflict their lethal effects.

Conventional oncology has largely overlooked the critical role that signaling between cancer cells plays in enabling uncontrolled tumor proliferation.

As single-target interventions, chemotherapy and radiation kill rapidly dividing normal cells, healthy tissue, and malignant cancer cells indiscriminately.

Suppose instead you could disrupt cancer cells’ lines of communication sufficiently to slow and prevent their proliferation, leaving healthy cells untouched?

Avant-garde cancer researchers are finding that a proprietary form of citrus pectin possesses this capability.

In this article you will learn of the mechanisms by which cancer cells “coordinate” their growth and spread through cell-to-cell signaling. You will find up-to-date scientific data detailing how modified citrus pectin or MCP may act to thwart malignant proliferation and tumor growth, improving prognosis and quality of life in cancer patients. In one notable study, 70% of prostate cancer patients treated for 12 months with MCP experienced significant slow-down in the rise of prostate-specific antigen or PSA concentrations in the blood—an indicator of improvement in their prognosis!
Galectins—Cancer Communicators

Living cells use hormones, cytokines, and other chemical signals to communicate with other cells and send long-distance messages through the bloodstream. Up close, cells use proteins and fat molecules on their surfaces to notify one another of their presence and to provide instructions about how, when, and where to grow.

Cancer cells use similar methods to communicate, but their communication networks are corrupt. The signals that cancer cells transmit are for the destruction of normal tissue and may ultimately trigger clusters of cancer cells to migrate and/or metastasize into other tissues—often with lethal effects. Numerous stages of cancer progression involve recognition of specific carbohydrates by cell surface proteins in that corrupt communications network.2

One of these types of cell surface proteins necessary for cancer cells to communicate is called galectins. Recent research reveals that galectins are utilized by malignant tumors3 and that they also act as a sort of molecular “glue,” causing cancer cells to aggregate, or clump together.4,5

When a sufficient number of cancer cells have aggregated or clumped together, some can break off and travel through the bloodstream, setting up footholds in tissues far from the site of the original cancer in the process called metastasis.6,7 Metastatic spread is one of the hallmarks of advanced cancer; and once it occurs, a patient’s chances of survival are sharply reduced. Galectins are involved at each step in aggregation, invasion, and metastasis.5,8-10

Galectins help cancer cells fight off our best chemotherapy, making the cells resistant to apoptosis, or programmed cell death.9 Finally, galectins are emerging as vital players in producing inflammation, often a necessary step in cancer promotion.5,11,12

Given their multiple roles in cancer development, it is clear why galectins have become exciting new targets for drug development.13,14 If we could interfere with galectins on cancer cell surfaces, we would have a powerful means of disrupting their coordinated attacks on our bodies. And indeed, there is tremendous interest in the world of Big Pharma to bring out new anti-galectin drugs.12 As always, though, we can expect that such drugs will be a) expensive, b) slow to reach the market, and c) targeted only at one specific target in the complex array of galectin-based communications.

Modified Citrus Pectin (MCP)—Jamming Cancer Communications Naturally

Intact citrus pectin molecules are long-chain, branched polysaccharides made from individual galacturonic acid molecules strung together. Galacturonic acid is the oxidized form of galactose. The galectins that make cancer cells so dangerous act by binding to galactose molecules on one another’s surface membranes. So, by introducing a large number of reduced molecular weight chains of pectin molecules into the body, we can essentially “coat” the galectins with innocuous galactose molecules connected to nothing more dangerous than the pectin used to prepare jelly.15
That coating of modified citrus pectin, in turn, prevents galectins from interacting with one another and helping cancer cells to aggregate, adhere, and metastasize.\textsuperscript{15,16} Since galectins also provoke expression of the protease enzymes that allow tissue invasion, we can expect that pectin treatment would reduce cancers’ ability to invade tissue as well.\textsuperscript{17} A proprietary form of modified citrus pectin (MCP) was shown to interrupt and reduce the metastatic process by reducing migration, adhesion, and invasion in both the androgen-independent prostate cancer PC-3 line, and in the aggressive breast cancer triple negative cell line, MDA-MB-231.\textsuperscript{18}

Scientists have recently found that this proprietary form of MCP possesses immune enhancement properties. Specifically, MCP enhances natural killer (NK) cell activation and activity. This is important as it sheds light on the mechanisms of MCP. Not only is the cancer cell being bound to the MCP and presented to the immune system, but the immune system is dramatically enhanced and stimulated by the MCP.\textsuperscript{19}

In 2009 it was shown for the first time that galactose-containing portions of pectin molecules do indeed bind to the human galectin known as galectin-3,\textsuperscript{20} which regulates cell growth, cell adhesion, cell proliferation, angiogenesis, and apoptosis.\textsuperscript{9}

But naturally occurring, unmodified pectin molecules are bulky and difficult to absorb in the digestive tract, and they prefer to bind to one another rather than to molecules such as galectins. In order for pectin molecules to be biologically useful in our battle against cancer, they have to be modified. Specifically, they need to be reduced in size and complexity, to form shorter-chain, less highly branched molecules that offer multiple sites where their galactose components are available for binding to galectins on cancer cells.

A proprietary formulation of modified citrus pectin that is reduced in size is turning the cancer-fighting world upside down.\textsuperscript{20} MCP is prepared from the pith of citrus peel that would otherwise go to waste.\textsuperscript{15} MCP production can be accomplished in a “green” fashion, minimizing its carbon footprint even while producing a health-giving end product.\textsuperscript{21}

Citrus fruit has the highest pectin content of most common foods. Its modification by a non-GMO (not genetically modified) enzyme controlled by heat and pH treatment produces relatively short-chain, non-branched pieces of the larger pectin molecule.\textsuperscript{6} MCP is rich in the galactose-containing sub-units that bind to galectin-3, the primary galectin involved in cancer promotion, adhesion, and metastasis.\textsuperscript{6,15} Let’s examine the world literature on this remarkable cancer-fighting compound.

### Blocking Cancer Cell Communication

- Cancer cells must communicate with one another to invade, colonize, and proliferate in healthy tissue.
- A proprietary form of *citrus pectin* may disrupt this inter-cellular communication, potentially slowing metastasis and improving quality of life in cancer patients.
- So-called *modified citrus pectin* may retard tumor growth, induce selective cell death for specific cancers, and inhibit the development of tumor-feeding vasculature.
- This novel capability indicates its potential value as part of a multitargeted, *natural* cancer-preventive regimen.
MCP’s Multi-targeted Effects on Tumor Growth, Progression, and Metastasis

It has been nearly two decades since the first studies demonstrating that MCP is capable of preventing metastasis in experimentally induced cancers. Mice that had been injected with human melanoma (skin cancer) cells had very high rates of colonization of their lungs with the deadly metastases; that effect was strongly inhibited when the cells were pre-treated with MCP. That astonishing result was shown to be caused by binding of tumor galectins by the MCP, which interfered with cell-to-cell recognition. A subsequent study showed that similar treatment also inhibited melanoma cells’ ability to anchor themselves to a growth medium, similar to the way metastatic tumors establish themselves in previously healthy tissue.

Compelling studies in other animal models have shown similar (and even superior) results. In one case, 15 out of 16 control rats injected with prostate cancer cells developed lung metastases, while only 7 out of 14 given a 0.1% solution of MCP developed lung metastases. The animals that did suffer metastases had significantly fewer in the treated than in the control groups. Interestingly, in that early study, the MCP appeared to have no effect on the growth of the primary tumors, a finding that would be challenged as we learned more about MCP.

To illustrate that point, let’s look at a study of human colon cancer cells implanted into mice (a standard human colon cancer model). The mice were given MCP in their drinking water at low or high doses. By the 20th day of the study, a significant reduction in tumor size was detected in both groups, compared with control animals. In fact, the low-dose group had an average 38% reduction in tumor size, and an impressive 70% reduction was found in the high-dose group. That was the first demonstration that MCP might actually reduce the size of primary tumors, in addition to its ability to prevent metastases.

Several more recent studies have now confirmed the powerful anti-metastatic effect of MCP in a variety of common cancers.

As scientific interest in MCP increased, so did the level of our detailed understanding of its mechanisms of action (like most nutrients, MCP has more than a single biological target). It was found that tumor growth, angiogenesis (new blood vessel formation), and spontaneous metastases were all significantly reduced by MCP given orally. These effects were traced to MCP-related inhibition of galectin-3, the ubiquitous tumor-associated recognition and adhesion molecule. Remarkably, MCP not only inhibits...
**Modified Citrus Pectin Protects Kidneys**

In addition to its role in cancer proliferation, adhesion, and metastasis, galectin-3 is also known to be upregulated in acute kidney injury. Since modified citrus pectin is known to bind with galectin-3, scientists investigated its effects in acute kidney injury.\(^{30}\)

Mice consumed either regular water or MCP-supplemented water for one week before undergoing experimentally induced kidney injury. All the animals demonstrated weight loss and kidney enlargement following the injury, although these changes were lessened in the group that received MCP. Microscopic examination of kidney tissue showed that MCP reduced renal cell proliferation.\(^{30}\)

Two weeks later, during the recovery phase, the MCP-treated mice displayed decreased galectin-3 expression, along with decreases in kidney fibrosis, pro-inflammatory cytokine production, and apoptosis.\(^{30}\)

These findings suggest that MCP is protective against experimental nephropathy and may represent a novel approach to reducing kidney injury over the long term.
An important characteristic of MCP is its ability to induce apoptosis in cancer cells. Remember that apoptosis (programmed cell death) is one of nature’s ways of keeping incipient cancers under control. Most early cancers actually die off from apoptosis-inducing death pathways before they ever take hold, but successful cancers manage to suppress those pathways to survive. MCP induces apoptosis by blocking galectin-3, which itself has anti-apoptotic functions. By blocking galectin-3, MCP allows nature’s own anti-cancer mechanism to resume its normal function, and the cancer cells die.

Recent studies have capitalized on MCP’s apoptosis-inducing features to help increase tumor response to chemotherapy, a vital step in reducing the amount of dangerous chemicals required. And an exciting paper was published in 2010, revealing that a formulation of MCP could induce apoptosis in human and mouse prostate cancer cells. Scientists are keenly interested in this study, because it showed that MCP could preside at the deaths of both androgen-dependent and androgen-independent prostate cancers. Androgen-dependent cancers can be treated with relatively safe androgen-deprivation therapies, but androgen-independent tumors can be highly resistant to treatment. Thus MCP appears to be an outstanding candidate for suppression of both types of prostate cancers, which are the most common diagnosed cancers in men.

**Summary**

Cancer cells rely on the ability to communicate with one another in order to invade, colonize, and proliferate in healthy tissue. A proprietary form of citrus pectin has been shown to disrupt this inter-cellular communication, slowing metastasis and improving quality of life in cancer patients. Preliminary studies suggest modified citrus pectin may retard tumor growth, induce selective cell death for specific cancers, and inhibit angiogenesis—the spontaneous growth of blood vessels tumors require to nourish themselves and spread.

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

Dr. Isaac Eliaz, MD, has been researching the anti-cancer and chelation properties of modified citrus pectin for the past 20 years. His work in this field has been published in prestigious journals. Currently, Dr. Eliaz is medical director at Amitabha Medical Clinic in Sebastopol, CA. Dr. Eliaz specializes in integrative medicine and cancer treatment and has been practicing integrative medicine with a specific focus on cancer and chronic illness for 25 years.
References


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).

**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.⁹

The retail price for a bottle containing 90 softgels (three-month supply) is $26. If a member buys four bottles, the price is reduced to just $17.25 per bottle.

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Super K formula provides in just one daily softgel:

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<th>Vitamin</th>
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<tr>
<td>Vitamin K1</td>
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<tr>
<td>Vitamin K2 (MK-4)</td>
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<tr>
<td>Vitamin K2 (MK-7)</td>
<td>100 mcg</td>
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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 softgels.

Contains tree nuts (coconut).

**Warning to Coumadin® (warfarin) Drug Users:**

Patients prescribed vitamin K antagonists anti-coagulant prescription drugs like warfarin should consult their physician before taking vitamin K supplements like Super K and Super Booster. There is evidence, however, that users of drugs like warfarin could benefit from a consistent low dose of supplemental vitamin K. Ask your doctor if you can take a low dose (45 mcg a day) of vitamin K2 in the long-acting MK-7 form for the purpose of stabilizing your INR levels and also protecting your body against long-term vitamin K deficit. Do not initiate any form of vitamin K supplementation without full cooperation of your treating doctor, as your doctor may need to increase your dose of warfarin to compensate for the vitamin K you supplement with.

Life Extension provides several forms of low-dose vitamin K for physician consideration.

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

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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.
The only clinically proven effective Modified Citrus Pectin

PectaSol-C®
Modified Citrus Pectin

- Promotes Cellular Health*
- Supports Healthy Immune Function*
- Provides both Active and Long-term Support*
- Extensively Researched and Patent Protected

454 Grams of Powder
Item #00342 Retail Price $99.95 Member four jar price $71.78

270 Vegetarian Capsules
Item #01080 Retail price $69.95 Member price $52.46

To order PectaSol-C® 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.
Protection from Disease: The CR Way
If you are over 65, you have an 80% chance of having at least one chronic disease such as: type 2 diabetes, cancer, or some form of cardiovascular impairment. Moreover, you have a 50:50 chance of having two chronic diseases that almost certainly seriously compromise your quality of life and cost great expense for medications.

Even if you are much younger—in your teens, twenties, or thirties, perhaps—research shows that you are likely to have already begun the age-related decline that will lead to disease in many systems—particularly if you eat a standard Western diet and are overweight.

But the good news is that both epidemiological studies and clinical trials indicate that calorie restriction, which forms the CR Way’s foundation, can prevent and even reverse many chronic diseases. This holistic low-calorie lifestyle is often written about in Life Extension Magazine®. 
For a long time, gerontologists postulated that humans who followed a nutrient-dense, low-calorie diet would gain the disease protection benefits seen in thousands of animal studies.

A breakthrough came in 2002 from Drs. John Holloszy and Luigi Fontana, when we helped them start studies of humans who had been consistently practicing calorie restriction for six years or more. These individuals maintained daily food intake of 1,780 calories, so they hardly felt deprived.

We spent months working with Dr. Fontana to put together a cohort that met the criteria. So the drama was high when the CR practitioners began arriving at Washington University in Saint Louis School of Medicine to participate in that first human CR study. No one knew if our results would be in line with the animal data or just indicate weight loss and not much else.

Fortunately, Drs. Holloszy and Fontana knew where to find the answer—the cardiovascular system. Dr. Timothy E. Meyer from the Cardiovascular Biophysics Lab at Washington University joined them to help analyze our cardiovascular function and artery health.

One of the tests flashed our carotid artery images on a computer screen, allowing the amount of plaque accumulation to be measured. We were tense at first, wondering what Dr. Meyer would see, then he exclaimed, “Your arteries are like 30-year-olds!” yet we were in our fifties at the time.

Soon the study results were reported and Drs. Fontana and Holloszy became heroes for those who want to live longer and better. “It’s very clear from these findings that calorie restriction has a powerful, protective effect against diseases associated with aging,” Holloszy said. “We don’t know how long each individual actually will end up living, but they certainly have a much longer life expectancy than average because they’re most likely not going to die from a heart attack, stroke, or diabetes.” Dr. Fontana added: “These effects are all pretty dramatic. For the first time, we’ve shown that calorie restriction is feasible and has a tremendous effect on the risk for atherosclerosis and diabetes.”

Over the next few years, results from Washington University and other labs confirmed the astounding disease-prevention effects for humans of a CR diet:

- Slower cardiovascular aging
- Lower blood pressure
- Reduced cholesterol/LDL/ triglycerides
- Less arterial plaque formation
- Lower glucose levels
- Less inflammation
- Lower levels of growth factors—reducing cancer risk
- Better cognition (Germany)

Building on this research, The CR Way integrates complementary practices that may enhance CR’s disease-protection benefits even more. Consider cancer, for example, which is known to be inhibited by calorie restriction. Many forms of cancer cells depend heavily on glucose to fuel their growth. The CR Way offers low-GI (low glycemic index) eating plans to increase the difficulty for cancer cells to get the glucose they need. Malignant tumors also rely on angiogenesis—the formation of new blood vessels, which deliver oxygen and glucose—essential to tumor growth. It is no accident that many
CR Way-recommended foods, especially in the cancer-prevention protocol, are anti-angiogenic.

Another disease state addressed by The CR Way is obesity. For many, overeating is due to emotions—eating for comfort. To help people feel happier, The CR Way to Happy Dieting makes it easy and fun to follow a low-calorie diet and to let comfort foods go. This multimedia guide offers video, podcasts, meal plans, and food choices so dieters have the tools at their fingertips to help them achieve their weight-loss goals.

The first stop on The CR Way to combating obesity or any other disease is one’s doctor, who can be a valuable partner in supporting this healthful lifestyle. In fact, many doctors and scientists follow a CR Way lifestyle. While not intended to be a replacement for medical treatment from a physician, the CR Way to Disease Protection does change lives. It is an important benefit of the CR Way to Optimal Health Membership, made available in partnership with the Life Extension Foundation.

In addition to heart disease, diabetes, cancer, and obesity, The CR Way has been shown to positively affect:

- Alzheimer’s disease
- Hearing loss
- Kidney disease
- Macular degeneration
- Migraine headaches
- Osteoarthritis
- Osteoporosis
- Parkinson’s disease
- Rheumatoid arthritis
- Sarcopenia (muscle loss)
- Senile dementia

Protection from Disease: The CR Way

- Individuals over age 65 have an 80% chance of suffering from at least one chronic disease, and a 50% chance of suffering from two chronic diseases.
- In fact, age-related decline can begin as early as the teenage years.
- One of the most powerful ways to prevent and reverse age-related disease is to follow a calorie-restricted diet—that is, a nutrient-dense, low-calorie diet.
- Research shows that calorie-restricted animals live longer, healthier life spans, while human studies show that calorie-restricted individuals demonstrate physiological markers consistent with younger, disease-free people.
- Scientists believe that calorie restriction may offer benefits for preventing heart disease, cancer, and neurodegenerative disease.
- A program called The CR Way offers an easy-to-follow blueprint for implementing calorie restriction in your own life.
- This comprehensive program helps address many of the factors that cause overeating, such as emotional distress.
- Those who follow The CR Way program report abundant energy, optimistic mood, and vibrant health.
People who travel The CR Way want to get the most out of life. They want to enjoy themselves and not be saddled with disease. Or if they do have disease, they want to increase their chances of survival and a good quality of life.

While helping protect against disease, The CR Way fills your body with energy and optimism—making it easier to enjoy life more and excel in the things that matter to you.

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

Assert **Control** over the Calories You Eat!

Would you spend hours at the beach **without** wearing sunglasses and sun protection lotion? The answer should be a resounding no! Yet most aging individuals do little to protect their bodies against the **excess calories** they ingest each day.

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

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

**Comprehensive Calorie Management**

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

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

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

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

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

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

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

The retail price for a one month (60-serving) supply of **Calorie Control Weight Management Formula** is $50. If a member buys four jars, the price is reduced to **$33**. If eight jars are purchased, the member price is slashed to only **$30** per jar.

To order the **Calorie Control Weight Management Formula** today, call 1-800-544-4440 or visit www.LifeExtension.com/calorie-control

Contains soybeans, tree nuts, and corn.

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

**CAUTION:** Take at least two hours apart from medications. Because this product may lower blood glucose, consult your healthcare provider before taking this product if you are taking blood glucose lowering medication. Taking fiber products without adequate liquid may increase the risk of choking. Consult your healthcare provider before taking this product if you have difficulty swallowing or esophageal narrowing.
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Caution: Consult your healthcare provider before taking this product if you are being treated for a medical condition (especially autoimmune or depressive disorders). Use caution if combining with alcohol. This product is not intended for children, pregnant or lactating women, or women trying to become pregnant. Do not attempt to drive or operate heavy machinery after taking this product.

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The apple peel has been shown to contain triterpenoids, compounds that possess strong anti-cancer activity, especially in preventing breast, colon, and liver cancer.

The Awesome Apple

In the past few years, hard science has begun to prove that the phrase “an apple a day keeps the doctor away” isn’t just a saying—it may be a fact. With its overwhelming load of powerful nutrients, antioxidants, fiber, and phytochemicals in every bite, the simple apple has been rising among nutritionists and scientists alike for its health potency. In addition, the apple peel has been shown to contain triterpenoids, compounds that possess strong anti-cancer activity, especially in preventing breast, colon, and liver cancer. The meat of the apple and the peel work together to help fight off many common debilitating illnesses and health problems, including lung cancer, cardiovascular disease, asthma, excess weight, Alzheimer’s, and dementia. In this article, we’ll learn how cutting-edge studies are proving the apple’s value as a health-enhancing fruit on an almost daily basis.
A Brief History

There are over 7,500 types of apples (*Malus domestica*). A majority of them have been cultivated since the Iron Age, but historians have found evidence that apples were first farmed by humans in ancient Egypt. Apples were a favorite food of the ancient Greeks and Romans, with the Romans eventually bringing the apples to England. The apple was then brought to the United States by the Pilgrims in 1620, and almost four hundred years later, the United States produces approximately one-third of the world’s apple crop, with China being the world’s largest producer.¹

Apples and Cancer Prevention

There have been many studies showing that the consumption of apples can be beneficial in lowering the risk of several cancers, but research groups have recently shown it has a strong impact in reducing the risk of lung cancer. In the Nurses’ Health Study and the Health Professionals’ Follow-up Study, fruit and vegetable intake was linked to a 21% reduced risk of lung cancer in women.² Of the fruits and vegetables examined, very few of them had a significant effect individually, however apples were one of the fruits specifically associated with a decreased risk of lung cancer.

Furthermore, a recent Finnish study that involved 10,000 men and women showed a strong relationship between higher intake of flavonoids and lower growth of lung cancer. Apples were the main source of flavonoid intake among the sample population, thus it was concluded that flavonoids from apples were most likely responsible for the lowered risk of the disease.²

Apples have also shown the ability to reduce the risk of breast cancer, according to a research study by Cornell University food scientists. The researchers treated a group of rats with a known mammary carcinogen, and after feeding them apple extracts, the number of tumors was reduced by 25% with the equivalent of just one apple a day and up to 61% with three apples a day.³ While consuming three apples a day may not be practical, supplementing with some of the nutrients found in apples, like quercetin and apple pectin, may provide a similar benefit. In fact, the high quercetin content of apples may be responsible for many of its health benefits, as quercetin is a known free radical scavenger that helps prevent disease.

Heart Health, and the Power of Pectin

Apples may prevent cardiovascular disease and promote heart health by lowering cholesterol and improving the function of blood vessels. In a large study of post-menopausal women, a direct correlation was found between the high level of flavonoids and the lowered risk of heart disease, with apples being the individual flavonoid-rich food contributing most to the results.²

Fiber is another component of apples that helps contribute to lowering the risk of heart disease. An average apple contains about 5 grams of fiber, and researchers have found that for every 10 grams of fiber added to the diet, there is a 14% reduction in heart illness.⁴ The reason apples are so potent in this area is due to their high pectin content. Pectin is a natural fiber found in fruits, and apples are the number one source for it.

APPLE TIPS

- While most varieties of apples are available all year round, the freshest apples are available September through November.
- When selecting the proper apple, choose apples that are firm, undented, have a shiny skin, and a fresh fragrance.
- A bruised or rotten apple gives off a gas that may cause the spoilage of other foods.
- Golden Delicious apples are considered the best all-purpose apple to use while cooking. Granny Smith and Rome apples are also great for baking, with Red Delicious and Fuji apples being better for salads.
- Once an apple is cut, it will brown on the inside. To prevent this, squeeze some lime, lemon, or orange juice on them right away.
- In general, apples should be stored in a cool, dark place. The best thing to do is place them in a plastic bag and keep them in the crisper drawer of your refrigerator.
Pectin may also help fight diabetes because it supplies quercetin. Apples are also considered a “negative calorie” food, meaning that at 80 calories per average apple, you are burning more calories ingesting it than they provide.

Bone Protection

Due to the flavonoid called phloridzin, which is found only in apples, French researchers have discovered that eating apples may help to prevent osteoporosis and may increase bone density, especially in post-menopausal women.

Apples and Asthma

Multiple studies have shown apple consumption to be associated with a decreased risk of asthma. These anti-asthma benefits are directly correlated to the flavonoids found in apples that we have discussed throughout this article. A recent study in Australia involving 1,600 people found that apple and pear intake was associated with a decreased risk of asthma and overall bronchial hypersensitivity. This builds upon information obtained in a previous study in the United Kingdom, where researchers surveyed nearly 600 people with asthma and 900 people without asthma. Apple intake produced a decreased risk of asthma, especially in those individuals who ate two apples per week.

Perhaps more importantly, pregnant women who eat apples may protect their children from ever developing asthma. In research done by S.M. Willers of Utrecht University in the Netherlands, the diets of 2,000 women were tracked and the lung health of 1,253 of their children was documented. The apple was the only food that was recorded and eaten by the pregnant women that showed a consistent protective correlation with childhood wheezing or asthma. The children of moms who ate 4 apples or more per week were recorded as having a 53% lower chance of having doctor-confirmed asthma.

Alzheimer’s Prevention

A recent study at Cornell University discovered that the antioxidant quercetin found in apples helps to protect brain cells from oxidative stress. As *Life Extension Magazine* readers know, oxidative stress is a tissue-damaging process linked to Alzheimer’s and other neurodegenerative disorders. In this particular Cornell study, groups of isolated brain cells of rats were exposed to different levels of quercetin and vitamin C. The cells were then exposed to hydrogen peroxide to help induce the damage that occurs with Alzheimer’s. Results showed that the cells treated with quercetin had much less damage than ones treated with vitamin C or without antioxidants at all, demonstrating that quercetin has an extremely strong effect in battling neurotoxicity.

References


If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-3027.
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- **Vitamin K2** Vitamin K1 from dietary plant sources is poorly absorbed and only a small fraction gets into the bloodstream. Vitamin K2 is absorbed much more efficiently.

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

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

- **Ginkgo** Hundreds of studies substantiate the multifaceted effects of ginkgo biloba in promoting healthy circulatory and neurological function.

- **Chlorophyllin** Scientific studies indicate that chlorophyll in plants may protect against environmentally induced damage to DNA.

- **Selenium** Some scientific evidence suggests that consumption of selenium may reduce the risk of certain forms of cancer. However, the FDA has determined that this evidence is limited and not conclusive. Selenium’s effects in boosting glutathione are well-established.

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- Chlorophyllin 100 mg
- Sesame lignans 20 mg
- Lycopene 10 mg
- Lutein 2 mg
- Selenium (as Se-Methyl L-Selenocysteine) 67 mcg
- Selenium (as L-Selenomethionine) 67 mcg
- Selenium (as Sodium selenite) 67 mcg
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- Vitamin C 95 mg
- Ascorbyl palmitate 50 mg
- Zinc 10 mg
- Mixed tocopherols 359 mg

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At 59 years old, Dr. Jeffry Life felt like a middle-aged man tumbling gut first into a limited, lethargic old age. “My joints and muscles ached, I had shortness of breath whenever I climbed just one flight of stairs, my clothes were tight, and my stomach was huge.” Physically, Dr. Life was in decline. Internally, the outlook wasn’t much better. His cholesterol scores were dangerously high and he was on his way to becoming a type 2 diabetic. He was also suffering from low self-esteem and erectile dysfunction. Then, one day, as Dr. Life describes it, he “took a long, hard look in the mirror… and realized that if [he] didn’t begin focusing on his own health, there would be no future.”
When Dr. Life decided to take control of his health, he wasn’t coming from a strong athletic background. He had been a Masters swimmer years before, but he got caught up with his medical practice, and as happens with most people, little by little he started letting his health deteriorate. The first thing he did was revamp his diet, which over the years began trending toward fast food and high-fat, high-carbohydrate meals.

“I put myself on a low-glycemic/low-fat diet,” Dr. Life says. “It was a bodybuilder’s diet. They were way ahead of everybody else. It was all about how to gain muscle mass and drop fat. Most people who were exercising were simply following the conventional rules of a low-fat diet, but that isn’t the best approach.”

Between the exercise and the new diet, Dr. Life began to see results almost right away.

“I was dropping fat pretty rapidly,” he says. “I was surprised, really.”

In addition to the eating and exercise, Dr. Life began taking supplements to augment his overall health regimen. He took a multivitamin as well as creatine, fish oil, hydroxymethylbutyrate (HMB), and protein shakes.

The routine worked, and Dr. Life became the Grand Champion in the 1998 Body-for-LIFE contest. The before and after pictures of Dr. Life are remarkable to look at to this day—from bulky and puffy to rock solid and ripped in less than six months.

One of the staples of the supplement regimen that Dr. Life preaches to his clients is the use of whey protein.

“In my medical practice, I’m big on pretty hefty protein intakes,” he explains. “Elderly people don’t take in enough protein and they start to become frail. Muscle loss is considered to be part of the aging process, but it doesn’t have to be. Aging is not inevitable. You can actually do things that will prevent muscle loss, like take whey. My patients demonstrate this on a daily basis. And I do too. I’ve put on over 4 pounds of muscle in the past year. People don’t realize that one of the main reasons the elderly end up in nursing homes is muscle loss, and this can be corrected.”

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- Lycopene
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- L-arginine
Dr. Life stuck with his new program for several years, but at age 64, he hit a plateau—then began sliding back. “I stopped gaining muscle and started losing energy,” he says. “I just thought that I was finally getting older. I was thinking like traditional physicians think, which meant that I figured I had to give in to getting weaker, losing muscle mass, and getting fatter.”

The confusing part for Dr. Life was that in order to counter this slide, he began training harder than ever, but he wasn’t seeing the results. Around this time, he came across a brochure in Las Vegas about a medical meeting that dealt with the role exercise and nutrition played in correcting hormonal deficiencies.

After attending that meeting, Dr. Life began wondering about his own hormone levels. “I had my own hormones checked and found out I was profoundly deficient in testosterone and DHEA (and growth hormone),” he said. “I was surprised, but relieved. The deficiencies explained my losing muscle mass, strength, and endurance, and why I was also accumulating body fat and battling low energy levels.”

Prior to starting a hormone supplement plan, Dr. Life says he studied up on the concept tremendously. He recalls that at the time it was thought that these hormones put people at greater risk for getting cancer. What he discovered was that the people with the lowest levels of hormones have the greatest risk. The conventional wisdom that he’d heard was wrong.

“Once I started supplementing, within a week, I was feeling better,” Dr. Life says. “Two weeks later I was gaining strength again.”

Six years after winning the Body-for-LIFE contest, Dr. Life decided to have some photos taken to prove to his patients that he lived the life he talked about. The photos are almost too striking to believe. Life, now 72-years-old, has the muscle mass of a man half his age.

“It has been 13 years since I started this journey of transformation,” Life says. “What’s so exciting is that not only do I feel great, I’ve been able to improve my physique over the years. I have been able to stay lean, reduce my cholesterol levels, reduce inflammation, reduce blood sugar levels, and avoid diabetes.”

Even more important is that Dr. Life and his cardiologist believe that had he not entered into this exercise and nutrition program, he would not be here today. But it hasn’t been easy.

In the beginning, Dr. Life admits that the physical training was very difficult and he was sore. Once the soreness went away, however; the idea of working out fueled him, and he looks forward to each of his training sessions. The nutrition side is where he really had to make a commitment and stick to it.

“The hardest concept I had to grasp, and that I have to explain to people, is that you can lose body fat and gain muscle mass without starving,” he says. “If you starve, you’ll lose both, but it’s harder to lose body fat. Coupled with this concept was the idea that I had to get across to people that small, frequent meals are better than two big meals a day.”

One of the keys to Dr. Life’s success was that he decided that he had to plan out each and every one of his meals. The easiest way to fall off a healthy eating regimen is to constantly have to figure out what you’re going to eat next. When you do this, you’re more likely to make a quick, wrong decision.

“Planning ahead and having nutritious food on you at all times is the only way to succeed,” he says. “When I travel, I carry around a cooler with me of healthy food. If you leave for the day and you don’t know where you’re going to eat, you will fail.”

When it comes to maintaining your health, failure is not an option, which is why he wrote the book: The Life Plan: How Any Man Can Achieve Lasting Health, Great Sex, and a Stronger, Leaner Body.

The book is the culmination of all that Dr. Life has learned in his quest for health and fitness. Its basic goal is to prevent disease, rather than fix it—a concept that Life Extension® readers are very familiar with.

**Editor’s note**: Dr. Life uses human growth hormone because his blood tests showed he was very deficient. There is conflicting data regarding the use of human growth hormone with some concerns that excess growth hormone elevates insulin-like growth factor-1 and may increase cancer risk. Some who practice calorie restriction seek to reduce excess protein intake in order to lower insulin-like growth factor-1. High protein intake can also impair kidney and/or liver function in patients with pre-existing kidney and/or liver disease.

To order Dr. Life’s new book, The Life Plan, call 1-800-544-4440.
Turns out, the advice you got as a child to “eat your greens” could pay major dividends as an adult. Scientists have recently identified extracts from green vegetables like broccoli, cabbage, and Brussels sprouts that help maintain healthy hormone levels. Having optimal hormone levels is essential to any anti-aging strategy. In addition, many of these extracts contain glucosinolates, isothiocyanates, carnosic acid, and carnosol – bioactive compounds that have a wide variety of favorable effects on estrogen metabolism and cell division.1-4

**Triple Action Cruciferous Vegetable Extract with Apigenin** combines a broccoli Super Concentrate with watercress, Indole-3-Carbinol (I3C), rosemary extract, cat’s claw extract, cabbage extract, DIM, and apigenin, a powerful plant flavonoid found in plants such as parsley and celery, to form the most comprehensive cruciferous vegetable supplement available.5

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**REFERENCES:**

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<table>
<thead>
<tr>
<th>Concentrate</th>
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<tr>
<td>Broccoli Super Concentrate</td>
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<td>(standardized to 4% glucosinolates (16 mg))</td>
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<td>Watercress 4:1 extract</td>
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<td>DIM (di-indolyl-methane)</td>
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<td>Apigenin</td>
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In recent years, scientific interest has intensified around fucoidan, a little-known molecule found primarily in edible seaweeds native to the Japanese diet. Nearly 900 published studies indicate its power to promote healthy immune function, cell-to-cell communication, and tissue repair.1-3

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References

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Mega L-Glutathione Capsules
N-Acetyl-L-Cysteine Capsules
Optimized Carnitine with GlycoCarn®
PharmaGABAA
Super Carnosine Capsules
Taurine Capsules
Tryptopure® Tryptophan
(optimized) Tryptopure® Plus

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

BRAIN HEALTH
Acetyl-L-Carnitine
Acetyl-L-Carnitine-ArGINate
CDP Choline Capsules
Cognitex® with NeuroProtection Complex
Cognitex® with Pregnenolone & NeuroProtection Complex
Cognitex® Basics
DMAE
DMAE-Ginkgo
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin with B6 and BHA
Lecithin Granules
Methylcobalamine Lozenges
Optimized Ashwagandha Extract
Phosphatidylserine Capsules
Rhodiola Extract
Super Ginkgo Extract
Vinpocetine

DIGESTIVE
Agave Digestive-Immune Support
Bromelain Powder
Carnosoothe w/ProFecto
Digest RC™
Enhanced Super Digestive Enzymes (also available with Probiotics)
Florastor
Intact Digest
Life Flora™
Natural EsophagaGuard
N-Zymes™
Pancreatin
Primal Defense™
Regimint
Saccharomyces Boulardi®-mos
Theralac Probiotics

DURK AND SANDY PRODUCTS
Blast™
Dual-C
Inner Power™
Memory Upgrade™

EYE CARE
Bilberry Extract
Blackcurrant Freeze Dried Extract
Brite Eyes III
Eye Pressure Support with Mirtogenol®
Overcast Polarized Sunglasses
Solarshield Sunglasses
Super Zeaxanthin with Lutein & Zeaxanthin and C3G
(Plus Astaxanthin also available)
Vision Optimizer

FIBER
Apple Pectin Powder
Fiber Food
Hi-Lignan® Nutri-Flax™
WellBetX PGX® Soluble Fiber Blend

FOOD
Asian Cruciferous Vegetable Soup
Cruciferous Vegetable Soup

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

HEART HEALTH
Advanced Lipid Control
Aspirin (Enteric Coated)
Cho-Less™
D-Ribo Capsules
D-Ribo Powder
Endothelial Defense™ with Full-Spectrum Pomegranate™
Fibrinogen Resist
Forskolin
Homocysteine Resist
Natural BP Management
Peak ATP® with GlycoCarn®
Policosanol
Red Yeast Rice
Super Absorbable CoQ10™ with d’Limonene
Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
Super Ubiquinol CoQ10
Super Ubiquinol CoQ10 with Enhanced Mitochondrial™ Support
Sytrinol™
Theaflavin Standardized Extract
TMG Powder
TMG Tablets

HERBAL PHYTO PRODUCTS
Artichoke Leaf Extract
Astraxanthin
Berry Complete
Blackcurrant Juice Concentrate
Blueberry Extract
Blueberry Extract w/Pomegranate
Butterbur Extract w/Standardized Rosmarinic Acid
Calcium D-Glucarate
Cilantro Herbal Extract
Citrus Bioflavonoid
Enhanced Berry Complete with RZD™ Acai
Full-Spectrum Pomegranate™
Grapeseed Extract with Resveratrol & Pterostilbene
Huperzine A with Natural Vitamin E
KyoCera® Garlic Formula 105
KyoCera® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
Mega Lycopene Extract
Nutrim
Optimized Ashwagandha Extract
Pomegranate Extract
Pomegranate Juice Concentrate
ProGreena®
Pure-Gar™
Pyroynogen
Optimized Quercetin
Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract
Rosmarinic Acid Extract
Silymarin
SODzyme® with GilSO Din®
Stevia Extract
Super Bio-Curcumin®

HORMONES
7-Keto (®) DHEA
DHEA
DHEA Complete
GH Pituitary Support Day Formula
GH Pituitary Support Night Formula
Melatonin
Melatonin Timed Release
Natural Estrogen with Pomegranate Extract
Pregnenolone
ProFem Cream
Pure IGF
Super Miraforte with Standardized Lignans

IMMUNE ENHANCEMENT
Agave Digestive-Immune Support
AHCC (® Active Hexose Correlated Compound)
Buffered Vitamin C Powder
Echinacea
Enhanced Life Extension Whey Protein
2626 Hericium Egg
Immune Protect with PARACTIN®
Lactoferrin
Lifeshield® Immunity™
Maitake SX-Fraction
Norwegian Shark Liver Oil
Optimized Fucoidan w/Maritech® 926
Primal Defense™
ProBoost™ Thymic Protein A
Pure Gar™
Sambu® Guard
Thymic Immune Factors
Ultimate Flora Advanced Immunity
Vitamin C with Dihydrosouceritin
Zinc Lozenges with Vitamin C

INFLAMATORY REACTIONS
Arthro-Immune Joint Support
ArthroMax™ with Theaflavins
Barlean’s Kids DHA
Boswellia
Boswellia® Topical Cream
Bromelain (Special-coated)
Coromega Kids Brain and Body (DHA)
DHA 240
Emulsified Norwegian Cod Liver Oil
Emulsified Super Twin EPA/DHA
Fast Acting Joint Formula
Ginger Force
Krill Oil
5-LOXIN®
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Natural Relief 1222™ Cream
Serrafayzome
SODzyme® with GilSO Din® and Wolfberry
Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
Tar Cherry
Udo’s Choice Oil
Zyflamend Easy

LIVER HEALTH
Branch Chain Amino Acids
N-Acetyl Cysteine
Liver Force
Certified European Milk Thistle
PhosChol® (NutraSal)
SAMe
Silymarin

MINERALS
BioSil
Bone Restore
Bone Strength Formula w/KoAct™
BoneUp™
Boron Capsules
Calcium Citrate with D3
Chromium Ultra
Copper
Dr. Strum’s Intensive Bone Formula

Super Curcumin with Bioperine®
Super Ginkgo Extract
Triple Action Cruciferous Vegetable Extract
Venotone
Whole Grape Extract
SKIN CARE
Advanced Under Eye Serum with Stem Cells
Amber Self MicroDermabrasion
Anti-Aging Mask
Anti-Glycation Serum
Antioxidant Rejuvenating Foot Cream
Antioxidant Rejuvenating Foot Scrub
Antioxidant Rejuvenating Hand Cream
Anti-Oxidant Rejuvenating Hand Scrub
Anti-Redness & Blemish Lotion
Cellulite Suppressor® Formula
Corrective Clearing Mask
DermaWhey
Dual-Action MicroDerm Abrasion
Elastin Collagen Body Firming Lotion
Essential Plant Lipids Reparative Serum
Face Master® Platinum
Face Rejuvenating Antioxidant Cream
Enhanced FernBlock® with Sendara™
Fine Line-Less Hair Suppress Formula
Healing Formula All-in-One Cream
Healing Mask
Hyaluronic Facial Moisturizer
Hydrating Anti-oxidant Face Mist
Hydroderm®
Lavilin Underarm Deodorant
Lifting & Tightening Complex
Melatonin Cream
Mild Facial Cleanser
NaPCA w/Aloe Vera
Neck Rejuvenating Antioxidant Cream
New Face Solution
Peel Off Cleansing Mask
Pigment Correcting Cream
(Ultra) Rejuvenex® Body Lotion
Rejuvenex® Factor
Rejuvenating Serum
Skin Lightening Serum
Skin Restoring Ceramides w/Lipowheat™
Skin Stem Cell Serum
Sun Protection Spray
Total Sun Protection Cream
Triple Action Under Eye Rejuvenator
Ultra Rejuvenex®
Ultra RejuveNight® w/ Progestosterone
Ultra RejuveNight® w/o Progestosterone
Ultra Lip Plumper
Ultra Wrinkle Relaxed
Under Eye Refining Serum
Under Eye Rescue Cream
Vitamin C Serum
Vitamin D Lotion
Vitamin K Healing Cream

SOY
Natural Estrogen w/Pomegranate
Soy Protein Concentrate
Super Absorbable Soy Isoflavones
Ultra Soy Extract

SPECIAL PURPOSE FORMULA
Anti-Alcohol Antioxidants w/HepatoProtection Complex
Bentoflamine w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorrella
Chlorophyllin w/Zinc
Cleanse Smart
Coriolus Super Strength
CR Mimetic Longevity Formula
Derma-Vita™
Cinsulin® w/InSea™
and Cromine® x 5+
EDTA
European Leg Solution Diosmin 95
Fenn Dophilus
Fennemessence MacaPause®
Flush & Be Fit
GlucoFit™
Ideal Bowel Support 299
Lustre™
Maitake SX-Fraction™

Menopause Solutions
Migra-eze™
Natural Female Support
Organic Total Body Cleanse
Pecta-Sol®
Potassium Iodide
POQ Caps with BioPOQQ™
PieroPure™
Prelox® Natural Sex for Men®
Pyridox 5'-Phosphate
Rosmarinic Acid Extract

SPORTS PERFORMANCE
Creatine Capsules
Creatine Powder
Enhanced Life Extension Protein
DMG (N, N-dimethylglycine)
Inosine
L-Glutamine Capsules
L-Glutamin Powder
Octacosanol

VITAMINS
Ascorbic Acid Powder
Ascorbyl Palmitate Capsules
B1
B2
B12
Beta-Carotene
Biotin Capsules
Biotin Powder
Buffered Vitamin C Powder
Complete B Complex
Essential Fat-Soluble Nutrient
Folic Acid + B12
Gamma E Tocopherol w/Sesame Lignans
Gamma E Tocopherol/Tocotrienols
Inositol Capsules
Inositol Powder
Mega Lycopene Extract
Methylcobalamin
MK-7
No-Flush Niacin
Optimized Folate
PABA Capsules
Super Ascorbate C Capsules
Super Ascorbate C Powder
Super K w/Advanced K2 Complex
Tocotrienols w/Sesame Lignans
Vitamin A Nutrisorb
Vitamin B3 (Nicacin) Capsules
Vitamin B6
Vitamin B12 Tablets
Vitamin C
Vitamin D
Vitamin D3
Vitamin D3 w/Sea-Iodine™
Vitamins D and K w/Sea-Iodine™
Vitamin E
Vitamin K1

WEIGHT MANAGEMENT
All® Refill Pack
Advanced Anti-Adipocyte Formula w/AdipoStat & Integra Lean™
Anti-Adipocyte Formula w/AdipoStat
Calorie Control Weight Management Formula
7-Keto DHEA
DHEA Complete
Fucodexanthin Slim™
HCA
IntegraLean® Irvingia
LunaLean® Caps Special Propolmannan
Particle Size
Optimized Irvingia w/Phase 3™ Calorie Control Complex
Optimized Saffron with Satiereal®
Natural Appetite Control
Natural Glucose Absorption Control
Stevia Liquid Extract
Super CLA Blend w/Guarana and Sesame Lignans
Super CLA Blend w/Sesame Lignans
Udo's Choice Wholesome Fast Food Blend
WellBetX PGX® Soluble Fiber Blend
<table>
<thead>
<tr>
<th>No.</th>
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<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>01066</td>
<td>ASPIRIN - 81 mg, 30 enteric coated tablets</td>
<td>$6.00</td>
<td>$4.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00708</td>
<td>ASTAXANTHIN - 2 mg, 30 softgels</td>
<td>10.25</td>
<td>7.69</td>
<td></td>
</tr>
<tr>
<td>00920</td>
<td>BENFOTIAMINE w/ THIAMINE - 100 mg, 120 veg. caps</td>
<td>$19.95</td>
<td>$14.96</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00925</td>
<td>BENFOTIAMINE (MEGA) - 250 mg, 120 veg. caps</td>
<td>30.00</td>
<td>22.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01206</td>
<td>BERRY COMPLETE - 30 veg. caps</td>
<td>21.00</td>
<td>15.75</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01406</td>
<td>BERRY COMPLETE w/RZD® ACAI (ENHANCED) - 60 veg. caps</td>
<td>29.00</td>
<td>21.75</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00664</td>
<td>BETACAROTENE - 25,000 IU, 100 softgels</td>
<td>10.98</td>
<td>8.24</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00653</td>
<td>BETTERWOMAN® - 40 caps</td>
<td>40.00</td>
<td>30.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01073</td>
<td>BILBERRY EXTRACT - 100 mg, 100 veg. caps</td>
<td>28.00</td>
<td>21.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01512</td>
<td>BIDACTIVE MILK PEPTIDES - 30 caps</td>
<td>18.00</td>
<td>13.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01006</td>
<td>BIOSIL™ - 5 mg, 30 veg. caps</td>
<td>18.95</td>
<td>15.16</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01007</td>
<td>BIOSIL™ - 1 fl oz</td>
<td>29.99</td>
<td>23.99</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00102</td>
<td>BIOTIN - 600 mcg, 100 caps</td>
<td>7.50</td>
<td>5.63</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00145</td>
<td>BIOTIN POWDER - 30 grams</td>
<td>12.50</td>
<td>9.38</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01037</td>
<td>BLACKCURRANT FREEZE DRIED EXTRACT - 60 veg. caps</td>
<td>21.95</td>
<td>16.46</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01034</td>
<td>BLACKCURRANT JUICE CONCENTRATE - 12 fl. oz</td>
<td>17.95</td>
<td>13.46</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01008</td>
<td>BLEND™ - 600 grams of powder</td>
<td>26.95</td>
<td>20.21</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>70000</td>
<td>BLOOD PRESSURE MONITOR-ARM CUFF (medium)</td>
<td>99.95</td>
<td>64.97</td>
<td></td>
</tr>
<tr>
<td>70001</td>
<td>BLOOD PRESSURE MONITOR-WRIST (travel size)</td>
<td>69.95</td>
<td>45.47</td>
<td></td>
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<tr>
<td>01214</td>
<td>BLUEBERRY EXTRACT - 60 veg. caps</td>
<td>22.50</td>
<td>16.88</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01438</td>
<td>BLUEBERRY EXTRACT w/ POMEGRANATE - 60 veg. caps</td>
<td>30.00</td>
<td>22.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01506</td>
<td>BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 veg. caps</td>
<td>56.00</td>
<td>42.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00811</td>
<td>BONE RESTORE - 150 caps</td>
<td>22.50</td>
<td>16.88</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01211</td>
<td>BONE STRENGTH FORMULA w/KOACT® - 120 caps</td>
<td>42.00</td>
<td>31.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00313</td>
<td>BONE-UP® - 240 caps</td>
<td>24.95</td>
<td>18.71</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01370</td>
<td>BOOSTER - 60 softgels</td>
<td>48.00</td>
<td>36.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01590</td>
<td>BOOSTER w/ADVANCED K2 COMPLEX (SUPER) - 60 softgels</td>
<td>42.00</td>
<td>31.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00621</td>
<td>BORON - 3 mg, 100 caps</td>
<td>3.95</td>
<td>2.74</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00202</td>
<td>BOSWELLA - 100 caps</td>
<td>38.00</td>
<td>28.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00258</td>
<td>BOSWELLA TOPICAL CREAM - 4 oz</td>
<td>15.00</td>
<td>11.25</td>
<td>Buy 4 jars, price each</td>
</tr>
<tr>
<td>00313</td>
<td>BONE-UP® - 240 caps</td>
<td>24.95</td>
<td>18.71</td>
<td>Buy 4 bottles, price each</td>
</tr>
</tbody>
</table>

**SUB-TOTAL OF COLUMN 1**

<table>
<thead>
<tr>
<th>No.</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>00449</td>
<td>ACETYL-L-CARNITINE - 500 mg, 100 caps</td>
<td>$56.00</td>
<td>$42.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00768</td>
<td>ACETYL-L-CARNITINE ARGINATE - 100 caps</td>
<td>59.00</td>
<td>44.25</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01038</td>
<td>ADVANCED LIPID CONTROL - 60 veg. caps</td>
<td>30.00</td>
<td>22.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01300</td>
<td>ADVANCED ORAL HYGIENE - 60 mg, 100 caps</td>
<td>20.00</td>
<td>15.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01417</td>
<td>AGAVE DIGESTIVE IMMUNE SUPPORT - 60 caps, 360 grams powder</td>
<td>30.00</td>
<td>22.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00681</td>
<td>AMUC - 500 mg, 30 caps</td>
<td>59.98</td>
<td>44.99</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>046925</td>
<td>ALL® REFILL PACK - 120 caps</td>
<td>69.95</td>
<td>58.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00457</td>
<td>ALPHA-LIPIDIC ACID W/BIOTIN (SUPER) - 250 mg, 60 caps</td>
<td>37.00</td>
<td>27.75</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01440</td>
<td>ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO - 100 caps</td>
<td>26.00</td>
<td>19.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01510</td>
<td>ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT - 60 veg. caps</td>
<td>35.00</td>
<td>26.25</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01509</td>
<td>ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT &amp; INTEGRATE LEAN®(ADVANCED)</td>
<td>39.00</td>
<td>29.25</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00105</td>
<td>APPLE PECTIN POWDER - 227 grams</td>
<td>14.75</td>
<td>11.06</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01012</td>
<td>ARGinine CAPS - 800 mg, 200 caps</td>
<td>26.50</td>
<td>19.88</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>01039</td>
<td>ARGinine/ORNithine - 50/250, 100 caps</td>
<td>16.00</td>
<td>12.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00038</td>
<td>ARGinine/ORNithine POWDER - 150 grams</td>
<td>22.95</td>
<td>17.21</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01025</td>
<td>(L)-ARGinine FREE-FORM POWDER - 100 grams</td>
<td>15.98</td>
<td>11.99</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01317</td>
<td>ARTHROMAX™ w/TEAFLAVINS - 120 veg. caps</td>
<td>44.00</td>
<td>33.00</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>01404</td>
<td>ARTHRITIC IMMUNE JOINT SUPPORT - 60 veg. caps</td>
<td>32.00</td>
<td>24.00</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>00919</td>
<td>ARTICHoke LEAF EXTRACT - 500 mg, 180 veg. caps</td>
<td>28.00</td>
<td>21.00</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>00086</td>
<td>ASCORBATE C (SUPER) - 8 oz powder</td>
<td>26.99</td>
<td>20.24</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>00080</td>
<td>ASCORBIC ACID POWDER - 454 grams</td>
<td>38.00</td>
<td>28.50</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>00082</td>
<td>ASCORBYL PALMITATE - 500 mg, 100 caps</td>
<td>22.50</td>
<td>16.88</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>00888</td>
<td>ASHWAGANdHA EXTRACT (OPTIMIZED) - 60 veg. caps</td>
<td>10.00</td>
<td>7.50</td>
<td>Buy 4 bottles, price each</td>
</tr>
<tr>
<td>No.</td>
<td>Description</td>
<td>Member Each</td>
<td>Qty</td>
<td>Total</td>
</tr>
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<td>-------</td>
<td>------------------------------------------------------------------------------</td>
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<tr>
<td>01253</td>
<td>BRANCHED CHAIN AMINO ACIDS - 50 veg. caps</td>
<td>19.50</td>
<td></td>
<td>$14.63</td>
</tr>
<tr>
<td>00999</td>
<td>BREAST HEALTH FORMULA - 50 veg. caps</td>
<td>17.00</td>
<td></td>
<td>12.75</td>
</tr>
<tr>
<td>00893</td>
<td>ONLY EYES III - 2 vials, 5 ml each</td>
<td>34.00</td>
<td></td>
<td>25.50</td>
</tr>
<tr>
<td>00136</td>
<td>BROMELAIN POWDER - 100 grams</td>
<td>21.00</td>
<td></td>
<td>15.75</td>
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**SUB-TOTAL OF COLUMN 3**

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

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**SUB-TOTAL OF COLUMN 4**

JULY 2011

To order online visit: www.lifeextension.com
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**SUB-TOTAL OF COLUMN 5**

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**SUB-TOTAL OF COLUMN 6**
**Buyers Club Order Form**

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**SUB-TOTAL OF COLUMN 7**

**SUB-TOTAL OF COLUMN 8**

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

JULY 2011
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**Sub-Total of Column 9**

**Sub-Total of Column 10**
No. | Retail Each | Member Each | Qty | Total  
--- | --- | --- | --- | ---  
01227 | LIVER FORCE - 30 veg. caps | $34.95 | $26.21 |  
00939 | 5-LINKIN = 75 mg, 100 veg. caps | 19.50 | 14.63 |  
01013 | L-LYSINE - 620 mg, 100 caps | 9.00 | 6.75 |  
00129 | L-lysine powder - 300 grams | 16.00 | 12.00 |  
01470 | LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps | 28.00 | 21.00 |  
01017 | LUSTRE® - 90 tablets | 17.50 | 13.13 |  
00455 | Lycopene extract (Mega) - 15 mg, 90 softgels | 35.00 | 26.25 |  
01063 | MELATONIN - 500 mcg, 200 veg. caps | 18.00 | 13.50 |  
00329 | MELATONIN - 1 mg, 60 caps | 5.00 | 3.75 |  
00330 | MELATONIN - 3 mg, 60 caps | 8.00 | 6.00 |  
01086 | MELATONIN - 3 mg, 60 time-release veg. caps | 10.50 | 7.88 |  
00331 | MELATONIN - 10 mg, 60 caps | 28.00 | 21.00 |  
00332 | MELATONIN - 3 mg, 60 lozenges | 8.00 | 6.00 |  
01087 | MELATONIN TIME RELEASE - 300 mcg, 100 veg. caps | 6.25 | 4.69 |  
01088 | MELATONIN TIME RELEASE - 750 mcg, 60 veg. caps | 5.75 | 4.31 |  
01009 | MEMORY UPGRADE™ - 600 grams powder | 26.95 | 20.21 |  
01047 | MENOPAUSE SOLUTIONS - 120 tablets | 49.95 | 37.46 |  
00536 | METHYLCOBALAMIN - 1 mg, 60 lozenges (vanilla) | 9.95 | 7.46 |  
00537 | METHYLCOBALAMIN - 5 mg, 60 lozenges (vanilla) | 32.00 | 24.00 |  
00709 | MIGRA-EZE® (BUTTERBURN) - 60 softgels | 29.50 | 22.13 |  

SUB-TOTAL OF COLUMN 1

No. | Retail Each | Member Each | Qty | Total  
--- | --- | --- | --- | ---  
01517 | MILK THISTLE (CERTIFIED EUROPEAN) - 120 veg. caps | $42.00 | $31.50 |  
00623 | MINERAL FORMULA FOR MEN - 100 caps | 15.00 | 11.25 |  
00624 | MINERAL FORMULA FOR WOMEN - 100 caps | 15.00 | 11.25 |  
01315 | MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps | 62.00 | 46.50 |  
01569 | MITOCHONDRIAL BASICS w/BIOPOQ™ - 30 caps | 52.00 | 39.00 |  
01568 | MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPOQ™ - 120 caps | 94.00 | 70.50 |  
00803 | MIST ORAL III w/COQ10 - 2 fl oz | 28.00 | 21.00 |  
00065 | MK-7 - 90 mcg, 60 softgels | 28.00 | 21.00 |  
01279 | MOUTHWASH W/POMEGRANATE - 16 oz | 18.50 | 13.88 |  
00451 | MSM (METHYLsULFONYLMETHANE) - 1000 mg, 100 caps | 14.00 | 10.50 |  
00215 | Ψ-Acetyl-L-cysteine - 600 mg, 60 caps | 14.00 | 10.50 |  
00168 | NAPCA w/ ALOE VERA - 8 fl oz | 10.50 | 7.88 |  
00066 | NATTOKINASE - 60 softgels | 24.98 | 18.74 |  
00391 | NATURAL APPETITE CONTROL - 90 softgels | 28.00 | 21.00 |  
00094 | NATURAL BP MANAGEMENT - 60 tablets | 42.00 | 31.50 |  
00093 | NATURAL ESOPHAGUARD - 10 softgels | 19.95 | 14.96 |  
00712 | NATURAL ESTROGEN w/POMEGRANATE EXTRACT - 60 caplets | 38.00 | 28.50 |  
01221 | NATURAL FEMALE SUPPORT - 30 veg. caps | 28.00 | 21.00 |  
01471 | NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps | 39.00 | 29.25 |  
00098 | NATURAL RELIEF 1222™ - 2 oz | 28.00 | 21.00 |  
01084 | NATURAL SLEEP® - 3 mg, 60 veg. caps | 12.99 | 9.74 |  
01507 | NATURAL SLEEP® (ENHANCED) W/MELATONIN - 30 caps | 22.00 | 16.50 |  
01511 | NATURAL SLEEP® (ENHANCED) W/O MELATONIN - 30 caps | 20.00 | 15.00 |  

SUB-TOTAL OF COLUMN 11

SUB-TOTAL OF COLUMN 12
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<td>NATURAL STRESS RELIEF™ - 30 veg. caps</td>
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<td>NEW FACE SOLUTION - 1.7 oz bottle</td>
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<td>Buy 4 bottles, price each</td>
<td>$79.32</td>
</tr>
<tr>
<td>01483</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 60 softgels</td>
<td>18.00</td>
<td>13.50</td>
<td>Buy 4 bottles, price each</td>
<td>72.00</td>
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<tr>
<td>01482</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 120 softgels</td>
<td>32.00</td>
<td>24.00</td>
<td>Buy 4 bottles, price each</td>
<td>128.00</td>
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<tr>
<td>01484</td>
<td>OMEGA 3 EPA/DHA w/SESAME LIGNANS &amp; OLIVE FRUIT EXTRACT (SUPER) - 120 enteric coated softgels</td>
<td>34.00</td>
<td>25.50</td>
<td>Buy 4 bottles, price each</td>
<td>136.00</td>
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<tr>
<td>01501</td>
<td>ONE-PER-DAY™ - 60 vegetarian tablets</td>
<td>17.95</td>
<td>13.46</td>
<td>Buy 4 bottles, price each</td>
<td>71.80</td>
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<tr>
<td>00717</td>
<td>ONLY TRACE MINERALS™ - 90 caps</td>
<td>15.00</td>
<td>11.25</td>
<td>Buy 4 bottles, price each</td>
<td>60.00</td>
</tr>
<tr>
<td>00915</td>
<td>OPTIZINC® - 30 mg, 90 veg. caps</td>
<td>5.00</td>
<td>3.75</td>
<td>Buy 4 bottles, price each</td>
<td>20.00</td>
</tr>
<tr>
<td>01070</td>
<td>ORGANIC TOTAL BODY CLEANSE™ - 14-day supply</td>
<td>34.99</td>
<td>26.24</td>
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</tr>
<tr>
<td>00043</td>
<td>L-ORNITHINE™ - 500 mg, 100 caps</td>
<td>24.95</td>
<td>18.71</td>
<td>Buy 4 bottles, price each</td>
<td>99.80</td>
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<tr>
<td>00107</td>
<td>PABA CAPS™ - 500 mg, 100 caps</td>
<td>$15.42</td>
<td>$11.57</td>
<td>Buy 4 bottles, price each</td>
<td>$61.68</td>
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<tr>
<td>00073</td>
<td>PANCREATIN™ - 500 mg, 50 caps</td>
<td>13.22</td>
<td>9.92</td>
<td>Buy 4 bottles, price each</td>
<td>52.88</td>
</tr>
<tr>
<td>00923</td>
<td>PEAK ATP® WITH GLYCOCARN®™ - 60 tablets</td>
<td>59.00</td>
<td>44.25</td>
<td>Buy 4 bottles, price each</td>
<td>236.00</td>
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<tr>
<td>00342</td>
<td>PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder</td>
<td>99.95</td>
<td>74.96</td>
<td>Buy 4 jars, price each</td>
<td>399.80</td>
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<tr>
<td>01080</td>
<td>PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps</td>
<td>69.95</td>
<td>52.46</td>
<td>Buy 4 bottles, price each</td>
<td>279.80</td>
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<tr>
<td>00867</td>
<td>PHOSPHOLIPID® - 60 chewable tablets</td>
<td>29.95</td>
<td>22.46</td>
<td>Buy 4 bottles, price each</td>
<td>119.80</td>
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<tr>
<td>01320</td>
<td>PHOSPHOLIPID® - 900 mg, 100 softgels</td>
<td>69.45</td>
<td>52.09</td>
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<tr>
<td>00368</td>
<td>PHOSPHATIDYLGLYCEROL CAPS™ - 100 mg, 100 caps</td>
<td>54.00</td>
<td>40.50</td>
<td>Buy 4 bottles, price each</td>
<td>216.00</td>
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<tr>
<td>00814</td>
<td>PILLOW CUTTER/GRINDER</td>
<td>11.95</td>
<td>8.96</td>
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<tr>
<td>00561</td>
<td>POLICOSANOL™ - 10 mg, 60 tablets</td>
<td>24.00</td>
<td>18.00</td>
<td>Buy 6 bottles, price each</td>
<td>144.00</td>
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**SUB-TOTAL OF COLUMN 13**

<table>
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<tr>
<th>No.</th>
<th>Item Description</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
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<tr>
<td>01423</td>
<td>POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels</td>
<td>$24.00</td>
<td>$18.00</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>00956</td>
<td>POMEGRANATE EXTRACT - 30 veg. caps</td>
<td>19.50</td>
<td>14.63</td>
<td>Buy 4 bottles, price each</td>
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<td>00957</td>
<td>POMEGRANATE JUICE CONCENTRATE - 16 oz. liquid</td>
<td>25.95</td>
<td>19.46</td>
<td>Buy 4 bottles, price each</td>
<td>103.80</td>
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<tr>
<td>00577</td>
<td>POTASSIUM IODIDE - 1 box, 14 tablets</td>
<td>6.95</td>
<td>5.21</td>
<td>Buy 4 boxes, price each</td>
<td>27.80</td>
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<td>01500</td>
<td>PQG CAPS W/BIPPO® - 10 mg, 30 veg. caps</td>
<td>24.00</td>
<td>18.00</td>
<td>Buy 4 bottles, price each</td>
<td>96.00</td>
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<tr>
<td>00302</td>
<td>PREGNENOLONE - 50 mg, 100 caps</td>
<td>24.00</td>
<td>18.00</td>
<td>Buy 4 bottles, price each</td>
<td>96.00</td>
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<tr>
<td>00700</td>
<td>PREGNENOLONE - 100 mg, 100 caps</td>
<td>26.00</td>
<td>19.50</td>
<td>Buy 4 bottles, price each</td>
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<tr>
<td>01373</td>
<td>PRELOX™ NATURAL SEX FOR MEN® - 60 tablets</td>
<td>50.00</td>
<td>37.50</td>
<td>Buy 4 bottles, price each</td>
<td>200.00</td>
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<tr>
<td>00571</td>
<td>PRIMAL DEFENSE™ - 90 caplets</td>
<td>49.95</td>
<td>37.46</td>
<td>Buy 4 bottles, price each</td>
<td>199.80</td>
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<tr>
<td>00109</td>
<td>PRIMAL DEFENSE™ - 180 caplets</td>
<td>78.95</td>
<td>59.21</td>
<td>Buy 4 bottles, price each</td>
<td>315.60</td>
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<tr>
<td>00525</td>
<td>PROBOSTHYMIC PROTEIN™ - 4 mcg, 30 packets</td>
<td>72.00</td>
<td>54.00</td>
<td>Buy 4 boxes, price each</td>
<td>288.00</td>
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<tr>
<td>00869</td>
<td>PRO FEM CREAM - 2 fl oz (Progesterone Cream)</td>
<td>32.00</td>
<td>24.00</td>
<td>Buy 4 bottles, price each</td>
<td>128.00</td>
</tr>
<tr>
<td>01020</td>
<td>PROGREENS™ - 15 stick pack</td>
<td>22.50</td>
<td>16.88</td>
<td>Buy 4 bottles, price each</td>
<td>90.00</td>
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<tr>
<td>01072</td>
<td>PRO M INTERNAL DEODERIZER - 500 mg, 100 veg. caps</td>
<td>28.00</td>
<td>21.00</td>
<td>Buy 4 bottles, price each</td>
<td>112.00</td>
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<tr>
<td>01094</td>
<td>PROTEIN - NATURAL (Enhanced Life Extension) - 1000 grams powder</td>
<td>38.00</td>
<td>28.50</td>
<td>Buy 4 bottles, price each</td>
<td>152.00</td>
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<tr>
<td>01095</td>
<td>PROTEIN - NATURAL (Enhanced Life Extension) - 1000 grams powder</td>
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<td>28.50</td>
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<tr>
<td>00290</td>
<td>PROTEIN - VANILLA (Designer Whey) 2 lbs powder</td>
<td>42.49</td>
<td>31.87</td>
<td>Buy 4 bottles, price each</td>
<td>170.00</td>
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<td>00289</td>
<td>PROTEIN - CHOCOLATE (Designer Whey) 2 lbs powder</td>
<td>42.49</td>
<td>31.87</td>
<td>Buy 4 bottles, price each</td>
<td>170.00</td>
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<tr>
<td>00283</td>
<td>PROTEIN - NATURAL (Designer Whey) 30 caps</td>
<td>28.00</td>
<td>21.00</td>
<td>Buy 4 bottles, price each</td>
<td>112.00</td>
</tr>
<tr>
<td>01056</td>
<td>Pure-Gar™ - 200 caps</td>
<td>24.95</td>
<td>18.71</td>
<td>Buy 4 bottles, price each</td>
<td>99.80</td>
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<tr>
<td>01075</td>
<td>Pure Plant Protein - Natural Vanilla 450 grams powder</td>
<td>36.00</td>
<td>27.00</td>
<td>Buy 4 bottles, price each</td>
<td>144.00</td>
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<tr>
<td>01209</td>
<td>Pumpkin Seed Extract (Water-Soluble) - 60 veg. caps</td>
<td>20.00</td>
<td>15.00</td>
<td>Buy 4 bottles, price each</td>
<td>80.00</td>
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<tr>
<td>01210</td>
<td>Pumpkin Seed Extract w/BUY ISOLAVONES (Water-Soluble) - 60 veg. caps</td>
<td>22.00</td>
<td>16.50</td>
<td>Buy 4 bottles, price each</td>
<td>88.00</td>
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<tr>
<td>01031</td>
<td>PYCNOGENOL® - 60 veg. caps</td>
<td>89.95</td>
<td>67.46</td>
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</tbody>
</table>

**SUB-TOTAL OF COLUMN 14**

- **To order call:** 1.954.766.8433 or 1.800.544.4440
- **Life Extension Members receive 25% off the retail price of all products**
<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Retail Each</th>
<th>Member Each</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>00453</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets</td>
<td>$40.00</td>
<td>$30.00</td>
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<td>00557</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets</td>
<td>32.00</td>
<td>24.00</td>
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<tr>
<td>01065</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets</td>
<td>72.00</td>
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<tr>
<td>01043</td>
<td>SEA-IODINE™ - 1000 mcg, 60 veg. caps</td>
<td>8.00</td>
<td>6.00</td>
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<tr>
<td>00046</td>
<td>SELENIUM - 2 oz dropper bottle</td>
<td>9.95</td>
<td>7.46</td>
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<tr>
<td>00567</td>
<td>SE-METHYL L-SELENIOCYSTEINE - 200 mcg, 100 caps</td>
<td>12.00</td>
<td>9.00</td>
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<tr>
<td>00318</td>
<td>SERRAFLAVYZME - 100 tablets</td>
<td>$18.00</td>
<td>13.50</td>
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<tr>
<td>00011</td>
<td>SHAMPOO - 16 fl oz</td>
<td>6.00</td>
<td>4.50</td>
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<td>00284</td>
<td>SHARK LIVER OIL (NORWEGIAN) - 3000 mg, 90 softgels</td>
<td>18.00</td>
<td>13.50</td>
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<td>01087</td>
<td>SOLARSHIELD SUNGLASSES - 1 pair smoke color</td>
<td>12.99</td>
<td>9.74</td>
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<tr>
<td>00657</td>
<td>SODZYME® w/GLISODIN® AND WOLFBERRY - 90 veg. caps</td>
<td>28.00</td>
<td>21.00</td>
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<tr>
<td>00351</td>
<td>ST. JOHN’S WORT EXTRACT - 300 mg, 60 caps</td>
<td>10.98</td>
<td>8.24</td>
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<tr>
<td>00327</td>
<td>ST. JOHN’S WORT EXTRACT (PLANETARY) - 600 mg, 60 tablets</td>
<td>16.75</td>
<td>12.56</td>
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<tr>
<td>01476</td>
<td>STRONTIUM - 750 mg, 90 veg. caps</td>
<td>20.00</td>
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<td>00971</td>
<td>SUN PROTECTION SPRAY W/BETA GLUCAN - SPF 30 - 6 oz</td>
<td>14.95</td>
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<tr>
<td>00747</td>
<td>SUNGLASSES (OVERCAST POLARIZED) - gray, large</td>
<td>27.00</td>
<td>20.25</td>
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<tr>
<td>00748</td>
<td>SUNGLASSES (OVERCAST POLARIZED) - gray, medium</td>
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<td>20.25</td>
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<tr>
<td>00758</td>
<td>SUPER ABSORBABLE SOY ISOFLAVONES - 60 caps</td>
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<tr>
<td>01408</td>
<td>SUPER SAW PALM/NETTLE ROOT W/BETA-SITOSTEROL 60 softgels</td>
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<tr>
<td>00070</td>
<td>RHODIOLA EXTRACT - 200 mg, 100 caps</td>
<td>12.13</td>
<td>9.10</td>
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<tr>
<td>00766</td>
<td>REJUVENIGHT+ (ULTRA) - 2 oz</td>
<td>39.95</td>
<td>29.96</td>
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<tr>
<td>00448</td>
<td>REJUVENEX® BODY LOTION - 6 oz</td>
<td>24.00</td>
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<tr>
<td>00918</td>
<td>REJUVENEX+ FACTOR - 1.7 oz airless pump</td>
<td>65.00</td>
<td>48.75</td>
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<tr>
<td>01220</td>
<td>RESV ENGINEER W/PROGESTERONE (ULTRA) - 2 oz</td>
<td>42.00</td>
<td>31.50</td>
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<td>01410</td>
<td>RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps</td>
<td>36.00</td>
<td>27.00</td>
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<tr>
<td>00393</td>
<td>RESV FWORK W/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 caps</td>
<td>46.00</td>
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<tr>
<td>00839</td>
<td>RHODIOLA EXTRACT - 250 mg, 60 veg. caps</td>
<td>11.75</td>
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<tr>
<td>00972</td>
<td>(D) RIBOSE POWDER - 150 grams</td>
<td>27.50</td>
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<td>01473</td>
<td>(D) RIBOSE TABLETS - 100 veg. tabs</td>
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<tr>
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<td>R-LIPIC ACID (SUPER) - 300 mg, 60 veg. caps</td>
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<tr>
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<td>RNA CAPSULES - 500 mg, 100 caps</td>
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<td>ROSMARINIC ACID EXTRACT - 60 veg. caps</td>
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<tr>
<td>01082</td>
<td>SACCHAROMYCES BOULARDII + MOS - 30 veg. caps</td>
<td>9.95</td>
<td>7.46</td>
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<tr>
<td>01067</td>
<td>SACCHAROMYCES BOULARDII + MOS - 90 veg. caps</td>
<td>21.95</td>
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<td>SAFRON w/SATIREAL (OPTIMIZED) - 60 veg. caps</td>
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<td>SAMBU® GUARD - 175 ml</td>
<td>17.49</td>
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<td>00358</td>
<td>SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets</td>
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<td>01099</td>
<td>STABILUM® 200 - 30 capsules</td>
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<tr>
<td>00432</td>
<td>STEVIA EXTRACT - 100 packets, 1 gram each</td>
<td>9.95</td>
<td>7.46</td>
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<tr>
<td>00381</td>
<td>ST. JOHN’S WORT EXTRACT - 300 mg, 60 caps</td>
<td>10.98</td>
<td>8.24</td>
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<td>01097</td>
<td>SOY EXTRACT (ULTRA) - 150 veg. caps</td>
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<td>00286</td>
<td>SOY PROTEIN CONCENTRATE - 16 oz of powder</td>
<td>12.00</td>
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<td>STABILUM® 200 - 30 capsules</td>
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<td>22.50</td>
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<td>STEVIA EXTRACT - 100 packets, 1 gram each</td>
<td>9.95</td>
<td>7.46</td>
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<tr>
<td>00432</td>
<td>STEVIA EXTRACT - 100 packets, 1 gram each</td>
<td>9.95</td>
<td>7.46</td>
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**SUB-TOTALED OF COLUMN 15**

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

**JULY 2011**
Buyers Club Order Form

<table>
<thead>
<tr>
<th>No.</th>
<th>Retail Each</th>
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<td>$108.00</td>
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- Enclosed is $75 for annual membership. (Canadians add $20; all others outside the U.S. add $35.00. Send me Disease Prevention & Treatment Protocol Book.

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**Sub-Total (U.S. Dollars)**

$351.50

Shipping only $5.50 U.S. • $17.50 Canada • $12.50 Hawaii, Alaska, U.S. Virgin Islands, Puerto Rico • UK Flat rate $25 USD
(Add $7 for C.O.D. • Add $16.00 for UPS overnight • Add $7.00 for UPS 2nd day air • International air mail costs will be added.)

**TOTAL**

$351.50
Don’t suffer the harsh side effects of antibiotics.

Take Theralac®

ANTIBIOTICS AND THERALAC WORK HAND IN HAND.

Many people taking antibiotics suffer disruption of their intestinal flora and, consequently, their digestive regularity suffers. Antibiotics reduce the numbers of beneficial probiotic bacteria and may cause undesirable bacteria to flourish.

One particular adverse bacteria, *Clostridium difficile*, or *C. diff.*, is known to be resistant to antibiotics and can cause severe diarrhea. The best way to stop the havoc *C. diff.* wreaks is to overwhelm it with Theralac.

THERALAC IS CLINICALLY PROVEN TO WORK.

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

Theralac assists with nutrient absorption and helps regulate peristaltic action. Theralac helps maintain estrogen, cholesterol and glycemic levels in those already within normal range.

LEADING DOCTORS RECOMMEND THERALAC.

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

So to ensure digestive health while taking antibiotics, order Theralac today by calling 800-544-4440 or visit LifeExtension.com. Then take your antibiotics and avoid unintended consequences.

Theralac® is a registered trademark of Master Supplements, Inc.

Theralac, 30 capsules
Item # 01038
Retail price: $44.95
Call for LEF Member Pricing

Call 800-544-4440

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.
Better Bones by Design

2%-4% of your skeleton is “rebuilt” every year as calcium and minerals leave the bone and must be replaced.

Jarrow FORMULAS® Presents . . .
A Complete Multi-Nutrient Bone Health System!

Bone-Up® provides your body with much needed calcium as well as essential nutrients for building strong bones.* It utilizes the finest source of calcium available: Australian/New Zealand bovine bone hydroxyapatite from chemical-free, range grazed calves less than two years old.

Bone-Up® is a clinically-validated formula and an effective addition to any bone health regimen.* It features added vitamins and minerals that synergistically support healthy bone density and overall bone health*:

- **Ossein Microcrystalline Hydroxyapatite (MCHA):** Promotes calcium balance.*
- **Vitamin D3:** Converts to calcitriol to enhance calcium absorption.
- **MK-7:** The more bioavailable form of Vitamin K2, which is needed for building bone matrix and proper calcium distribution.
- **Boron:** A trace mineral important in calcium retention.*
- **Manganese, Copper and Zinc:** Essential trace minerals involved in the formation of bone.

Jarrow Formulas® Bone-Up®, 240 capsules Item # 00813: $24.95

If a member buys four bottles, the price will be reduced to $16.88 per bottle.

To order, call (800) 544-4440 or visit www.LifeExtension.com

www.Jarrow.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.
SUPERCritical Holy Basil™

Supercritical Holy Basil extract promotes natural stress relief and normal cell growth.*

Our Bodies Respond to Stress in Many Ways

Our mind and body respond to stress by releasing a cascade of chemicals and hormones. Cortisol, epinephrine, and norepinephrine, otherwise known as the stress hormones, are instantly launched into production by the adrenal glands, tiny little hormone factories that sit atop the kidneys. The stress hormones work to shift the body's metabolism away from repair and regeneration to energy expenditure. The heart beats faster, blood pressure increases, sugar (glucose) is released rather than metabolized, and digestion shuts down so that blood is kept in the periphery of the body for the muscles to use. This response is known as fight or flight. It is a charged physical state that is incredibly valuable for responding to serious life-threatening situations. The problem is everyday nonlife-threatening events such as losing your keys, arguing with your spouse, or getting a speeding ticket can also unnecessarily trigger it. Over time, the continual stress reactions your body produces to these everyday situations can wear us down. Chronically high levels of cortisol flood the body, contributing to a whole host of stress-related health responses.

The Tradition of Holy Basil

Holy Basil, known as Ocimum sanctum in Latin, has for thousands of years been revered as Tulsi in Ayurvedic medicine. Tulsi means "The incomparable One," which is the reality of this majestic herb. When in New Delhi, we visited with the leader of India's Ayurvedic Medical Association. We asked the vaidya, or Ayurvedic master, why Holy Basil is considered the Mother Medicine of Nature in his tradition. He replied that it is a rasayana, or an herb that on its own nourishes a person's growth to perfect health and enlightenment.** We asked why people in the West find that Holy Basil promotes a positive stress response and elevates their spirit, and he replied that, "Holy Basil delivers nutrients to the mind necessary for the experience of enlightenment.***

Scientific Confirmation of Traditional Wisdom

Phytonutrients within Holy Basil are some of the most prized molecules in the plant pharmacy. To make a drug from Holy Basil, pharmaceutical companies could deliver those molecules in an isolated form, but that would no longer be the infinitely complex Holy Basil treasured by traditional medicine. At New Chapter, therefore, we deliver the wisdom of Holy Basil in its most complete herbal form. We are, of course, also respectful of those "prized molecules," but choose to deliver them with the numerous other naturally occurring chemistries to deliver the full intelligence of the herb.

The scientific world is giving heed to these molecules. In the United States, researchers have determined that Holy Basil's "active" molecules promote a healthy inflammation response.* These "active" molecules' cell protective properties have been studied in vitro with respect to cells of the breast, oral cavity, colon, prostate, skin, and liver.** They have also been studied worldwide for their effect on normal cell growth.*

The whole is more than the sum of its parts, but the whole must contain the parts. That is why New Chapter's Holy Basil is the only source of this herb that provides both supercritical and hydroethanolic extracts to capture the fullness of this herb in its purest and most concentrated form.

To Enlightenment!

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Holy Basil 60 Capsules Item# 01433 Retail: $31.95
Member Price $23.96

Holy Basil 120 Capsules Item# 01434 Retail: $56.95
Member Price $38.96

To order Supercritical Holy Basil, call 1-800-544-4440 or visit www.LifeExtension.com

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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.
Curcumin is the health-promoting trace compound derived from the Indian spice turmeric. But not all turmeric is alike. The curcumin found in the vast majority of dietary supplements is derived from turmeric that is nutritionally inferior. Why? Almost all growers harvest turmeric at the point when the turmeric root turns its signature yellow color, but before it has fully matured. The turmeric root requires more time in the ground for highly beneficial phytonutrients called curcuminoids and sesquiterpenoids to attain peak concentrations.

Life Extension’s Super Bio-Curcumin® derives from turmeric that is organic, cultivated to maturity, then specially transported and processed to preserve and deliver the root’s most complete nutritional profile. In recent studies comparing the effects of standard curcumin against turmeric extracts comparable to Super Bio-Curcumin®, researchers observed:

- Nearly twice the support for immune health.
- Approximately twice the support for inflammatory issues.
- Almost double the antioxidant support.

A separate study indicated powerful support for heart health using a comparable extract.

Unrivaled Potency and Absorbability with BCM-95®

Curcumin is neither absorbed nor retained well in the blood, which is another challenge facing those who wish to maximize its benefits. The highly popular Super Bio-Curcumin® uses BCM-95®, a patented, bioenhanced preparation of curcumin. It has been shown to reach 7 times higher concentration in the blood than standard curcumin. Absorption studies further demonstrate that just one 400 mg vegetarian capsule per day of Super Bio-Curcumin® supplies the equivalent of 2,500-2,800 mg of commercial curcumin supplements. A bottle containing 60 vegetarian capsules of Super Bio-Curcumin® retails for $38. If a member buys 4 bottles, the price is reduced to only $26.25 per bottle.

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

References

To order Super Bio-Curcumin®, 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.
28  NOVEL PLANT EXTRACTS BLOCK FAT CELL STORAGE
Warnings about the consequences of obesity have not helped Americans lose weight. Overlooked are the cellular mechanisms behind weight gain. Two cutting-edge plant extracts target the pathways fat cells use to trigger fat storage.

54  ASTAXANTHIN’S BROAD-SPECTRUM BENEFITS
Dr. Oz recently touted astaxanthin as “The #1 Supplement You’ve Never Heard of That You Should Be Taking.” Life Extension members have long taken it to combat eye fatigue. New evidence shows it may also combat cancer, heart disease, and more.

76  HUMAN DATA SUPPORT CALORIE RESTRICTION’S BENEFITS
Most people believe adhering to a nutritious diet low in calories is impossible. Find out how easy it really is—and the latest supportive human data.

42  CALIFORNIA DECREES ABSURD LABEL LAW FOR HORMONES
Abundant medical evidence supports the safety of DHEA and pregnenolone. Yet governmental assaults on your right to obtain them persist. In California, alarmist warning labels are now law.

66  ANTI-CANCER POWER OF CITRUS PECTIN
Cancer cells must communicate with one another in order to metastasize. Modified citrus pectin disrupts this communication, slowing cancer’s progress.

PLUS—
EPIDEMIC DENIAL ABOUT OBESITY
CoQ10 IMPROVES ENDOTHELIAL FUNCTION
FISH OIL ENHANCES EFFECTS OF TAMOXIFEN
C-REACTIVE PROTEIN MAY IMPAIR MEMORY