

GREEN COFFEE BEANS REVERSE OBESITY

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Life Extension®

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

July 2012

LEGAL VICTORY!

FDA Loses Landmark First Amendment Case

Obesity Epidemic Much Worse Than Government Claims

Suppress Immune Attack on Your Joints

Life Extension-Funded Study Receives Widespread Media Coverage

PLUS-
Reducing Iron May Prevent Alzheimer's Disease
Michael Milken Discusses PSA Testing
New Report: Half of All Cancers Avoidable



ARE YOU GETTING Curcumin's BENEFITS?



How Much Curcumin Are You Absorbing?

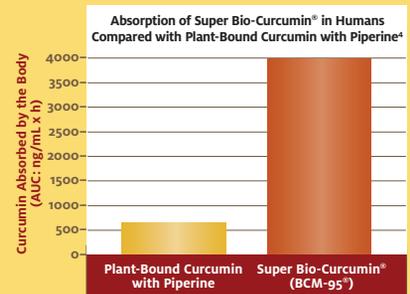


Chart 1. Super Bio-Curcumin® (BCM-95®) showed 6.3 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with plant-bound curcumin with piperine (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by the body over 8 hours).

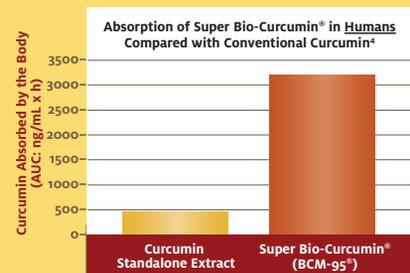


Chart 2. Super Bio-Curcumin® (BCM-95®) showed 6.9 times greater bioavailability (absorption and sustainability over 8 hours) in humans compared with conventional curcumin (as measured by the area under the curve [AUC] in a plot of blood levels against time, that is, the total amount of curcumin absorbed by the body over 8 hours).

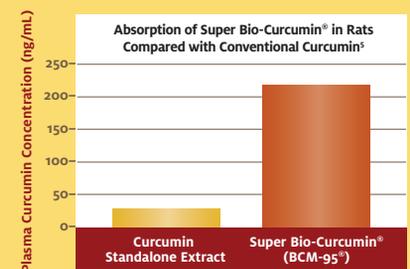


Chart 3. Bioavailability in rats fed with BCM-95® is 7.8 times higher than conventional curcumin.

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:^{1,2}

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

A separate study indicated that an antioxidant-rich curcumin extract³ provided powerful support for heart health.

Unrivalled 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.⁴

The graphs on this page illustrate that 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 four bottles, the price is reduced to only **\$26.25** per bottle. **Contains rice.**



Item # 00407

References

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3. *Arch Gerontol Geriatr.* 2002;34:37-46.
4. *Indian J Pharm Sci.* 2008 Jul-Aug;70(4):445-9.
5. Bioavailability study of BCM-95® in rats. Orcas International Inc. 2006.

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

Super Bio-Curcumin® and **BCM-95®** are registered trademarks of Dolcas-Biotech, LLC.
U.S. Patent Nos. 7,883,728, 7,736,679 and 7,879,373.

**To order Super Bio-Curcumin®
call 1-800-544-4440
or visit www.LifeExtension.com**

REPORTS

24 WIDESPREAD MEDIA COVERAGE OF LIFE EXTENSION-FUNDED STUDY

A study of over **9,000 patients** revealed that the **obesity epidemic** is far worse than what doctors believe. Nearly **39%** of Americans previously classified as “healthy” are medically **obese** and at greater risk for **premature death**. This landmark study was funded by the **Life Extension Foundation®**.

28 INHIBIT CALORIE ABSORPTION—AND SHED POUNDS FAST

Green coffee bean extract inhibits the **absorption of calories** along with lowering lipids and blood sugar. A breakthrough **2012** placebo-controlled study found weight loss in **100%** of those taking this extract, with **37%** reversing their pre-obese condition back to normal weight range and weight reduction averaging **17 pounds!**

40 HALT THE AUTO-IMMUNE ATTACK OF ARTHRITIS

Udenatured type II collagen has a unique molecular structure that inhibits immune overreactions to collagen proteins. Studies show significant reductions in pain and inflammation scores when tested in those with rheumatoid and osteoarthritis.

52 BLUEBERRY EXTRACT BOOSTS LONGEVITY

In two different models of aging, blueberries have now been shown to extend life span. Blueberries contain specific flavonoid molecules that fight DNA damage and slow age-related damage to brain cells.

66 REPAIR SUN-DAMAGED SKIN

Topically applied broccoli sprout cream delivers high levels of **sulforaphane** and glucoraphanin, which stimulate the production of enzymes that protect against—and even **reverse**—the appearance of sun-damaged skin.

76 AVOIDING PET SCAN ERRORS

Cancer patients and their doctors now have access to a superior imaging technology in PET scans. Dr. Richard Black seeks to establish a standardized system for accurate interpretation of PET scans, thereby saving lives.

DEPARTMENTS

17 IN THE NEWS

GLA inhibits pancreatic cancer cell growth; grape compound blocks formation of fat cells; metformin helps some cancers, lowering iron levels and supplementing with antioxidants may protect against Alzheimer’s disease; and more.

89 WELLNESS PROFILE: MICHAEL MILKEN

Creating innovative global research initiatives, Michael Milken is a cancer survivor and chairman of the Prostate Cancer Foundation and FasterCures. The work of Milken’s foundation is already saving lives.

95 SUPERFOODS: BELL PEPPER

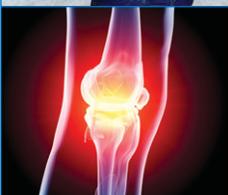
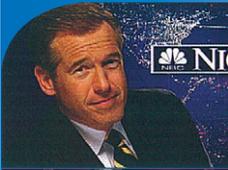
Containing over **30 carotenoids**, vitamin-rich bell peppers have been shown to protect against cancer, diabetes, and cardiovascular disease.



7 ON THE COVER

VICTORY AGAINST FDA CENSORSHIP!

A federal judge has ruled that the **FDA** cannot **ensor** health claims about **green tea** and **cancer prevention**. This represents a victory for consumers to learn about validated methods to slash disease risks. Americans can easily email Congress to encourage passage of the **Free Speech about Science Act** (HR1364) that will further halt FDA suppression of truthful scientific information.





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Comprehensive VITAMIN K Formula

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

Item # 01224

Super K formula provides in just one daily softgel:

Vitamin K1	1000 mcg
Vitamin K2 (MK-4)	1000 mcg
Vitamin K2 (MK-7)	100 mcg



Each bottle of **Super K** lasts **90 days**, so members pay as little as **\$5.75 a month** for this high-potency blend of all three active forms of vitamin K. The retail price for a bottle containing **90 softgels** is \$26. If a member buys four bottles, the price is reduced to just **\$17.25 per bottle**.

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

Warning to Coumadin® (warfarin) Drug Users

Patients prescribed vitamin K-antagonist 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 with
Advanced K2 Complex or Super Booster,
call 1-800-544-4440 or visit
www.LifeExtension.com**

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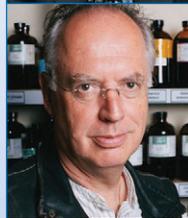
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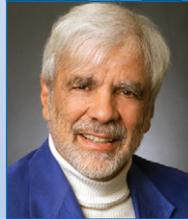
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The Ultimate Two-Per-Day Formula



Compare CENTRUM® to TWO-PER-DAY:

Sample Ingredient Comparison	LIFE EXTENSION® TWO-PER-DAY	Centrum® Silver® Adults 50+
Vitamin C	500 mg	60 mg
Vitamin D	2,000 IU	500 IU
Vitamin B1	75 mg	1.5 mg
Vitamin B2	50 mg	1.7 mg
Vitamin B6	75 mg	3 mg
Vitamin B12	300 mcg	25 mcg
Niacin (as niacinamide)	50 mg	20 mg
Pantothenic acid	100 mg	10 mg
Vitamin E	100 IU (natural)	50 IU (synthetic)
Natural Folate	400 mcg	400 mcg (synthetic)
Zinc	30 mg	11 mg
Selenium	200 mcg	55 mcg
Lutein	5,000 mcg	250 mcg
Lycopene	2,000 mcg	300 mcg
Biotin	300 mcg	30 mcg
Boron	3,000 mcg	150 mcg
Chromium	200 mcg	45 mcg
Molybdenum	100 mcg	45 mcg
Magnesium	100 mg	50 mg
Manganese	2 mg	2.3 mg
Iodine	150 mcg	150 mcg
Potassium	25 mg	80 mg
Vitamin A (as beta-carotene)	4,500 IU	1,000 IU
Vitamin A (preformed)	500 IU	1,500 IU
Choline (as bitartrate)	20 mg	(none)
Inositol	50 mg	(none)
PABA	30 mg	(none)
Calcium	12 mg	220 mg
Alpha Lipoic Acid	125 mg	(none)

Contains soybeans, rice, and corn.

Commercial “one-a-day” supplements provide very low potencies.

Compared to conventional “one-a-day” products, **Life Extension Two-Per-Day** contains up to 50 times more potency! This Two-Per-Day formula is available in tablet or capsule form.

The box to the left reveals how much more potent **Two-Per-Day** is compared to the leading commercial multi-vitamin.

Commercial supplements often contain the cheapest form of nutrients that don’t provide optimal benefits. For example, the 50 IU of synthetic vitamin E contained in Centrum® Silver® Adults 50+ may provide relatively little vitamin E to the bloodstream. The 100 IU of natural vitamin E contained in Two-Per-Day provides much more vitamin E activity.



Item # 01615
Tablets



Item # 01614
Capsules

Compared to Centrum® Silver® Adults 50+, Two-Per-Day Tablets or Capsules provide about:

- 4 times more Vitamin D
- 8 times more Vitamin C
- 2 times more Vitamin E
- 10 times more Biotin
- 20 times more Boron
- 4 times more Selenium
- 25 times more Vitamin B6
- 50 times more Vitamin B1
- 12 times more Vitamin B12
- More than twice as much niacin, zinc, and many other nutrients

Two-Per-Day Tablets retail for \$20, but members pay only **\$13.50 each** when four bottles are purchased. **Two-Per-Day Capsules** retail for \$22, but cost members only **\$15 each** when four are purchased.

Each bottle of **Two-Per-Day** lasts **60 days**, so members can obtain the benefits of this high-potency formula for as little as **\$6.75 per month**.



Ratings based on results of the 2012 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com.

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

Another Victory Against FDA Censorship



BY WILLIAM FALOON

A **federal judge** has again ruled the **FDA** violated the **First Amendment** to the US constitution when it tried to censor a health claim about the **anti-cancer** effects of a dietary supplement.

In this case, a company selling **green tea leaves** wanted to state on their label that “**green tea may prevent prostate and breast cancer.**” The FDA insisted that the claim also contain the following statement:

“The FDA does not agree that green tea may reduce the risk because there is very little scientific evidence for the claim.”¹

A US District Court ruled that by forcing the company to put this negative statement on their label, the ability of this health information to be communicated was effectively negated. The judge **ordered the FDA** to draft an accurate disclaimer that does not nullify the cancer prevention claim altogether.

In the **November 2005** issue of this magazine, I wrote an article about the FDA’s absurd position on the green tea cancer debate. My argument back then was that the FDA had misinterpreted and overlooked substantial published evidence about green tea’s cancer preventive effects. Since then, a host of new studies has shown a protective effect of green tea against common cancers.²⁻¹⁵ A **2009** study for example, showed that women who drank three cups of **green tea** a day reduced their risk of **breast cancer** by **37%**.¹⁶





In 2011 the **National Cancer Institute** published a meticulous review of 13 studies that showed a trend of **prostate cancer** reduction in Asian green tea drinkers of **38%**. The **National Cancer Institute** summarized their findings by stating:

“In conclusion, this meta-analysis supported that green tea but not black tea may have a protective effect on prostate cancer, especially in Asian populations.”¹⁷

A 2012 report concluded that by year 2035, the average family will face medical costs that exceed their total income.^{18,19} Long before this happens, Medicare will become insolvent.

Something has to drastically change to spare this nation from financial catastrophe. The encouraging news is there are more validated ways of preventing disease than ever before. The problem is that the public is kept largely in the dark because the FDA forbids companies from disseminating this information to the public.

The next part of this article is a reprint of what I wrote about the green tea debate back in 2005. At the very end is an opportunity to email your congressional representative about the need to co-sponsor a new bill that would limit the FDA’s ability to censor science-based health claims.

Life Extension Magazine November 2005

Inside the FDA’s Brain

The FDA has released a detailed report that states, **“it is highly unlikely that green tea reduces the risk of prostate cancer.”**²⁰ This report is quite enlightening and we thought it appropriate to share it with Life Extension® members.

The FDA made it clear that it evaluates lots of evidence when deciding whether to allow a health claim. Most of this evidence, however, is eliminated from further review because it does not meet the agency’s standards.

While there are numerous published studies on green tea and

prostate cancer, FDA determined that only two met its standards. The first study cited by the agency showed that drinking three cups of green tea a day reduced prostate cancer risk by **73%**.²¹ The second study did not provide statistically significant data, but showed that drinking two to 10 cups of green tea daily reduced prostate cancer risk by **33%**.²² According to the FDA, “both studies received high methodological quality ratings.”

Based on these two human studies, the FDA will allow the following health claim for green tea beverages:

*“One weak and limited study does not show that drinking green tea reduces the risk of prostate cancer, but another weak and limited study suggests that drinking green tea may reduce this risk. Based on these studies, FDA concludes that it is highly unlikely that green tea reduces the risk of prostate cancer.”*²³



Why FDA Calls These “Weak” Studies

The FDA’s gold standard is tightly controlled studies that consist of an active component and a placebo arm. The two green tea studies chosen by the FDA evaluated the effects of historical consumption of green tea beverages on prostate cancer risk.

The studies showed that the greater the consumption of green tea, the lower the prostate cancer risk. This does not, however, impress the FDA as much as a carefully designed study where half of the men would drink three to 10 cups of green tea a day while the other half drank a placebo beverage.

While the FDA admits that the study showing a **73% reduction** in prostate cancer risk is significant, the agency believes the study that showed a non-statistically significant **33% risk reduction** cancelled out the better study. According to the FDA, “replication of scientific findings is important in order to substantiate results.”²⁰

The Omitted Study

While the FDA claims to have extensively reviewed the scientific literature to find the truth about green tea and prostate cancer, one important study was overlooked.

In a tightly controlled clinical setting, men with pre-malignant prostate disease were given either **600 mg/day** of green tea extract or a placebo. Compared to those who received the placebo, men with this pre-malignant condition who received the green tea extract were **90% less likely** to develop prostate cancer.²⁴

Unlike the FDA’s two hand-selected green tea beverage studies, this study met the agency’s rigid design criteria and could not be classified as a “weak” study.

While the FDA may argue that green tea supplements differ from green tea beverages, the fact is that this placebo-controlled study existed, but was omitted from the FDA’s report. The FDA’s report concluded:

“Based on FDA’s review of the strength of the total body of publicly available scientific evidence for a claim about green tea and reduced risk of prostate cancer, FDA ranks this evidence as the lowest level for a qualified health claim. For the reasons given above, FDA concludes that it is highly unlikely that green tea reduces the risk of prostate cancer.”²³

The FDA Press Release

The FDA was so proud of its findings that it issued a press release to alert the world that green tea has little or no value in preventing cancer.²⁵

The news media picked up on the FDA’s negative findings about green tea and echoed the agency’s claims that green tea does not prevent cancer.

Newspapers and television stations reported that consumers were wasting their money by drinking green tea. None of these media sources bothered to check the National Library of Medicine’s database to find over 600 studies relating to green tea and cancer. Even a cursory review of these studies reveals a very different story than what was contained in the FDA’s press release.

The National Library of Medicine is part of the US Department of Health and Human Services, the same parent agency as the FDA!

Consumers Need to Know the Facts

The United States faces a worsening health care crisis as aging Baby Boomers financially exhaust the nation’s medical systems.

The FDA is empowered to regulate almost every aspect of our health care, yet this federal agency continues to behave in a manner that promotes illness. An unbiased review of the published scientific literature reveals health properties attributed to green tea, but the FDA has restricted what Americans are allowed to read on the labels of green tea beverages.

If the data about green tea and prostate cancer risk turn out to be only partially accurate, the lives of millions of men could be saved and billions of dollars shaved off future health care expenditures. Yet the law still allows the FDA to censor truthful information about foods and dietary supplements.

End of reprint originally published in *Life Extension Magazine*® in **November 2005**. [Turn this page to learn what you can do to combat inappropriate FDA censorship.](#)





We Can Change the Law

The number of Americans needlessly dying because of FDA censorship is staggering!

The federal court ruling against the **FDA** as it relates to **green tea** and **cancer prevention** is a battle victory, but the war against **governmental censorship** continues.

A bill has been introduced in the US House of Representatives that would give consumers greater access to truthful, non-misleading health information.

Please contact Congress and ask your legislators to co-sponsor **HR1364**, the **Free Speech about Science Act**. If it passes, this bill has the potential to transform the healthcare field by educating the public about the science behind natural health.

To email your representative, log on to lef.org/lac It only takes a few minutes for your voice to be heard on Capitol Hill.

For longer life,

William Faloon

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You can easily email this letter to your representative and two Senators by logging on to lef.org/lac

To the Honorable:

FDA regulations prohibit reference to a scientific study by producers of food relating to the health benefits. Violation of this ban can result in FDA declaring common food to be unapproved drugs — this is censorship!

The **Free Speech about Science Act** provides a limited and carefully targeted change to FDA regulations so that legitimate, peer reviewed, scientific studies can be referenced by manufacturers and producers without converting a healthy food into an unapproved drug. The bill amends the appropriate sections of current law to allow the flow of legitimate scientific and educational information while still giving FDA and FTC the right to take action against misleading information and against false and unsubstantiated claims.

The Free Speech About Science Act:

- Provides a clear definition of the types of research that may be referenced by growers and manufacturers.
- Ensures that referencing such research does not convert a food into an “unapproved [and therefore illegal] new drug.”
- FDA and FTC still have the authority to pursue any fraudulent and misleading statements.

The Free Speech About Science Act ensures the free flow of legitimate scientific research for consumers to make informed decisions based on all scientific information—not just limited pieces endorsed by the government.

I ask that you co-sponsor **HR1364**, the **Free Speech about Science Act**.

Sincerely,

Name:

Address:

AS WE SEE IT

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KRILL HEALTHY JOINT FORMULA

TARGETED SUPPORT
FOR OPTIMAL JOINT
FUNCTION AND MOBILITY



Maintaining healthy, flexible joints is essential to quality of life. Joint stiffness and discomfort can stand in the way of performing even simple everyday tasks.

Most people do not obtain critical nutrients shown to support youthful joint function and mobility.

To meet this urgent need, **Life Extension**[®] introduced **Krill Healthy Joint Formula**, a patent-pending blend of deep-sea **whole krill oil** sourced in Antarctica, combined with **hyaluronic acid** and **astaxanthin**.

In a recent clinical trial involving over 100 maturing individuals, a **55% reduction** in joint discomfort was observed in less than three months, with **63%** of participants maintaining ease of motion.¹

THREE SYNERGISTIC COMPOUNDS FOR SUPERIOR BENEFIT

The data reveals that the fatty acids found in krill oil are particularly effective for joint health.² These unique fatty acids have been shown to *specifically target joint tissue*.^{2,3}

Hyaluronic acid occurs naturally in the joints,⁴ where it acts to lubricate and cushion against repeated physical impacts.⁵ Because it forms a major component of cartilage and soft tissue,⁴ it is widely used to promote joint health.⁴⁻⁸

The difficulty has been that hyaluronic acid is a large molecule not well absorbed by the body. When combined with krill oil, it has been shown to reach significantly *higher* levels in the bloodstream than in standalone form.⁸

Krill oil is a natural source of the antioxidant carotenoid **astaxanthin**. Astaxanthin works in multiple ways, including suppression of free radical activity and enhanced mitochondrial function.⁹ It also maintains krill oil's molecular stability.

Most commercially available krill oils do not contain significant amounts of astaxanthin because it is nearly eliminated during processing. **Krill Healthy Joint Formula** is *fortified* with astaxanthin, for maximum stability and superior benefit.

JUST ONE SOFTGEL DAILY

The suggested daily serving of one **Krill Healthy Joint Formula** softgel daily supplies **353 mg** of this proprietary blend.

A bottle containing **30** softgels of **Krill Healthy Joint Formula** retails for \$32. If a member buys four bottles, the price is reduced to **\$21.75** per bottle. Just one softgel a day of **Krill Healthy Joint Formula** duplicates a successful human clinical trial.

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

Contains crustacean shellfish (krill).

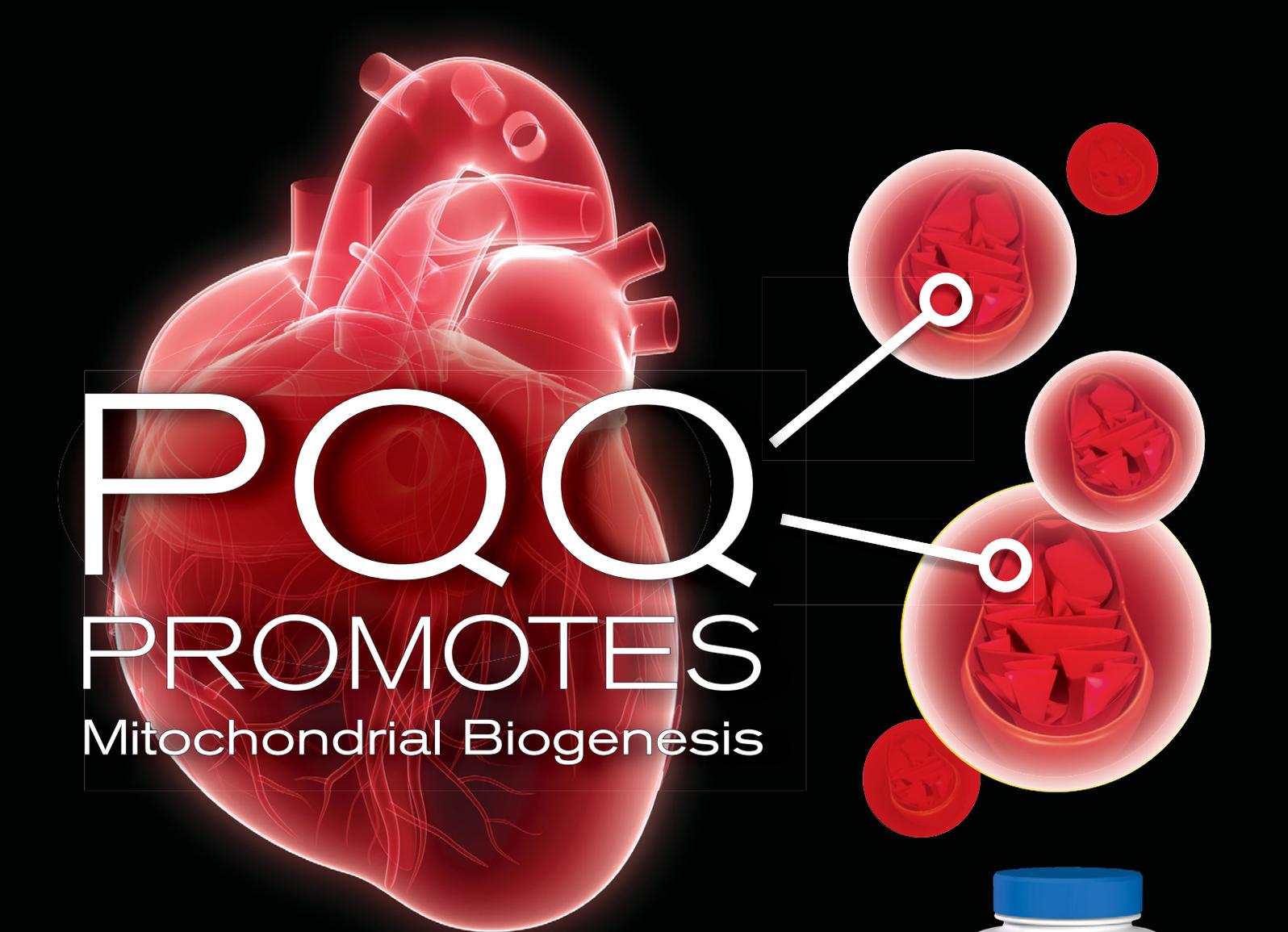
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Item # 01600

To order **Krill Healthy Joint Formula**
call 1-800-544-4440 or visit www.LifeExtension.com



PQQ

PROMOTES

Mitochondrial Biogenesis

Critical Importance of Mitochondria

Back in 1983, **Life Extension**® was the first to introduce **CoQ10** as a proven method to enhance **mitochondrial** energy production.

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

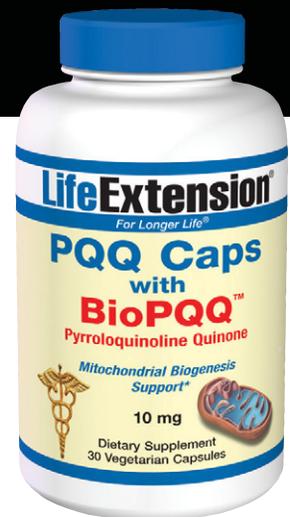
In an unprecedented breakthrough, a compound called **PQQ** (*pyrroloquinoline quinone*) has been shown to support **mitochondrial biogenesis**—the spontaneous generation of **new mitochondria** in aging cells.⁷

PQQ is available as a low-cost dietary supplement.

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

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

PQQ offers a viable alternative.



Item #01500

The Ultimate Cell Rejuvenator

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

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

- **Antioxidant power.** Like CoQ10, PQQ is a highly potent antioxidant. Its extraordinary molecular stability enables it to facilitate thousands of biochemical reactions in the mitochondria, without breaking down, for maximum antioxidant and bioenergetic support.¹⁵
- **Favorably modulates gene expression.** PQQ activates *genes* that promote formation of **new mitochondria**⁷—and beneficially interacts with genes directly involved in mitochondrial health. These same genes also support **healthy body weight**, normal **fat** and **sugar metabolism**, and **youthful cellular proliferation**.¹⁶
- **Mitochondrial defense.** Mitochondria possess their *own* DNA, distinct from the DNA contained in the nucleus. Unfortunately, compared to nuclear DNA, mitochondrial DNA is relatively unprotected. PQQ's antioxidant potency and favorable gene expression profile act to support mitochondrial defense.

Vital Protection for the Aging Heart and Brain

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

Research shows that **PQQ** supports **heart cell function** in the presence of free radicals and promotes blood flow in heart muscle.¹⁹

When taken in combination with **CoQ10**, just **20 mg per day** of **PQQ** has been shown to promote **memory, attention, and cognition** in maturing individuals.²⁰

A Breakthrough Weapon in the Battle Against Aging

Life Extension® has identified a purified, highly potent form of PQQ from Japan that is produced through a unique fermentation process. The result is the highest quality PQQ available on the market today called **BioPQQ™**.

A bottle containing **30 10 mg** vegetarian capsules of **PQQ Caps with BioPQQ™** retails for \$24. If a member buys four bottles, the price is reduced to just **\$16.50** per bottle.

A 10 mg dose of **PQQ** is also included in the **Mitochondrial Energy Optimizer with BioPQQ™** and **Mitochondrial Basics with BioPQQ™** formulas.

Contains rice.



To order **PQQ Caps with BioPQQ™** standalone or any other PQQ-containing formula call **1-800-544-4440** or visit **www.LifeExtension.com**

BioPQQ™ is a trademark of MGC (Japan).

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BLOCK THE EFFECTS OF STRESS!

Unique formulation modulates multiple biochemical pathways of stress, providing *broad-spectrum* defense

When properly supported, the mechanism known as *homeostasis* enables the body to maintain its normal balance during stress, helping us to remain energized and focused.

Increasingly overwhelmed by stress, however, our bodies seldom get a chance to restore our natural equilibrium.

The result is that an estimated **75-90%** of visits to primary care physicians are now related to the effects of stress.¹

Even more alarming is a recently published study² linking stress with *shorter telomeres* (the caps on the ends of chromosomes), which is associated with accelerated aging!

Inhibiting the Pathways of Stress

Stress disrupts multiple biochemical pathways, including *cortisol production*, the *hypothalamic-pituitary-adrenal (HPA) axis*, *pro-inflammatory enzyme* production and *neurotransmitter* production. A pre-clinical study has shown that stress also inhibits neural plasticity (the growth of new connections between neurons in the brain)³

Fortunately, **Life Extension**[®] has created a state-of-the-art formulation of botanical *adaptogens*, shown to modulate a broad range of factors to help relieve the effects of stress.

Broad-Spectrum Defense

Adrenal Energy Formula combines **four** known stress-modulating extracts—**Holy Basil**, **Cordyceps**, **Bacopa**, and **Ashwagandha**—each scientifically validated to support homeostasis, even on the most stressful days.

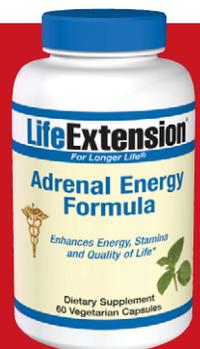
Each of these extracts modulates a different *set* of stress related changes in the body's chemistry.⁴⁻¹⁶ Combined, they may *complement* each other to provide complete adaptogenic stress defense!

For those who are seeking protection from the damaging effects of stress, **Adrenal Energy Formula** is a broad-spectrum, potent, and safe formulation for maintaining healthy energy and vitality!

Adrenal Energy Formula modulates stress and supports energy and balance.

The suggested dose of 4 capsules each day of Adrenal Energy Formula provides:

OciBest [®] (Holy Basil) extract	1,200 mg
Proprietary Blend	1,032 mg
Sensoril [®] (Ashwagandha) extract	
Cordyceps Cs-4 (<i>Cordyceps sinensis</i>) extract	
BaCognize [®] Ultra (<i>Bacopa monnieri</i>) extract	



A bottle containing 60 vegetarian capsules of **Adrenal Energy Formula** retails for \$24. If a member buys four bottles, the price is just **\$16.50** per bottle. Item# 01628

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To order Adrenal Energy Formula,
call 1-800-544-4440 or visit www.LifeExtension.com

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IN THE NEWS

Green Coffee Extract Aids Weight Loss

At the 243rd National Meeting & Exposition of the American Chemical Society, Joe Vinson, PhD, of the University of Scranton reported the finding of significant weight loss in overweight adults following supplementation with green coffee bean extract.*



This crossover study included 16 men and women who received **700 mg** green coffee extract, **1,050 mg** green coffee extract, or a placebo daily for six weeks, followed by two six-week periods during which the participants received one of the regimens not previously received. Each treatment phase was separated by a two week washout period.

Weight loss averaged **17 pounds**, including a **16%** decrease in body fat percentage and a **10.5%** decrease in body weight, by the end of the study. “Based on our results, taking multiple capsules of green coffee extract a day—while eating a low-fat, healthful diet and exercising regularly—appears to be a safe, effective, inexpensive way to lose weight,” Dr. Vinson concluded.

Editor’s Note: Green (unroasted) coffee beans lack aroma and flavor, yet they have higher levels of a compound known as chlorogenic acid that has been found to have effects that include a reduction in post-meal glucose levels. While green coffee has been previously shown to benefit weight loss, the study is the first to use higher amounts of the extract and to evaluate the response to varying doses.

—D. Dye

* 243rd National Meeting & Exposition of the American Chemical Society, San Diego, March 25-29, 2012.

Note: For more details on weight loss studies using green coffee extract, refer to the article on page 28 of this issue.

Science Journal Estimates Half of all Cancers are Preventable

Imagine a world where half the cases of cancer that now exist are suddenly nonexistent.

According to a review published in the journal *Science Translational Medicine*, the idea is not at all far-fetched.* Graham A. Colditz, MD, PhD, and coauthors at Washington University conclude that we now have the knowledge to bring about wide-scale prevention of a disease estimated to kill 577,190 men and women this year in the United States alone.

Dr. Colditz and colleagues observe that lifestyle choices play a major role in the development of cancer. Smoking is responsible for a third of all US cancer diagnoses and excess body weight for **20%**. Diet, exercise levels, alcohol intake, and other controllable factors are also involved.

If our society succeeds in adopting all that is currently known about cancer prevention, these measures will additionally reduce deaths from cardiovascular and other diseases.

Editor’s Note: Obstacles outlined in the article include: continued widespread skepticism that cancer can be prevented, short-term focus of cancer research due to the challenge of long-term studies and limited research funding, interventions that are administered too late to prevent the disease, debate concerning the causes of cancer that can overshadow what we do know about risk factors, societal factors such as tobacco policy and government subsidies that fail to discourage unhealthy behavior, lack of interdisciplinary collaboration, and challenges in the implementation of broad changes involving healthcare providers, government regulators, and individual members of society.



—D. Dye

* *Sci Transl Med.* 2012 March 28;4(127):127.

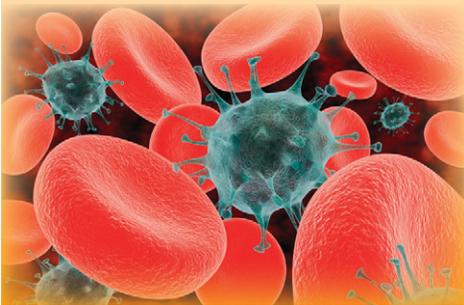
Mayo Clinic Study Finds GLA Inhibits Pancreatic Cancer Cell Growth

The results of a study reported by Mayo Clinic pathologist Ruth Lupu, PhD, at the American Association for Cancer Research Annual Meeting 2012 revealed a protective effect for **gamma-linolenic acid** (GLA) against the growth of one type of pancreatic cancer.*

Dr. Lupu's team initially evaluated the effects of GLA in a number of cultured pancreatic cancer cell lines and discovered an inhibitory effect in a subtype that expresses a gene for fatty acid synthase. In earlier research, the team showed that fatty acid synthase is highly expressed in pancreatic adenocarcinomas and may be a marker of poor survival. When GLA was tested in cells with high fatty acid synthase levels, **85%** of cancer cell growth was inhibited, which is a significant improvement over gemcitabine, the standard chemotherapy for pancreatic cancer. When the two compounds were combined, the researchers observed a complete inhibition of pancreatic cancer cell growth.

Editor's Note: GLA is an omega-6 fatty acid that is available as a dietary supplement. **Fatty acid synthase**, which is inhibited by GLA, is also over-expressed in other cancers including prostate. —D. Dye

* American Association for Cancer Research Annual Meeting 2012, Chicago, March 31-April 4, 2012.



Grape Compound May Block the Formation of Fat Cells

A recent issue of the *Journal of Biological Chemistry* published the finding of Purdue University researchers of the ability of a compound known as piceatannol to help prevent the formation of mature fat cells by blocking the pathways needed for their growth.* Piceatannol is an analog of resveratrol, found in grapes and other fruit, which is converted to piceatannol in humans following its consumption.

Purdue assistant professor of food science Kee-Hong Kim and his associates tested piceatannol in cultured pre-adipocytes, which are immature fat cells. These cells pass through several stages before reaching maturity over a ten day or longer period.

Dr. Kim's team found that piceatannol bound to the preadipocytes' insulin receptors during their initial stage of fat cell formation, which blocked insulin's ability to control cell cycles and activate genes necessary for the further stages of adipogenesis.

Editor's Note: Dr. Kim hopes to test piceatannol in an animal model as well as find a way to prevent the compound from degrading so that enough is available to the body to prevent fat gain.



—D. Dye

* *J Biol Chem.* 2012 Mar 30;287(14):11566-78.

Reducing Iron, Adding Antioxidants May Help Prevent Alzheimer's Disease

A report published in the *Journal of Alzheimer's Disease* describes research conducted by Othman Ghribi, PhD, and his associates which suggests that lowering iron levels and supplementing with antioxidants could help protect the brain from some of the changes related to the development of Alzheimer's disease.*

In previous research, Dr. Ghribi's team demonstrated that the intake of a high cholesterol diet results in Alzheimer's disease-like changes and iron deposition in the brains of experimental animals. In the current study, rabbits were given a high cholesterol diet for 12 weeks, which resulted in the formation of brain plaques containing the protein amyloid beta, which is a characteristic of Alzheimer's disease. The animals also underwent increased phosphorylation of a protein in the brain's neurons known as tau, which is another hallmark of the disease. When some of the rabbits were treated with the iron-chelating agent deferiprone, plasma cholesterol and iron levels were lowered, and even though brain iron levels were not also reduced, amyloid beta and phosphorylated tau were significantly decreased.

Editor's Note: Treatment with deferiprone did not reduce levels of reactive oxygen species (whose generation by iron causes damage to neurons) in comparison with untreated animals. "It is possible that a higher dose of deferiprone, or combination therapy of deferiprone together with an antioxidant to prevent reactive oxygen species generation would more fully protect against the deleterious effects of cholesterol-enriched diet that are relevant to Alzheimer's disease pathology," Dr. Ghribi remarked.

—D. Dye

* *J Alzheimers Dis.* 2012 Mar 9.



Improved Folate Intake During Young Adulthood Reduces the Incidence of Hypertension Later

A study reported in the *American Journal of Clinical Nutrition* found that young adults who had a higher intake of folate experienced a significantly lower risk of developing high blood pressure over a 20-year follow-up period.

Pengchung Xun and colleagues evaluated data from 4,400 African American and Caucasian men and women who enrolled in the Coronary Artery Risk Development in Young Adults Study in 1985. Dietary questionnaires were analyzed for total folate intake from dietary and supplemental sources, and blood pressure was assessed at the beginning of the study and at follow-up visits.

Nine hundred eighty-nine cases of hypertension were diagnosed over the 20-year follow-up. Men and women whose folate levels were among the top one-fifth of participants had a **52%** lower incidence of hypertension compared to those whose intake was among the lowest fifth.

Editor's Note: When participants were examined by race, Caucasians who were among the top one-fifth of folate intake had a **67%** lower risk and African Americans had a **46%** lower risk of having high blood pressure in comparison with the lowest groups.

—D. Dye

* *Am J Clin Nutr.* 2012 Apr 4.

High Fiber Diet Associated with Cardioprotective Benefit in Women

An article published recently in the journal *PLoS One* revealed a protective effect for fiber against ischemic cardiovascular disease in women.

Peter Wallström of Lund University and his associates evaluated data from 8,139 men and 12,535 women who participated in the Swedish population-based Malmö Diet and Cancer cohort, which enrolled residents of Malmö, Sweden, between 1991 and 1996. Interview responses and seven-day dietary records were analyzed for the intake of energy, fats, fiber, carbohydrates, and other macronutrients. Participants were followed for an average of 13.5 years, during which 1,089 men and 687 women developed ischemic cardiovascular disease.

While no significant associations were found between cardiovascular disease and fat or other dietary components, women whose fiber intake was among the top one-fifth of subjects had a **24%** lower risk of ischemic cardiovascular disease compared to those whose intake was among the lowest fifth.

Editor's Note: For men, having a fiber intake that was among the top fifth was associated with a **31%** lower adjusted risk of ischemic stroke. Although the researchers are uncertain about the reason for the gender difference, they suggest that women may consume healthier fiber sources, in the form of fruit and vegetables, compared to men, whose primary source of fiber in this study was bread.

—D. Dye

* *PLoS One.* 2012 Feb 27.



Metformin Helps Some Cancer Patients

An article written by Christian Nordqvist in *Medical News Today* summarizes the recent findings presented at an American Association for Cancer Research meeting, where scientists revealed that according to studies “a popular diabetes drug, metformin, appears to help patients with several types of cancer, including cancer of the prostate, liver, and pancreas.”*

Dr. Michael Pollak, professor of oncology and of medicine at McGill University in Montreal, and co-author in the prostate cancer trial, says further studies need to determine metformin's safety and efficacy, as well as finding out what the ideal dosages might be. Experts are not sure whether a metformin derivative might be better than the drug itself for cancer treatment.

Senior author of the study involving metformin and liver cancer, Geoffrey D. Girnun, PhD, stated:

“Our research demonstrated that metformin prevents primary liver cancer in animal models. Mice treated with metformin had significantly smaller and fewer tumors than those who did not receive the medication. Based on these findings, we believe metformin should be evaluated as a preventive agent in people who are at high risk. Many patients with diabetes already are taking this medication, with few side effects.”

—M. Richmond

* <http://www.medicalnewstoday.com/articles/243718.php>. Accessed April 23, 2012.



Life Extension Pharmacy Offers Cutting Edge New Aspirin Test

Aspirin is frequently called the “wonder drug” because of its many beneficial properties. One of its most amazing effects is to make blood platelets less sticky, which helps prevent blood clots from forming. If blood clots can’t form within the arteries, blood flows more freely, and the risk of heart attack and stroke is reduced.

More than 43 million people in the US take aspirin daily to help prevent heart attacks and strokes. However, research has demonstrated that about **25%** of individuals are resistant to the beneficial effect of aspirin. And if you’re aspirin-resistant, taking it daily has no effect whatsoever on your risk of a cardiac event. In fact, individuals that are aspirin-resistant are over three times more likely to die from a heart attack or stroke.

Until recently, there was no quick, accurate, effective way to test for aspirin effect. Now, with the AspirinWorks™ Test, you can be sure your aspirin is working. This test requires the collection of a simple random urine sample which measures thromboxane, the target of aspirin therapy.

The AspirinWorks™ Test is available through **Life Extension®**. Members may order the test for **\$111.75** during the annual Blood Test Super Sale. Alternatively, the AspirinWorks™ Test may be obtained through your physician and is typically reimbursed through most insurance carriers or covered under Medicare. To order your AspirinWorks™ Test or for more information please contact a Life Extension Health Advisor at 1-866-864-3027.

—S. Fogle, ND

Consumption Of Cruciferous Vegetables Linked To Improved Breast Cancer Survival Rates

Eating cruciferous vegetables after breast cancer diagnosis was associated with improved survival among Chinese women, according to results presented at the American Association for Cancer Research Annual Meeting.*

“Breast cancer survivors can follow the general nutritional guidelines of eating vegetables daily and may consider increasing intake of cruciferous vegetables, such as greens, cabbage, cauliflower and broccoli, as part of a healthy diet,” said Sarah J. Nechuta, MPH, PhD, a postdoctoral research fellow at Vanderbilt University in Nashville, Tenn.

She and her colleagues investigated the role of cruciferous vegetables in breast cancer survival in the Shanghai Breast Cancer Survival Study, a prospective study of 4,886 Chinese breast cancer survivors diagnosed with stage 1 to stage 4 breast cancer from 2002 to 2006. After adjusting for demographics, clinical characteristics and lifestyle factors, the researchers found cruciferous vegetable intake during the first 36 months after breast cancer diagnosis was associated with a reduced risk for total mortality, breast cancer-specific mortality and recurrence in a dose-response pattern.

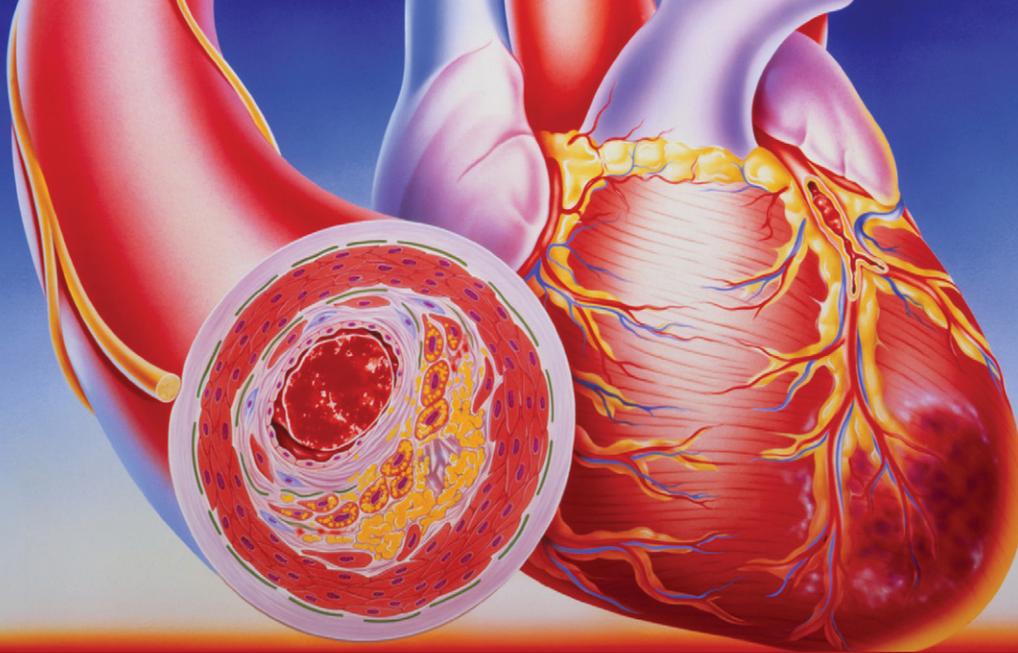
“Commonly consumed cruciferous vegetables in China include turnips, Chinese cabbage/bok choy and greens, while broccoli and Brussels sprouts are the more commonly consumed cruciferous vegetables in the United States and other Western countries,” she said. “Second, the amount of intake among Chinese women is much higher than that of US women. The level of bioactive compounds such as isothiocyanates and indoles, proposed to play a role in the anticancer effects of cruciferous vegetables, depend on both the amount and type of cruciferous vegetables consumed.”

Editor’s Note: Life Extension® has long understood the role cruciferous vegetables play in a healthy diet as well as a cancer preventive diet. This is one of the many reasons we created our line of Cruciferous Vegetable Soups, to provide a delicious and nutritious way for members to get their daily intake of many potent vegetables.

* <http://www.aacr.org/home/public--media/aacr-press-releases.aspx?d=2779>. Accessed, April 23, 2012

—M. Richmond





ENHANCE Heart Health

The reason for many circulatory problems is the breakdown of endothelial function and structure.

Today, there are nutrients that have been clinically shown to help maintain healthy endothelial function and arterial circulation. **Endothelial Defense™ with GliSODin®** provides potent nutrients to support endothelial health: *standardized pomegranate* and an orally active form of **superoxide dismutase**.

While both of these components have been clinically shown to help with blood flow and age-related changes in endothelial function, Life Extension® has made the best endothelial product even more powerful by adding **Full-Spectrum Pomegranate**, which includes active constituents from the **seed** and **flower** in addition to the pomegranate **fruit**.¹⁻⁷

The daily serving of 2 softgels of Endothelial Defense™ contains:

Superoxide Dismutase/Gliadin Complex (GliSODin®) [SOD (Superoxide Dismutase) Enzyme Activity = 500 IU]	500 mg
POMELLA® Pomegranate (<i>Punica granatum</i>) Extract (fruit) [std. to 30% punicalagins (120 mg)]	400 mg
Pomegranate (<i>Punica granatum</i>) 5:1 Extract (fruit)	100 mg
Proprietary Pomegranate Blend (<i>Punica granatum</i>) [flower extract and seed oil (standardized to 22% (30 mg) punicic acid)]	137.5 mg

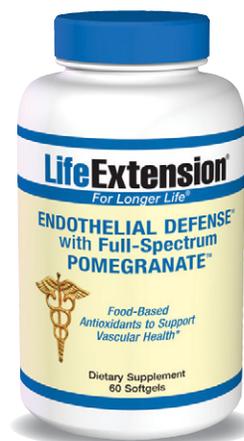
POMELLA® Extract is covered under U.S. Patent 7,638,640. POMELLA® Extract is a registered trademark of Verdure Sciences, Inc. IsoCell SA, France is the owner of US Patents Nos. 6,045,809 and 6,426,068B1 and the registered trademark of GliSODin®.

Contains soybeans and wheat. Contains gluten.

Next-Generation Pomegranate Power

The unique blend of **pomegranate flower extract** and **seed oil** in **Endothelial Defense** contains potent polyphenols that provide support for youthful **lipid** and **glucose** metabolism, and help with **inflammatory factors**.⁸

A bottle containing 60 softgels of **Endothelial Defense™ with Full-Spectrum Pomegranate™** retails for \$56. If a member buys four bottles, the price is reduced to just **\$39** per bottle.



Item # 01498

To Order Endothelial Defense™ with Full-Spectrum Pomegranate™, 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.

IMPROVED RECIPE

Rich Rewards™

**Cruciferous
Vegetable
Soups**

*The World's Healthiest Vegetables
One Smart Bowl of Soup™*

Processed food companies sell vegetable soups so cheaply because they load them with *high-glycemic* carbohydrates (rice, potatoes, pasta) that cost virtually nothing. They then add inexpensive ingredients like corn, sugar, and sometimes omega-6 fats (like cottonseed oil). So for less than \$2, you get a relatively high-carb-calorie soup that provides virtually no health benefits.

Life Extension® has formulated two vegetable soups that contain only healthy ingredients, including loads of **cruciferous vegetables** (cauliflower, broccoli, cabbage, etc.), **extra-virgin olive oil**, and a host of other beneficial **plant foods**.

Each serving of **Cruciferous Vegetable** and **Spicy Cruciferous Vegetable** soup contains only **60 to 70 calories** of the best-documented foods to maintain your precious health. You can consume the entire contents or use a smaller portion of the soup as part of a meal for you (or several people).

Each **60-70 calorie** portion of these new soups provides a **full serving** of the world's healthiest vegetables. The entire container supplies about **3.5 servings** of these vegetables—with none of the glucose-spiking fillers found in commercial soups.

The retail price for a **3.5 serving bottle** of **Cruciferous Vegetable** or **Spicy Cruciferous Vegetable** soups is \$11.95. Member price is **\$8.96**. If a **Life Extension®** member purchases any assortment of six bottles, the price is reduced to **\$8.44** per bottle (or **\$2.56 per serving**).

To order your fresh supply of
Life Extension's
Cruciferous Vegetable or
Spicy Cruciferous Vegetable soups,
 call 1-800-544-4440
 or visit www.lef.org/soup



Item # 01530



Item # 01531

Souper Tasty. Souper Satisfying.

You know you don't eat enough veggies. So **Life Extension®** cooked up a convenient, tasty way to spoon-feed these souper foods.

This soup provides unique garden-fresh ingredients, such as cruciferous vegetables, tomatoes, carrots, and other beneficial plant foods plus heart-healthy extra virgin olive oil.

One Smart Bowl of Soup

A full serving of vegetables per serving
 (or about 3.5 servings of healthy vegetables per bottle)

Less than 71 calories per serving

No added starches, preservatives, or sugars!

Excellent source of cruciferous vegetables

Low total fat per serving

No saturated fat or cholesterol

0 grams *trans* fat

Cruciferous Vegetable Soup

Nutrition Facts

Serving Size 1 cup (245g)
 Servings Per Container about 3.5

Amount Per Serving		Calories from Fat 10	
Calories 60		% Daily Value *	
Total Fat	1g	2%	
Saturated Fat	0g	0%	
Trans Fat	0g		
Cholesterol	0mg	0%	
Sodium	45mg	2%	
Potassium	580mg	17%	
Total Carbohydrate	12g	4%	
Dietary Fiber	3g	12%	
Sugars	8g		
Protein	3g		

Vitamin A 60% • Vitamin C 80%
 Calcium 6% • Iron 8%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Ingredients: Water, Diced Tomatoes in Juice (tomatoes, tomato juice, citric acid, calcium chloride), Tomato Paste, Carrots, Celery, Cauliflower, Green Cabbage, Red Cabbage, Broccoli, Spinach, Brussels Sprouts, Chicken Broth, Asparagus, Red Bell Pepper, Garlic, Parsley, Extra Virgin Olive Oil, Thyme, Dill Weed, Black Pepper, Basil, Bay Leaf.

Item # 01530

Spicy Cruciferous Vegetable Soup

Nutrition Facts

Serving Size 1 cup (245g)
 Servings Per Container about 3.5

Amount Per Serving		Calories from Fat 20	
Calories 70		% Daily Value *	
Total Fat	2g	3%	
Saturated Fat	0g	0%	
Trans Fat	0g		
Cholesterol	0mg	0%	
Sodium	40mg	2%	
Potassium	560mg	16%	
Total Carbohydrate	12g	4%	
Dietary Fiber	2g	8%	
Sugars	8g		
Protein	3g		

Vitamin A 45% • Vitamin C 80%
 Calcium 6% • Iron 8%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Potassium		3,500mg	3,500mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Ingredients: Water, Diced Tomatoes in Juice (tomatoes, tomato juice, citric acid, calcium chloride), Tomato Paste, Bok Choy, Cauliflower, Carrots, Onion, Broccoli, Red Bell Pepper, Green Onion, Red Cabbage, Chicken Broth, Extra Virgin Olive Oil, Cilantro, Garlic, Pepper Sauce (aged red peppers, distilled vinegar, salt), Fennel, Ginger, Black Pepper.

Item # 01531

Life Extension® Funded Study Shows Obesity Epidemic Much Worse Than What Doctors Claim!

A study funded by the **Life Extension Foundation®** received near universal media acclaim beginning in **April 2012**.

What transformed this scientific study into **headline news** were results from a multi-year review of **9,088** patients showing the **obesity epidemic** in the United States has been grossly underestimated. The findings revealed that as many as **39%** of Americans who were previously classified as being “healthy” were in reality **obese**—placing them at significantly **higher risk of premature death**.

This is not the first time **Life Extension®** has shown the medical establishment to be **dead wrong**. Back in **1983** we urged all Americans to keep their **fasting glucose under 100 mg/dL**. Conventional guidelines at the time identified the diabetic threshold for **fasting glucose as 140 mg/dL**. The number of lives lost to **diabetic complications** because of mainstream medicine’s ignorance on this one issue is incalculable

The establishment typically ignores Life Extension’s research, but when a peer-reviewed scientific journal reports breakthrough findings on the popular topic of **obesity**, the worldwide media pays attention. As you can see beginning on this page, the most respected news sources reported on a startling number of obese Americans our study uncovered. We will feature in-depth articles about this study later this year in **Life Extension Magazine®**.

The most exciting news today (that also received some media coverage) is a placebo-controlled human study showing that **green coffee bean extract** produced weight loss in **100%** of overweight participants, who lost an average of **17.6 pounds**.* You can read the details of this landmark finding beginning on page **28** of this month’s issue.

* *Diabetes Metab Syndr Obes.* 2012;5:21-7.

Los Angeles Times

April 2, 2012

RELIANCE ON BMI UNDERSTATES THE TRUE OBESITY CRISIS, EXPERTS SAY

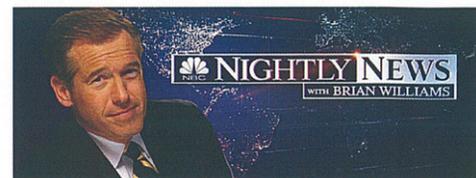
As if the nation’s weight problems were not daunting enough, a new study has found that the body-mass index, the 200-year-old formula used to distinguish between healthy and unhealthy weight, may be misclassifying roughly half of women and just over 20% of men as healthy when their body-fat composition suggests they are obese. According to an article published in the journal *PLoS One* and co-authored by New York City Commissioner of Public Health Nirav R. Shah. The study finds that for women over 50 especially, many whose BMIs suggest they are the picture of health are, in fact, dangerously fat.



OBESITY RATE MAY BE WORSE THAN WE THINK

(Health.com) -- Doctors and health officials have relied for decades on body mass index (BMI), a ratio of height to weight, to categorize people as overweight and obese.

A new study, however, suggests the use of BMI may be leading us to underestimate the already sky-high obesity rate.



BODY MASS INDEX TOO VAGUE, RESEARCHERS SAY

The obesity epidemic could be far worse than previously thought. BMI, an estimate of body fat, often isn’t accurate enough to categorize people as being at-risk. NBC’s Dr. Nancy Snyderman reports.



April 2, 2012

THE OBESITY PROBLEM IN THE US MAY BE MUCH WORSE THAN PREVIOUSLY THOUGHT, ACCORDING TO RESEARCHERS.

They said using the Body Mass Index or BMI to determine obesity was underestimating the issue.

Their study, published in the journal *PLoS One*, said up to 39% of people who were not currently classified as obese actually were.



Saturday, April 7, 2012

NEW STUDY FINDS BMI FORMULA MISSES MARK ON OBESITY:

The obesity crisis in America may be worse than experts thought. A new report suggests the key test used to measure obesity isn't reliable.



April 4, 2012

BMI MAY BE UNDERESTIMATING OBESE WOMEN

A new study suggests that the way obesity is typically measured is underestimating the actual number of women in America who are obese. Researchers used data on 9,000 people that measured their ratio of fat to lean muscle mass. They found many women, particularly those over 50, whose BMI numbers suggest they are healthy, but in fact, they are dangerously overweight.



OBESITY IS MORE COMMON THAN EVER; STRESS MAKES YOU SICK

Obesity: Americans may be more overweight than we think according to a new study that says how bad it is. Researchers say about 4 in 10 adults whose BMI places them in just the overweight category would actually be considered obese if their body fat percentage were taken into account. Currently the BMI threshold for obesity is 30 but should be lowered to 24 for women and 28 for men, the study reports.



RELIANCE ON BMI UNDERSTATES THE TRUE OBESITY CRISIS, EXPERTS SAY

As if the nation's weight problems were not daunting enough, a new study has found that the body-mass index, the 200-year-old formula used to distinguish between healthy and unhealthy weight, may be misclassifying roughly half of women and just over 20% of men as healthy when their body-fat composition suggests they are obese.



U.S. WOMEN COULD BE MORE OBESE THAN BELIEVED

A NEW MEASUREMENT OF BODY FAT COULD BETTER IDENTIFY OBESITY, STUDY SUGGESTS

MONDAY, April 2 (HealthDay News) -- The way that obesity is currently measured greatly underestimates the actual number of women who are obese, a new study suggests.

Almost half of women currently labeled as not obese by virtue of their body mass index (BMI) turned out to be obese when measured by a newer method focusing on their percentage of body fat by weight, the research found.



Breaking News, Since 1847

April 3, 2012

The traditional measures of obesity are inadequate, according to a new report. The American obesity epidemic might be much worse than many experts believe because of the limitations of the obesity which is the most popular number used to diagnose the condition.



OBESITY RATE IN U.S. HIGHER THAN THOUGHT?

STUDY: BMI + HORMONE TEST MAY BE MORE ACCURATE MEASURE OF OBESITY

April 2, 2012 -- More than 1 in 3 Americans who are classified as slightly overweight based on their body mass index (BMI) scores may actually be obese, a new study suggests.



STUDY FINDS BMI MAY BE MISLEADING

A worldwide "gold standard" formula used to distinguish between healthy and unhealthy weight may be misclassifying dangerously fat people as the perfect body shape.



U.S. OBESITY RATES MAY BE UNDERESTIMATED, STUDY FINDS: BLAME BMI TEST?

(CBS News) America may have a worse weight problem than anyone thought. Current estimates from the Centers for Disease Control and Prevention show roughly one-third of Americans are obese. But the authors behind a new study that questions the test commonly used to measure obesity think that rate might be underestimated.



OBESITY PROBLEM MAY BE BIGGER THAN THOUGHT

April 3, 2012 (WLS) -- The obesity problem in the United States may be much worse than we have been hearing. For decades, physicians have relied on Body mass index, or BMI, to figure out who is overweight or obese.



April 5, 2012

NEW OBESITY STANDARDS NEEDED, STUDY SUGGESTS

The conventional standard for diagnosing obesity -- body mass index (BMI) -- needs modification, according to a study that supports adding direct measurement of percent body fat as the best alternative.

The following abstract of the Life Extension-Funded study that received widespread media attention is reprinted below:

Measuring Adiposity in Patients: The Utility of Body Mass Index (BMI), Percent Body Fat, and Leptin

Nirav R. Shah, Eric R. Braverman

Background: Obesity is a serious disease that is associated with an increased risk of diabetes, hypertension, heart disease, stroke, and cancer, among other diseases. The United States Centers for Disease Control and Prevention (CDC) estimates a 20% obesity rate in the 50 states, with 12 states having rates of over 30%. Currently, the body mass index (BMI) is most commonly used to determine adiposity. However, BMI presents as an inaccurate obesity classification method that underestimates the epidemic and contributes to failed treatment. In this study, we examine the effectiveness of precise biomarkers and dual-energy x-ray absorptiometry (DXA) to help diagnose and treat obesity. **Methodology/Principal Findings:** A cross-sectional study of adults with BMI, DXA, fasting leptin and insulin results were measured from 1998–2009. Of the participants, 63% were females, 37% were males, 75% white, with a mean age = 51.4 (SD = 14.2). Mean BMI was 27.3 (SD = 5.9) and mean percent body fat was 31.3% (SD = 9.3). BMI characterized 26% of the subjects as obese, while DXA indicated that 64% of them were obese. 39% of the subjects were classified as non-obese by BMI, but were found to be obese by DXA. BMI misclassified 25% men and 48% women. Meanwhile, a strong relationship was demonstrated between increased leptin and increased body fat. **Conclusions/Significance:** Our results demonstrate the prevalence of false-negative BMIs, increased misclassifications in women of advancing age, and the reliability of gender-specific revised BMI cutoffs. BMI underestimates obesity prevalence, especially in women with high leptin levels (.30 ng/mL). Clinicians can use leptin-revised levels to enhance the accuracy of BMI estimates of percentage body fat when DXA is unavailable.

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REDUCE Blood Glucose and Shed Pounds **FAST!**

BY MICHAEL DOWNEY

According to the World Health Organization, some **1.5 billion** people are obese or overweight.¹ Each of these obese individuals runs up to a **three times increased risk of death** compared to normal-weight people.²

Obesity results in shortening of the life span by an average **eight to ten years** compared with people at normal weight. For every **33** extra pounds, risk of early death increases by around **30%**.³ Beyond just looking good, shedding extra pounds is a proven life-saving strategy.

The good news is that scientists have found that **green coffee bean extract** can intervene in a **unique** way to inhibit the process behind obesity.

Now recognized as a complex *metabolic disease* itself and not merely a “risk factor,”⁴ obesity occurs when **excess calorie consumption** overwhelms the body’s ability to expend calories as energy.⁵⁻⁹ Then, *the obesity disease pro-*

*cess causes further increases in **body fat** and **blood glucose** levels.*

In this article, you will learn how **chlorogenic acid** compounds in green coffee bean extract work in the intestinal tract to **inhibit the absorption of calories!**¹⁰⁻¹¹ Green coffee bean extract also works along multiple pathways to **reduce [body] fat**¹²⁻¹⁶ and **glucose levels!**^{15,17-27}

In a small but compelling placebo-controlled study reported **January 2012**, a formulation of **green coffee bean extract** produced weight loss in **100%** of the overweight participants—who lost an average of over **17.6 pounds** and reduced their **body fat!**²⁸

*Without changing their consumption of calories, protein, or carbohydrates, or their exercise habits—a remarkable **37%** of participants **reversed their pre-obesity** status (25-30 BMI) back into the normal-weight range!*²⁸ >>

Obesity Now Defined as “Chronic Metabolic Disease”

Recent research placed the overall risks of obesity into clear and frightening perspective: scientists concluded that the healthcare costs associated with **obesity** exceed those associated with **smoking!**²⁹ With that level of risk, it’s important that we view obesity as the **complex disease** that scientists now know it to be.⁴

As a disease, the scientific community now specifically recognizes obesity to be a **chronic metabolic disorder**, one that plays a key role in the induction of many age-related diseases—and early death.³⁰ Obesity **alters** the body’s pulmonary, endocrine, and immunological functions.⁴

For example, a study concluded that *adipose (fat) tissue* is not simply a passive fat storehouse, but an active **endocrine organ** capable of synthesizing a variety of molecules and releasing them into the bloodstream, where they can **disrupt** the normal metabolic balance and cause a host of diseases.^{30,31}

Scientists have learned that this metabolic disruption can **trigger** diabetes,³¹ hypertension and cardiovascular disease,^{30,31} non-alcoholic fatty liver disease (NAFLD),^{32,33} liver and colorectal cancer,³³ and various digestive diseases.³²

With these risk factors, it is easy to understand why obesity involves a **200-300%** higher risk of death



than being of normal weight³—and why excess body fat may be robbing almost **2 out of 3** people of both quality and quantity of life.^{1,4}

The medical establishment’s longstanding answer to the obesity epidemic has been “more exercise and a balanced diet.” And body weight often comes down in response to striking a balance between energy (food) intake and energy expenditure (physical activity).⁷⁻⁹

But the contribution of **other factors** is poorly understood, and obesity can, in part, be a response to environmental stimuli, genetic predisposition, and endocrinological (hormonal) abnormalities.⁴

Reversing an obesity epidemic of this magnitude requires attacking it on several fronts, including exercise, diet—and **novel interventions**. So scientists have been investigating the safest and most effective, natural agents that might hold the ability to actively **halt** obesity’s underlying process.

Following the Clues to a Unique Obesity Intervention

Extensive epidemiological evidence had previously shown that a high level of **coffee** consumption lowers the risk of *type 2 diabetes* by **67%**.³⁴ This anti-diabetic effect appeared to result from reduced levels of blood glucose, increased insulin sensitivity, and decreased storage of both fat and carbohydrate.

To scientists, this suggested that compounds in the coffee bean can somehow modify digestion or metabolism. It also suggested, confirmed by a later review,³⁵ that the anti-diabetic benefit from coffee may stem from a weight-reducing effect—because excess weight is a well-known risk factor for diabetes.

Further research, including a meta-analysis that combined data on over 450,000 people, discovered that **decaffeinated coffee** provided the same protective effects as caffeinated.³⁶⁻⁴⁰

This proved to scientists that coffee’s ability to affect digestion or metabolism stemmed from non-caffeine compounds in the coffee bean, most likely chlorogenic acid, possibly enhanced by other coffee bean compounds.

Studies then found that caffeine stimulates glucose absorption, whereas chlorogenic acid in coffee **antagonizes glucose uptake**.²¹ It apparently does so by shifting the glucose uptake to more distal regions of the small intestine.²¹ It also seems to inhibit amylase, the enzyme that breaks down starch into sugar.¹⁰

Scientists recognized from these findings that coffee’s chlorogenic acids represented a potential breakthrough against obesity—because these compounds may be helping coffee drinkers to prevent diabetes by



an inhibition of weight gain, effected by a reduction in glucose levels² and by—the Holy Grail of anti-obesity efforts—a decrease in intestinal calorie uptake!^{10,28}

Confirmation of this began with a study concluding that the chlorogenic acids in coffee **inhibit glucose-6-phosphatase**, in turn interfering with glucose synthesis and release within the body.¹⁹ This lowers blood sugar levels—and promotes weight loss.

This study also found that chlorogenic acid **reduces the hyperglycemic peak** associated with carbohydrate ingestion.¹⁹ This lowers insulin activity and **reduces adipose tissue** accumulation⁴⁰—both associated with weight loss. Additionally, research has confirmed that compounds in coffee decrease adipose tissue.¹³

With increasing support for the weight-loss effect of coffee compounds, scientists then set out to investigate the effects of coffee specifically on **weight**.

In a human study, daily consumption of coffee that was rich in the compounds that are found abundantly in green coffee beans, and also in roasted beans, did indeed result in a **lower energy (food) intake**—which caused **reduced weight** and body fat.⁴¹ Scientists wondered if even greater calorie-blocking and weight loss could be achieved by a **higher concentration** of chlorogenic acids in the coffee.^{17,18}

Green Coffee Bean Extract Inhibits Calorie Absorption!

To investigate the weight-reducing effect that had been shown in roasted and brewed coffee, scientists turned to compounds **extracted directly** from green coffee beans. The green coffee beans contain higher amounts of chlorogenic acid and other polyphenol compounds that are substantially lost during the roasting process that turns them brown.

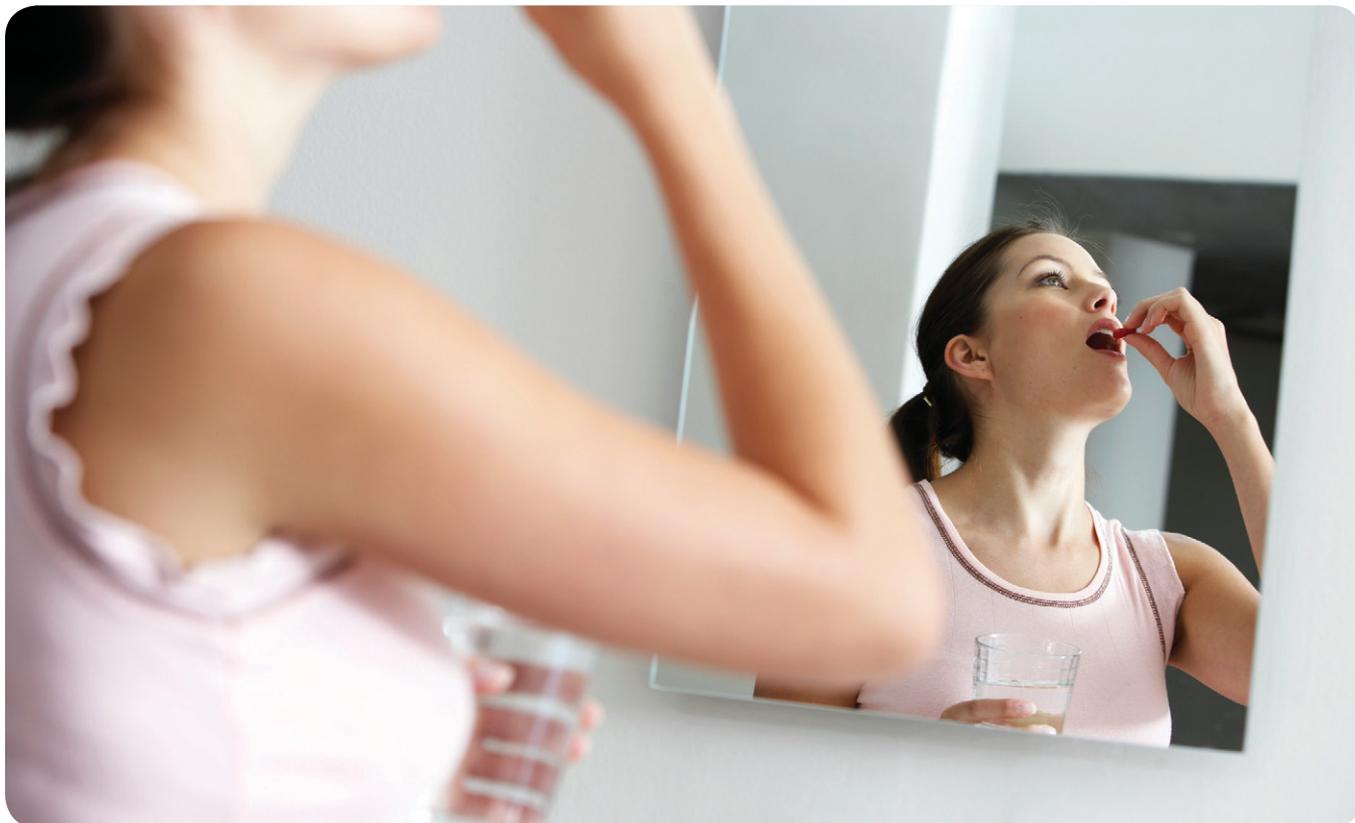
Investigators tested two agents on mice: chlorogenic acid, a key green coffee bean compound and green coffee bean extract. They found that chlorogenic acid alone showed a moderate weight-reducing effect. However, the **green coffee bean extract** produced **greater weight loss**.¹³ This was attributed to its ability to inhibit the absorption of fats from the intestine and enhance fat metabolism in the liver.¹³

Further testing involving induced-obese mice administered a high-fat diet (**37%** calories from fat) confirmed these findings.¹⁶

In other research with mice, **coffee polyphenols** enhanced energy metabolism, decreased lipogenesis (the formation of fat) and **inhibited weight gain**. The researchers found a suppression of body fat, which resulted from a downregulating of *sterol regulatory element-binding protein* and related molecules.¹⁴

Green Coffee Bean Extract Combats Obesity

- Now known to be a chronic disease,⁴ obesity raises the risk of death by **200-300%**.
- Scientific research supports that *adipose (fat) tissue* is not simply a passive fat storehouse, but an active **endocrine organ** capable of synthesizing a variety of molecules and releasing them into the bloodstream, where they have the ability to **disrupt** normal metabolic balance and cause a host of degenerative diseases.^{30,31}
- Fortunately, scientific research has shown that compounds found in green coffee bean extract can intervene to decrease fat^{13,16} and glucose levels^{17,19,21}—both associated with weight gain—and **decrease the absorption of calories!**¹⁰
- A recent, placebo-controlled human study found that green coffee bean extract produced an average weight loss of **17.6 pounds!**²⁸ For **37%** of subjects, their condition of pre-obesity was **reversed** back to the normal-weight category!²⁸
- These compelling results occurred, surprisingly, **without any significant change in calories**, protein, carbohydrates, or exercise!²⁸ They support green coffee bean extract as a **unique** and powerful intervention to **halt** obesity.



Encouraged by the anti-obesity effect of these extracts in animals, scientists designed new experiments to confirm that green coffee bean extract would significantly decrease body weight in humans.

In a 12-week, placebo-controlled study, scientists tested the efficacy of **green coffee bean extract**. Thirty overweight or obese human volunteers took either the extract or a placebo, dissolved in instant coffee. The extract produced an average **11 pound** weight loss. This was paralleled by a **decrease in glucose absorption** and an **increase in glucose utilization**. The researchers reported that the lower availability of **glucose** that results from these effects would cause the body to increase the metabolism of fat reserves, which would eventually **decrease body fat** and mass.¹⁷

By this point, scientists had accumulated substantial evidence that both caffeinated and decaffeinated coffee—and especially, **green coffee bean extract**—significantly reduce the absorption of glucose,^{17,19,21} and the absorption of fats.^{13,16} There was also evidence of a decrease in the enzyme amylase,¹⁰ which would reduce the absorption of carbohydrates. These effects indicated that green coffee bean extract decreases absorption of calories and produces substantial weight loss.¹⁷

A 2011 review and meta-analysis of published and unpublished human studies involving randomized

clinical trials using green coffee bean extract in doses of **180 mg** to **200 mg** daily concluded that there was an overall decrease in body weight. However, the scientists concluded that **further rigorous research** was needed to conclusively establish the weight-loss efficacy of the extract.⁴²

Compelling Weight-Loss Results

To determine conclusively that green coffee bean extract has a potent *anti-obesity benefit*, scientists set up a study of **rigorous design**: a randomized, double-blind, placebo-controlled, linear dose, **crossover study** on humans.

In a crossover study, participants are cycled through different phases of treatment and placebo. In this case, subjects took a high dose of **green coffee bean extract** for 6 weeks, a lower dose **green coffee bean extract** for 6 weeks, and a placebo for 6 weeks in a randomized, double-blind manner. Between phases, there was a 2-week “washout” period, making the entire study 22 weeks long.

Crossover studies are considered sound, because each person in the test group serves as his or her own control. This improves the chances of getting an **accurate result**, because it eliminates the possibility of the outcome reflecting a difference between the active and

control groups. Instead, any difference in results can be attributed with **much greater confidence** to the different supplements taken.

To ensure the findings were more representative, the investigation enlisted both **men and women**.

Participants were restricted to those who were classified by their BMI as **obese** or **pre-obese**, because those who have these conditions are subject to obesity's *metabolic effects* and find weight loss difficult to achieve.

To avoid any confounding effect from drugs, subjects were excluded if they had taken **any medications known to influence weight** during the previous 6 months.

To further ensure that any effect on weight, body fat or BMI could be solely attributed to the extract, there were **no significant changes in dietary calories** or in the dietary percentages of carbohydrates, fat, and proteins at any time during the study. There were also **no significant changes in exercise**. The daily capsules were the only intervention, although in a non-study situation, people seeking weight reduction would ideally combine this intervention with lower calorie consumption and greater physical activity to promote maximum weight loss.

During the high-dose phase, subjects took **350 mg** of extract, **three times daily**. The lower dose phase included **350 mg** of extract, taken **twice daily**. The placebo phase involved a **350 mg** dose **three times daily** of an inert capsule containing an inactive substance.

In January 2012, the scientists reported the striking results.

Although there were no changes in calorie intake or exercise over the 22-week trial, the investigators found that all subjects experienced an impressive reduction in body weight, BMI, and body fat during both the high-dose and low-dose phases of the study, but not in the placebo phase!

After just **12 weeks** of administering **350 mg** green coffee bean extract three times a day over the course of the 22-week study, the scientists found that:²⁸

- **Weight decreased** by over **17.6 pounds** on average—with some subjects losing more than **22.7 pounds!**
- **BMI decreased** by an average of **2.92!**
- **Body fat decreased** by an average **4.44%**, with some subjects losing **6.44%** of their body fat!
- **Heart rate decreased** by a significant average of **2.56 beats per minute!**

The substantial anti-obesity impact was clearly reflected in the finding that a remarkable **37%** of participants who were assessed as having **pre-obesity** (25-30 BMI) at the start of the study had their condition **reversed** to the **normal-weight range!**²⁸

A study follow-up showed that, contrasting with food-restriction diets, a surprising **87.5%** of the test subjects were able to **maintain** their weight loss after completing the study.²⁸

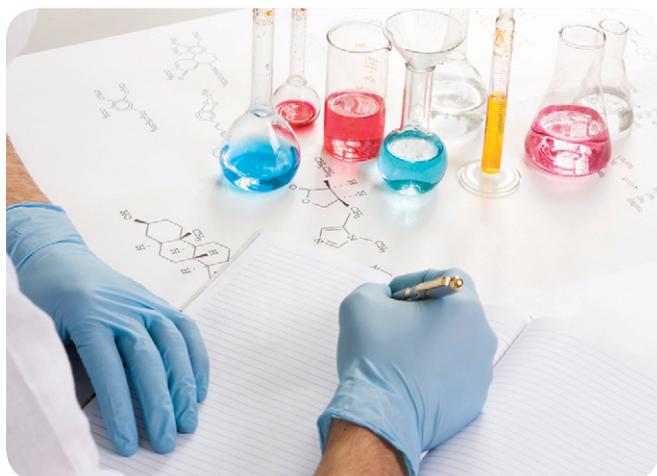
No side effects were observed.



Exploring the Biochemical Mechanisms

Research into exactly how **green coffee bean extract** produces its dramatic pound-shedding effect is in its early stages. However, existing evidence indicates that this powerful coffee extract has the ability to safely decrease the intestinal uptake of glucose, fats, and carbohydrates—and **reduce the absorption of calories!** Research shows that it also interferes with glucose transport and the production and storage of fats; and promotes utilization of glucose and breakdown of fats. Scientists speculate that its **multiple** biochemical mechanisms may work to:

- Inhibit the enzyme **amylase**, which would decrease the gastrointestinal tract absorption of sugar and calories¹⁰
- Interfere with **glucose-6-phosphatase**, an enzyme involved in creation of often surplus blood glucose from protein and fats¹⁹
- Suppress accumulation of hepatic **triglycerides**¹³
- Alter body-fat distribution¹⁶
- Downregulate fatty acid and **cholesterol** biosynthesis¹⁶
- Upregulate fatty acid oxidation and expression of **peroxisome proliferator-activated receptor alpha (PPAR-alpha)**, a key regulator of lipids and glucose^{15,16}
- Interfere with glucose transport²¹
- Inhibit pancreatic **lipase**, an enzyme that breaks down fats in the digestive tract¹¹
- Retard absorption of fats from the intestine, and activate fat metabolism in the liver¹³
- Enhance energy metabolism¹⁴
- Reduce lipogenesis and fat accumulation by downregulating **sterol regulatory element-binding protein** and similar molecules¹⁴



- Inhibit the enzyme **alpha-glucosidase**, which breaks apart complex sugars and enhances their absorption into the blood⁴³
- Increase the **signal protein** for insulin receptors in liver cells, increasing insulin sensitivity and decreasing glucose levels²²
- Antagonize glucose uptake in the proximal small intestine, shifting absorption to more distal regions of the small intestine, thus reducing overall glucose uptake²¹
- Promote synthesis of the **homeodomain transcription factor IDX-1**, which helps the insulin-regulating **beta cells** respond to increases in plasma glucose²⁴
- Promote dispersal of the **sodium ion (Na+)** **electrochemical gradient**, in turn reducing glucose absorption²⁷
- Enhance whole-body metabolism, as shown by greater oxygen consumption¹⁴

Whatever the mechanism through which **green coffee bean extract** delivers its beneficial effects, it has been shown to have a **unique** anti-obesity benefit: it substantially reduces body weight and body fat—even *without a change in exercise or calorie consumption!*²⁸

Summary

Obesity increases the risk of chronic diseases and puts its victims at a **200-300%** greater risk of death.^{3,4}

The good news is that scientists have found that **green coffee bean extract** can intervene in a unique way to inhibit the process behind obesity. Its compounds can reduce levels of fat¹¹⁻¹⁶ and glucose^{14,15,17-27} in the body—and can **decrease the absorption of calories!**¹⁰

In a recent, placebo-controlled study on humans, **green coffee bean extract** decreased weight by a remarkable average of over **17.6 pounds!**²⁸

And **37%** of participants **reversed** their pre-obesity status back to the normal-weight range!²⁸ These results confirm that **green coffee bean extract** is a unique and potent intervention to **halt obesity.** ●

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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Complete Skin Protection

From Inside Out

Scientists are realizing that skin needs to be protected against external factors such as sunlight, and also against internal damage caused by emotional stress. This is because our emotions, particularly stressful ones, release a wave of stress hormones such as cortisol that prematurely age the skin.

Fortunately, emerging research suggests that a natural herb called **ashwagandha** can protect and enhance psychological health as seen in a recent human trial.¹ In this study, just 125 mg of a patented ashwagandha extract once a day led to a **14.5%** reduction in cortisol levels in 98 chronically stressed individuals. This dose also resulted in a **13.2%** increase in levels of the anti-aging hormone DHEA, which helps maintain the youthfulness of skin cells. Overall, the ashwagandha-treated subjects experienced up to **62%** relaxation support compared with virtually no change in the placebo group.

The impressive results from this trial have led to the incorporation of **ashwagandha** into a new skin-protection formula called **Enhanced FernBlock® with Sendara®**. As the name suggests, this formula also contains **FernBlock®**, the revolutionary oral supplement introduced by Life Extension® in July 2008 that helps protect the skin against damaging solar radiation.

FernBlock® is a natural extract derived from the fern plant **Polypodium leucotomos**. Extensive clinical studies document its ability to provide remarkable skin protection by inhibiting the absorption of harmful ultraviolet (UV) rays and quenching DNA-corrupting free radicals. **FernBlock®** also diminishes the consequences of excessive UV radiation by favorably altering a number of changes in skin cells that cause premature skin aging.

Enhanced FernBlock® with Sendara® is complemented with a powerful antioxidant called **Phyllanthus emblica**. This natural extract blocks a chemical reaction that generates several types of skin-damaging free radicals, thus shielding the skin against the destruction of collagen and other dermal matrix proteins. An *in vitro* study² using a patented extract of both **ashwagandha** and **Phyllanthus emblica** demonstrated an impressive **54%** inhibition of collagen-degrading enzymes and an **86%** inhibition of those that break down hyaluronic acid—the skin's natural moisturizer.

The unique combination of natural ingredients in **Enhanced FernBlock® with Sendara®** has been scientifically proven to help skin look and feel good from the inside out. This formula is designed to complement topical sunscreens for complete skin protection.

A bottle containing **30** vegetarian capsules of **Enhanced FernBlock® with Sendara®** retails for \$39. If a member buys four bottles, the cost is only **\$26.25 per bottle**.
Contains corn and rice.

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1. JANA. 2008;11(1):50-6.
2. NutraGenesis LLC. Data on file. 2008.

Note: Use topical sunscreens whenever exposed to sunlight. This product is not a sunscreen.

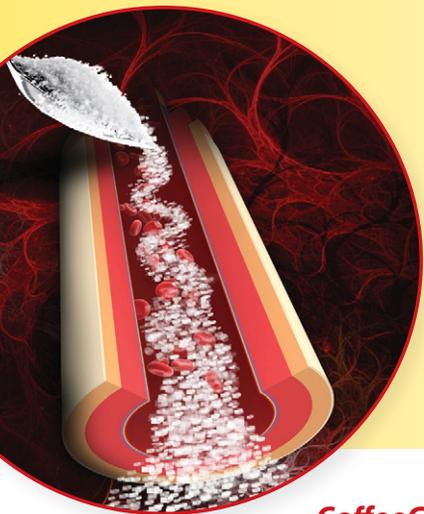
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NATURAL APPROACHES FOR OPTIMAL GLUCOSE CONTROL

Standardized **chlorogenic acid** supplements taken before meals can help many people achieve optimal glucose control.

Life Extension® offers a variety of nutrient blends rich in **green coffee bean extract** that provide potent doses of **chlorogenic acid**.

CoffeeGenic™ Green Coffee Extract with Glucose Control Complex

CoffeeGenic™ Green Coffee Extract with Glucose Control Complex contains 200 mg of **CoffeeGenic™ Green Coffee Extract** along with 4 ingredients formulated to help support healthy blood glucose levels already within normal range. Take one capsule 20-30 minutes before each meal to obtain the following nutrients in addition to Green Coffee Bean extract:

Each vegetarian capsule of **CoffeeGenic™ Green Coffee Extract with Glucose Control Complex** provides:

CoffeeGenic™ Green Coffee (Coffea arabica) Extract (bean) [std to 50% Chlorogenic acid (100 mg)]	200 mg
Iodine (typical value naturally occurring from <i>Ascophyllum nodosum</i> and <i>Fucus vesiculosus</i>)	25 mcg
Chromium [as Crominex® 3+ chromium stabilized with Capros® (<i>Phyllanthus emblica</i>) Extract (fruit) and PrimaVie® Shilajit]	150 mcg
InSea2® [proprietary composition of demineralized polyphenols from brown seaweeds Kelp (<i>Ascophyllum nodosum</i>) and Bladderwrack (<i>Fucus vesiculosus</i>)]	125 mg
Integra-Lean® African Mango (Irvingia gabonensis) proprietary Extract (seed)	100 mg
Green Tea (Camellia sinensis) Decaffeinated Extract (leaf) [std. to 98% polyphenols by UV (98 mg), 45% EGCG by HPLC (45 mg)]	100 mg

● CoffeeGenic™ Green Coffee Extract with Glucose Control Complex • Item #01607*

(Each serving contains approximately 7 mg caffeine)

A bottle containing **90 vegetarian capsules** of **CoffeeGenic™ Green Coffee Extract with Glucose Control Complex** retails for \$58. If a member buys four bottles, the price is reduced to just **\$39** per bottle.



Item # 01607

1. *Diabetes Metab Syndr Obes.* 2012;5:21-7.

Integra-Lean® *Irvingia* is protected by U.S. Patent No. 7,537,790. Other patents pending.

InSea2® is a registered trademark of innoVactiv™ Crominex® 3+, Capros® and PrimaVie® are registered trademarks of Natreon, Inc.

Why CoffeeGenic™ Green Coffee Extract

CoffeeGenic™ Green Coffee Extract is produced through a patented extraction process to deliver an extraordinarily high proportion of **chlorogenic acid** for maximum potency. The coffee beans sourced for **CoffeeGenic™ Green Coffee Extract** are organically grown.

For those who want to take CoffeeGenic as a standalone, it is available in 200 mg and 400 mg potencies.

One vegetarian capsule of **CoffeeGenic™ Green Coffee Extract** should be taken before heavy meals. This Green Coffee Extract is standardized to **50% chlorogenic acid**.

● CoffeeGenic™ Green Coffee Extract (200 mg) • Item # 01604

(Each serving contains approximately 6 mg caffeine)

A bottle containing **90 200 mg vegetarian capsules** of **CoffeeGenic™ Green Coffee Extract** retails for \$25. If a member buys four bottles, the price is reduced to just **\$16.50** per bottle.



Item # 01604

● CoffeeGenic™ Green Coffee Extract (400 mg) • Item # 01620

(Each serving contains approximately 12 mg caffeine)

A bottle containing **90 400 mg vegetarian capsules** of **CoffeeGenic™ Green Coffee Extract** retails for \$38. If a member buys four bottles, the price is reduced to just **\$25.50** per bottle. Those seeking to emulate the dose used in the 2012 study that induced an average **17.6 pounds** of weight loss¹ should take one 400 mg capsule of standardized **green coffee bean extract** three times a day.



Item # 01620

Caution: Because this product may lower blood glucose, consult your healthcare provider before taking this product if you are taking blood glucose lowering medication.

To order any of the Green Coffee Extract formulas, call 1-800-544-4440 or visit www.LifeExtension.com

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

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.

HALF OF AGING HUMANS IN THE DEVELOPED WORLD ARE MAGNESIUM DEFICIENT!¹

YOU MAY BE ONE OF THEM.

Optimal uptake of magnesium may now be obtained in a novel, highly *absorbable* form called **Neuro-Mag™ Magnesium L-Threonate**, available in **capsules** or **tasty natural lemon-flavored powder**.

A Critical Brain Booster. . .

Magnesium is needed for more than **300** biochemical reactions in the body.²

Long known for its role in cardiovascular³⁻⁵ and bone health,⁶ energy metabolism⁷ and mood,⁸ researchers are now focusing *intensely* on magnesium's benefits for **cognitive function**.²

Unfortunately, it is very *hard* for your body to maintain optimal levels of magnesium in the **brain**.² This problem is of *special concern* for maturing individuals, as magnesium deficiency increases over time.¹

Scientifically Advanced, Lab Tested

Most commercially available magnesium supplements are not readily absorbed into the central nervous system.

To overcome this obstacle, an innovative form of magnesium is being introduced called **Neuro-Mag™**, shown to specifically target the aging brain and nervous system.

In pre-clinical models, **magnesium L-threonate** contained in **Neuro-Mag™** boosted magnesium levels in spinal fluid by an impressive **15%** compared to no increase with conventional magnesium.²

Even more compelling, animal models revealed improvements of **18%** for short-term memory and **100%** for long-term memory using the **Neuro-Mag™** form of magnesium.²

Capsules or Powder... Value Priced

The suggested daily dose of three **Neuro-Mag™ Magnesium L-Threonate Capsules** provides **2,000 mg** of **Magnesium L-Threonate**. While this supplies a modest **144 mg** of elemental magnesium, its superior *absorption* into the bloodstream and nervous system make it a preferred choice for aging humans to supplement with.

This highly absorbable brain health-supporting magnesium is also available in a good tasting powder mix called **Neuro-Mag™ Magnesium L-Threonate with Calcium and Vitamin D3 Powder**. In addition to its appealing natural lemon flavor, the one-scoop per day serving size supplies the same amount of magnesium plus **500 mg** of **calcium** (as calcium lactate gluconate—a highly *soluble* form of calcium) and **1,000 IU** of **vitamin D3**.

This offers maturing individuals an easy way to obtain these key nutrients in one simple formula.

A bottle containing 90 vegetarian capsules of **Neuro-Mag™ Magnesium L-Threonate** or **30** scoops of **Neuro-Mag™ Magnesium L-Threonate with Calcium and Vitamin D3 Powder** retails for \$40. If a member buys four bottles, the price is reduced to **\$27** per bottle. Contains corn.

References

1. Available at: <http://www.mit.edu/press/2010/magnesium-supplement.html>. Accessed Sept 1, 2011.
2. *Neuron*. 2010 Jan 28;65(2):165-77.
3. *Ann Pharmacother*. 2002 Feb;36(2):255-60.
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8. *Pharmacol Rep*. 2008 Sept-Oct;60(5):588-9.

Magtein™ is a trademark of Magceutics, Inc, distributed exclusively by AIDP, Inc. Patent pending.

To order **Neuro-Mag™**
Magnesium L-Threonate
Capsules or Powder
call 1-800-544-4440 or visit
www.LifeExtension.com



Item # 01603



Item # 01602

CALORIE CONTROL WEIGHT MANAGEMENT FORMULA

NOW WITH GREEN COFFEE EXTRACT



Nearly **80%** of **highly motivated** people fail to achieve long-lasting **weight loss** with diet and lifestyle modifications alone.¹

That's why the **Calorie Control Weight Management Formula** was designed. Clinical studies validate that when overweight humans take just some of the **natural ingredients** in this formula combined with reduced calorie intake, there is a greater **loss of body fat** compared to diet alone.²⁻⁴ **Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract** can help give you the winning edge when following a calorie-modulated weight loss program.

Calorie Control Weight Management Formula comes in a natural **blueberry flavor** and is available in a 60-serving bottle or individual **stick packs** that you can conveniently use when away from home.

Each dose has been fortified with **200 mg of CoffeeGenic™ Green Coffee Extract** to impede rapid absorption of starches and sugary foods⁵ and suppress **after-meal** glucose surges.⁶

To order any of the **Calorie Control Weight Management Formulas with CoffeeGenic™ Green Coffee Extract**, call 1-800-544-4440 or visit www.LifeExtension.com

Importance of Taking Calorie Control Weight Management Formula Before Heavy Meals

Once we accept the fact that weight loss requires more than diet and exercise alone, it becomes easy to understand the importance of taking the **Calorie Control Weight Management** formula before two heaviest meals of the day to help neutralize the unwanted effects of caloric excess. Those seeking to emulate the dose used in the 2012 study that induced an average **17.6 pounds** of weight loss⁷ might want to also take a **200 mg** capsule of standardized **green coffee bean extract** along a serving of **Calorie Control Weight Management Formula** before meals.

Each appetizing blueberry flavored stick pack or scoop of the Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract, powder provides:

CoffeeGenic™ Green Coffee (<i>Coffea arabica</i>) Extract (bean) [std to 50% Chlorogenic acid (100 mg)]	200 mg
LuraLean® propolmannan (<i>Amorphophallus konjac</i> K. Koch, ssp. <i>Amorphophallus japonica</i>) fiber Extract (root)	2,000 mg
Phase 2® <i>Phaseolus vulgaris</i> white kidney (bean) Extract	445 mg
Integra-Lean® African Mango (<i>Irvingia gabonensis</i>) proprietary extract (seed)	150 mg
Tea Slender™ Green Tea Phytosome Green Tea (<i>Camellia sinensis</i>) Phytosome Decaffeinated Extract (leaf) bound to phosphatidylcholine (from lecithin)	150 mg

Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract • Item # 01693*

(Each serving contains approximately 6 mg caffeine)

A bottle containing 60 servings of **Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract** natural blueberry flavor powder retails for \$60. If a member buys four bottles, the price is reduced to just **\$40.50** per bottle.

For added convenience of use, this new formula also comes in **60 individual stick packs**. Each box containing 60 servings of **Calorie Control Weight Management Formula with CoffeeGenic™ Green Coffee Extract** natural blueberry flavor powder retails for \$64. If a member buys four boxes, the price is reduced to just **\$45** per box.

Item # 01694*

Contains soybeans. Contains corn.

References

1. *Lancet*. 2011 Aug 27;378(9793):826-37.
2. *Lipids Health Dis*. 2009 Mar 2;8:7.
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4. *Altern Ther Health Med*. 2007 Jul-Aug;13(4):32-7.
5. *J Nutr Sci Vitaminol (Tokyo)*. 2007 Apr;53(2):166-73.

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

6. Nagendran MV. Effect of Green Coffee Bean Extract (GCE), High in Chlorogenic Acids, on Glucose Metabolism. Poster presentation number: 45-LB-P. Obesity 2011, the 29th Annual Scientific Meeting of the Obesity Society. Orlando, Florida. October 1-5, 2011.
7. *Diabetes Metab Syndr Obes*. 2012;5:21-7.

healthcare provider before taking this product if you have difficulty swallowing or esophageal narrowing. **Integra-Lean® Irvingia** is protected by U.S. Patent No. 7,537,790. Other patents pending. **Phase 2®** is used under license. **LuraLean®** is a registered trademark of AHD International LLC.



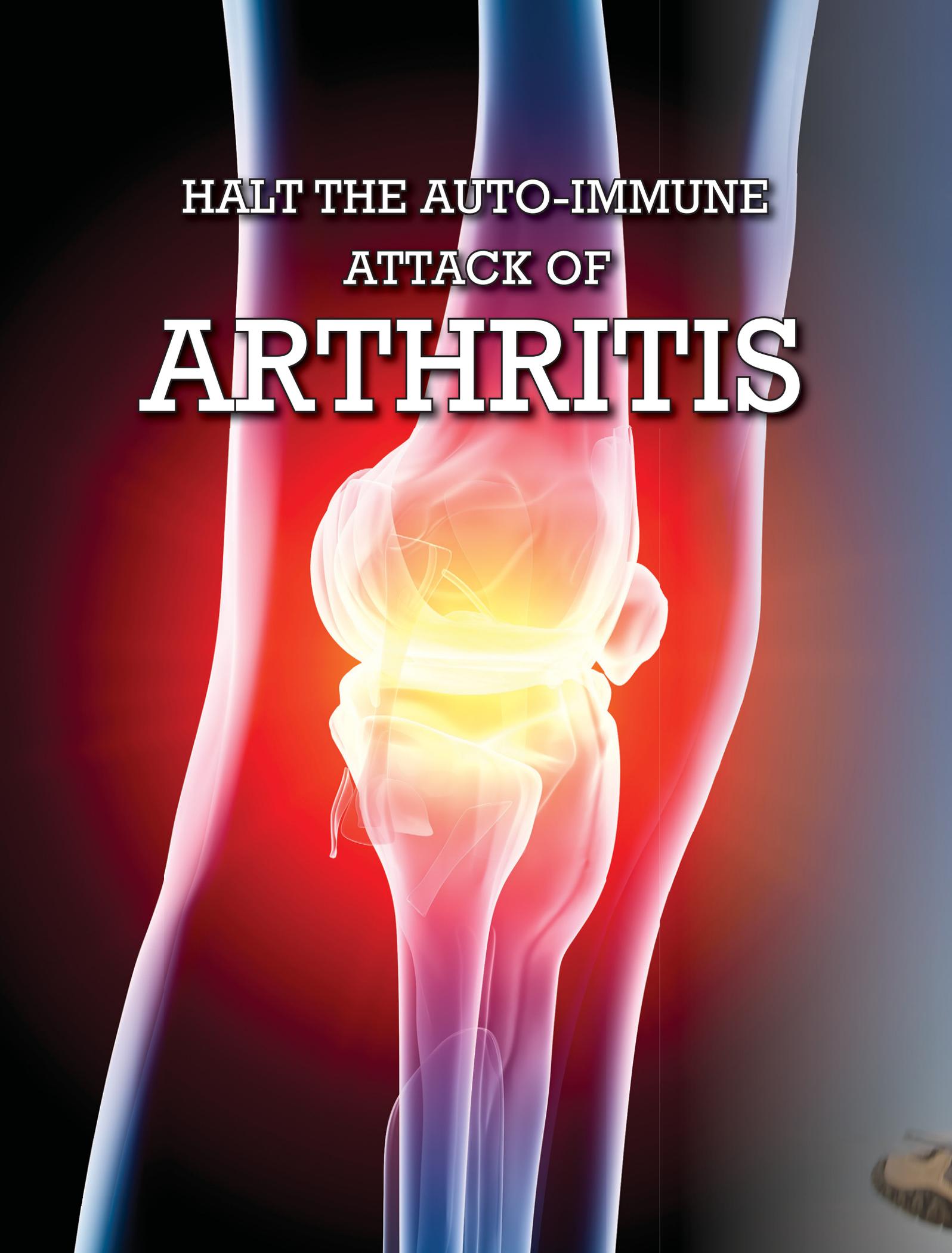
Item # 01693



Item # 01694

*These supplements 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. These products are not intended to diagnose, treat, cure, or prevent any disease.



HALT THE AUTO-IMMUNE
ATTACK OF
ARTHRITIS



BY MICHAEL DOWNEY

By the time people reach age 65, a startling **80% show X-ray evidence of osteoarthritis**¹—the most frequent cause of musculo-skeletal disability worldwide.^{1,2}

Most doctors consider **osteoarthritis** and **rheumatoid arthritis** to be progressive and **incurable**. Side effect prone drugs only transiently soften pain and have no long-term impact on the disease itself.^{3,4}

Conventional medical wisdom mistakenly believed that in contrast to **rheumatoid arthritis**—which results from an **autoimmune** attack on joints—**osteoarthritis** was simply the result of *age-related “wear-and-tear.”*

However, scientists now understand that, in **both of these conditions**, an inflammatory immune system attack on joint compounds can be triggered by **exposed collagen**.⁵

This article is about **undenatured type II collagen**, which has a unique molecular structure that interferes with damaging inflammation responses and helps to **retrain** the immune system.

Studies show that exposure to small amounts of type II chicken collagen can inhibit immune **overreaction** to exposed collagen proteins, substantially reducing the pain and disability of osteoarthritis^{4,6-8} and rheumatoid arthritis.⁹⁻¹² In one study, an unheard-of **14%** of patients taking undenatured type II collagen experienced **complete remission** of their rheumatoid arthritis!⁹ > >



A unique formulation of undenatured type II collagen, **UC-II®**, was found in controlled studies to significantly **reduce pain and increase function** in arthritic dogs,^{6,7,13,14} horses,⁸ and humans.⁴

As you'll learn, pain scores for osteoarthritis patients taking UC-II® **decreased**—in just **90 days**—by a **remarkable 40%**!¹⁴

A New Understanding of Osteoarthritis

Cartilage, the shock-absorbing substance that lines our joints and allows them to slide smoothly, is comprised largely of a protein known as **collagen**. Minor damage to cartilage exposes small fibers of **collagen** that trigger **rheumatoid arthritis**—and **osteoarthritis** as well.

Until recently, conventional medical thinking held that these two forms of arthritis involve different pathologies.

Only **rheumatoid arthritis** was recognized as an inflammatory **immune process**—where the body's oversensitive immune system attacks the body's own tissues, in this case the joint linings and cartilage.

By contrast, **osteoarthritis** was believed to be an unavoidable result of the simple **wear-and-tear** of age and repeated use on joint cartilage and bone. It was assumed that joint-cushioning cartilage **simply wore away**, leaving the friction of increasingly painful scraping and inflammation.

The assumption that **osteoarthritis** is the degeneration of cartilage may have stemmed largely from the fact that this form of arthritis arises typically in the later years of life; and the number of minor cartilage traumas that can spark an immune response tend to increase as the water content of cartilage is reduced—which *is* indeed, age-related.

So, osteoarthritis has long been assumed to be an **inevitable** and **incurable** consequence of **aging**. In recent years, research has increasingly shown that immune mediated joint inflammation plays a large role in the development and perpetuation of osteoarthritis. This new understanding of the underlying cause of osteoarthritis offers new avenues for medical intervention and has even brought forth the possibility of a **cure**!

New research shows that the underlying pathology behind **osteoarthritis** is the triggering of an inflammatory immune response—similar to **rheumatoid arthritis**. The end result—for both forms of arthritis, scientists now realize—is activation of “killer” T-cells by **exposed collagen**, destruction of joint surfaces, and the accompanying pain and impaired function.^{9,15}

For the first time, this establishes osteoarthritis as a disease progression that is **not inevitable**—and opens the door to the possibility of a *single intervention to modulate the abnormal immune response behind both of these types of arthritis*.

So let's take a look at how scientists **now** see the development of osteoarthritis, and how we can **re-educate** the immune system to **halt** the progression of both types of arthritis—and **reverse** it!

The Immune System Cause of Joint Disease

Joints take a beating over time, with those in the weight-bearing lower half of our bodies taking the heaviest punishment. Small traumas to cartilage occur at all ages, but go unnoticed in younger individuals. In time, these traumas result in **exposed fibers of collagen**, a cartilage component.¹⁶

And that's the early silent signal for a devastating chain of events.

Normally sealed off from the immune system, **newly exposed** microscopic collagen fibers are now mistaken as “foreign” cells.¹⁷

The body's alarm goes off indicating a foreign invasion that triggers a complex and destructive interplay known as the **complement cascade**. An army of “killer” **T-cells** is sent to the joint, followed by the release of **inflammatory cytokines**, which in turn draw in more “killer” T-cells.^{17,18}

This culminates in the release of a cell-destroying protein cluster called the **membrane attack complex**, or **MAC**.¹⁹ These MAC proteins bind themselves to cartilage-producing cells, causing them to secrete **complement-component proteins**, as well as other inflammatory chemicals and enzymes. Together, these secreted compounds proceed to **chew up** the matrix of cartilage occupying the spaces between cells.¹⁸

But the attack *doesn't end there!*

Researchers found that as cartilage fibers are destroyed by the immune system, the destroyed cells release various byproducts, including **fibromodulin**. These damaging breakdown products directly **reactivate** the complement cascade—driving a vicious and **continuing cycle** of joint-tissue damage.¹⁸

Small, surface fibers trigger the initial immune response. Then the secondary cycle of **trigger-damage** eventually **eats away** the **healthy** cartilage **within** the joint—creating the pain, friction, and grinding known as osteoarthritis.¹⁹

To prove this chain of events is the origin of osteoarthritis, mice were bioengineered so that they lacked a key protein, without which the **complement cascade** (a specific set of events that set off an immune response) cannot be triggered. Following a cartilage tear—which in this special case did **not** trigger the normal immune-attack cascade—the mice maintained their ability to walk normally and did not suffer any osteoarthritic or immune reaction.¹⁸

Rheumatoid arthritis occurs when the immune system mistakenly identifies **exposed cartilage**—or other joint elements such as **synovial fluid** or the **synovial membrane**—as “enemies.”⁹ An inflammatory response ensues that is considered to be **high-grade**, which is why rheumatoid arthritis is categorized as a true **autoimmune disease**. As in **osteoarthritis**, exposed collagen triggers the **complement cascade**, a **cyclical** attack that eventually destroys the joint surfaces and normal function.

Now aware that both osteoarthritis and rheumatoid arthritis are substantial immune reactions triggered by **exposed collagen**,^{219,20} scientists sought ways to target the common immune origin of these joint-destroying diseases.

The ideal prevention would be to **re-educate** the immune system to **differentiate** between exposed collagen fibers and foreign bodies. This would **inhibit overreaction** to proteins normally found in joint cartilage, and **prevent** immune-mediated attacks on the joints.

Fortunately, a number of studies have shown that a form of a natural collagen does just that!

Protect Your Joint Health with Undenatured Type II Collagen

- Until recently, osteoarthritis was simply considered to be the mechanical wearing down of cartilage with use and aging, treatable only with risky and ineffective NSAIDs and immune suppressants.
- Scientists have now learned that osteoarthritis—like rheumatoid arthritis—is an abnormal immune response to exposed collagen fibers in joint cartilage.
- Oral introduction of **type II collagen** desensitizes the immune system to collagen fibers, preventing the inflammatory response that leads to further joint destruction.
- This unique intervention works by activating the natural pathway of **induced oral tolerance**—“short-circuiting” **both** osteoarthritis and rheumatoid arthritis!
- Controlled clinical studies have confirmed that undenatured type II collagen **uniquely inhibits** arthritic joint pain, swelling, and loss of function—by blocking the disease process in **both rheumatoid and osteoarthritis**.



Short-Circuit Arthritis—at its Root

Because arthritis has been considered impossible to cure, standard medical treatment has focused on drugs for inflammation and pain and in some cases, immune suppressants. These pharmaceuticals include NSAIDs such as *ibuprofen* (**Motrin**®), and corticosteroids such as *prednisone*. They substantially increase the **risk of life-threatening disorders**, including *obesity, kidney disease, diabetes, heart disease, and stroke*.²¹⁻²⁴ And yet, they only blunt symptoms while having no impact on the **origin** of the disease itself.⁴

So, scientists have long sought ways to **short-circuit** the immune response to exposed collagen.

Then, researchers came across the surprising finding that something in **chicken soup** exerted an anti-inflammatory activity, protecting sites of inflammation from attack.²⁵

When scientists later investigated **type II chicken collagen**, they discovered its potential to act along natural immune pathways to **induce tolerance** to exposed collagen.

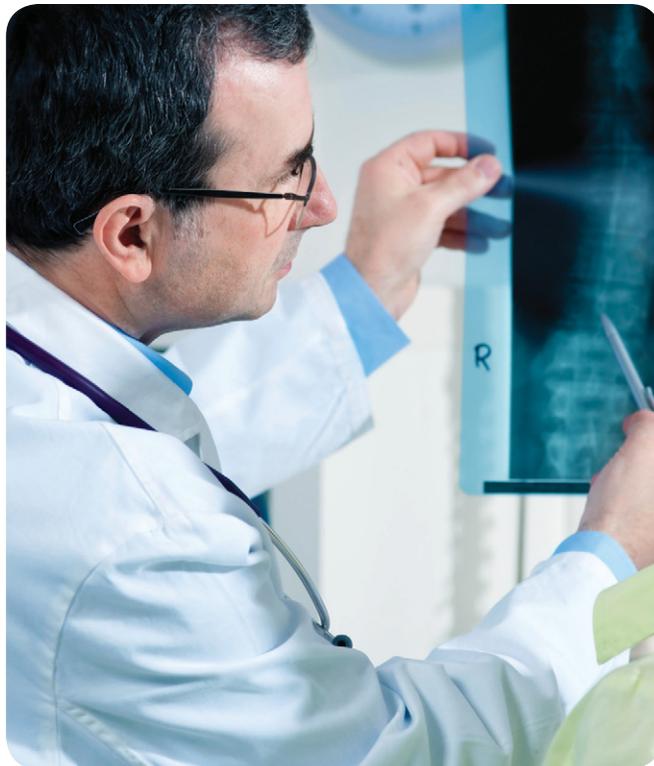
At that time, **osteoarthritis** was still seen as simply the mechanical wearing down of cartilage with use and aging. So, chicken collagen was initially tested only on the known *autoimmune* joint condition, **rheumatoid arthritis**.

In a randomized, double-blind study of the effect of type II chicken collagen on 60 patients with active rheumatoid arthritis, the number of swollen and tender joints decreased in the collagen group, but not in the placebo group—within just **3 months**. However, the study team observed another dramatic finding: an unheard-of **14%** of those patients receiving type II chicken collagen had a **complete remission** of their rheumatoid arthritis!⁹

These findings for type II chicken collagen were confirmed with similar results in a larger trial of 274 patients with active rheumatoid arthritis.¹⁰

Scientists tested oral type II collagen on patients with **juvenile rheumatoid arthritis**, an especially aggressive form of this disease that begins in childhood. In just 12 weeks, **80%** of the patients in the type II collagen group responded to treatment with an average reduction of **61%** in the number of swollen joints, and an average reduction of **54%** in the number of tender joints.¹¹

Eventually, researchers conducted a conclusive **phase III clinical trial** on over 500 rheumatoid arthritis patients, which was published in the journal *Arthritis Research & Therapy* in 2009. They found that supplementing with type II chicken collagen resulted in reduced disease activity and beneficial effects—



exerted specifically, in the words of the study authors, **“through inducing oral tolerance.”**¹²

As it became increasingly apparent that **osteoarthritis**—like rheumatoid arthritis—is an immune disorder, scientists began testing *type II chicken collagen* on this most prevalent form of joint disease.

Let’s examine the results of these breakthrough studies.

UC-II® Modulates Osteoarthritis

Turning their attention to **osteoarthritis**, scientists tested **UC-II**®, a proprietary form of **undenatured type II chicken collagen**, on horses and larger dogs. These animals are, like humans, very susceptible to osteoarthritis.

Only a specific **undenatured** form of collagen, which maintains its **unique molecular structure**, can **retrain** the immune system not to overreact to exposed collagen fibers. To understand this crucial difference, see the box on the next page.

Dogs with osteoarthritis given UC-II® were found to exhibit **significant reductions** in overall pain, in pain after limb manipulation, and in lameness after physical exertion—within **90 days**.⁶ There were no adverse side effects. When UC-II® was then withdrawn for the next **30 days**, the pain and exercise-associated lameness returned.⁶

These findings were confirmed when a subsequent study on arthritic dogs found that UC-II® produced the same **significant decrease** in arthritic pain—again, within **90 days**.⁷

A longer study found that while arthritic dogs given UC-II® were measured to experience significant improvements in pain and mobility after 30 and

60 days, they showed the **greatest benefit** after **120 days** of supplementation. By that point, the UC-II® group was measured to have a **62% reduction** in overall pain, a **78% reduction** in exercise-associated lameness—and a **surprising 91% reduction in pain upon limb manipulation!**¹³

How UC-II® Induces Oral Tolerance

Researchers found that **normally processed collagen** exhibited no bioactivity and would **not** induce **oral tolerance**.¹⁵ Only a specific form of collagen, with its **unique molecular structure**, will **retrain** the immune system not to overreact to exposed collagen fibers. To understand this difference, let's examine how oral tolerance is induced.

T-cells are in part, immune system watchdogs, constantly assessing the **three-dimensional structure** of proteins they encounter in order to distinguish between harmless “self” proteins and potentially deadly “foreign” proteins.²⁷

If T-cells are exposed in the blood to a new protein structure—such as an unrecognized protein on separated collagen fiber—they react violently and trigger an **inflammatory response** to destroy what is presumed to be a disease-causing invader.²⁸

And that deadly inflammatory attack is extended to any other collagen molecules that are subsequently encountered by the T-cells—including intact collagen in cartilage **in the joint**.

In fact, injecting collagen into animals is the standard procedure to create an animal model of arthritis for experiments. It sensitizes the T-cells **in their blood** to the collagen protein, which results in inflammation in the animal's joints where the **circulating T-cells** encounter rich supplies of identical molecular structures.²⁹ The inflammatory result is **arthritis**.

However, scientists have learned that it is possible to **teach** T-cells that the collagen molecule is a friend rather than a foe.

Rich collections of immune tissue are located in the lower end of the **small intestine**. Called **Peyer's patches**, they act as “training centers” for the immune system, exposing T-cells to a vast variety of molecular shapes among the natural components in the food we eat. This **desensitizes** T-cells to new foods to avoid constant inflammatory or allergic reactions. In other words, this is the area that induces **tolerance**.³⁰

Native collagen introduced into the **digestive tract**—rather than directly into the bloodstream—can

“educate” T-cells to ignore collagen fibers when they are encountered in the joints.³¹ In scientific terms, the result is “**induced specific oral tolerance**.”^{32,33}

This oral tolerance to collagen powerfully **suppresses** joint inflammation, as has been shown in numerous studies.³²⁻³⁵

But to induce tolerance to exposed joint collagen, the orally introduced product must be **type II collagen**—the same form of collagen found in the cartilage matrix—and must have the **exact same three-dimensional structure**.

Typical commercial processing causes collagen to become **denatured**. Its normal helical shape uncoils and it has as a slightly, but crucially, altered three-dimensional structure. Denatured collagen does not induce oral tolerance.³²

However, **undenatured type II chicken collagen** retains its molecular structure, allowing it to induce oral tolerance.

Scientists found that—even in small doses—orally administered undenatured type II chicken collagen inhibits the **killer T-cell** attack.^{15,34}

UC-II® is a proprietary formulation of undenatured type II chicken collagen, derived from chicken sternum cartilage, a rich source of natural collagen. UC-II® retains the **original helical molecular structure** of joint collagen.²⁷ This allows the T-cells in Peyer's patches to develop tolerance to exactly the same molecular shape as exposed collagen encountered in the joints—which will now be recognized as “self,” not “foreign,” molecules.

This unique molecular composition of UC-II® has been shown to be **robust**. This enables UC-II® to survive passage through the harsh conditions of the stomach and small intestine, so that it arrives finally at Peyer's patches with **its molecular structure intact**.²⁷

Studies verify that when undenatured type II collagen is introduced into *the digestive tract*, it induces oral tolerance to the exposed collagen *inside the joint* and **suppresses rheumatoid and osteoarthritis**.

Extinguishing Arthritis at Its Source

Today, **52 million Americans** live with some form of arthritis,³⁶ with its debilitating joint pain and impairment.

The standard medical treatment for arthritis has been anti-inflammatory and pain drugs, including NSAIDs such as **ibuprofen (Motrin®)**, as well as corticosteroids such as **prednisone**. Over **46%** of those diagnosed with osteoarthritis are prescribed NSAID therapy.³⁷

At best, these medications partially blunt the symptoms. At worst, they substantially increase the **risk of life-threatening disorders**, including *obesity, kidney disease, diabetes, heart disease, and stroke*.²¹⁻²⁴ And they **compromise the immune system**.¹⁸ But for a long time, medical science offered no treatment that would have a fundamental impact on the **origin** of the disease itself.⁴

However, both **rheumatoid arthritis** and **osteoarthritis** are now understood to be *immune disorders*—massive immune system attacks triggered by the minor traumas to joint cartilage that result in **exposed collagen fibers**.

Scientists sought ways to activate **induced specific oral tolerance** to exposed collagen. Achieving induced specific oral tolerance requires involvement of the **immunological pathway**, the “immune learning center” within our digestive tract. Here, the

immune complement system is trained to differentiate correctly between “self” and “foreign” cells.

Through induced specific oral tolerance, it is possible to **reprogram** the immune system to suppress reactivity to a specific *antigen*—to **teach** it to tolerate the harmless substance. The immune system’s ability to acquire *tolerance* by oral administration of the antigen is likely rooted in mankind’s early evolution. It may have evolved to prevent hypersensitive reactions to food proteins, which is in keeping with the fact that this immunological pathway is situated within the digestive tract.

Inducing specific oral tolerance to exposed collagen requires finding, and then introducing to the body through the immune system’s desensitization area within the digestive tract, a substance with precisely the **same molecular shape** as the collagen fiber molecules currently being identified as “foreign.”

Unlike regularly processed **type II collagen**, the **undenatured** form maintains its molecular shape.

Scientific studies have confirmed that **undenatured type II collagen** effectively **reprograms the immune system** to recognize the proteins normally found in joint cartilage to be harmless “self” cells.³⁰⁻³² This significantly relieves symptoms of both **rheumatoid arthritis**⁹⁻¹¹ and **osteoarthritis**.^{4-9,13,14}



A later placebo-controlled study confirmed these observations. After **120 days**, dogs treated with UC-II® were assessed to have a **77% reduction** in overall pain, an **84% reduction** in exercise-associated pain, and an **83% reduction** in pain upon limb manipulation. No adverse effects were found—even after a thorough check of liver, kidney, and heart function.²⁶

A longer, more precision-based study was undertaken in 2011, using a high-tech **ground force plate** employing a special **piezoelectric sensor**. This apparatus allowed researchers to measure with a high degree of accuracy, the exact force and weight that dogs placed on each arthritic limb. Dogs given the undenatured UC-II® formulation were able to place **more weight** on sore limbs and use them **more naturally**, relative to those given either placebo or the combination of chondroitin-plus-glucosamine. Monthly tests of kidney and liver function, pulse rate, temperature, and weight found no adverse effects. The data from the groundforce plate study showed that dogs

in the UC-II® only group showed continued improvement after 150 days, at which time supplementation was discontinued.¹⁵⁴

In a large, placebo-controlled study, researchers administered oral doses of UC-II® to horses. They measured reductions of **88%** in overall pain, and **78%** in pain during limb manipulation among horses given UC-II®. These benefits were seen after **150 days** of supplementation.⁸

Studies demonstrated that UC-II® alone produced much greater results in relieving arthritis in dogs and horses than the combination of chondroitin and glucosamine sulfate alone.^{8,13} However, the same researchers found that **combining UC-II®, with chondroitin and glucosamine sulfate** produced the greatest benefits, substantially alleviating pain and improving function.¹⁵ This suggests the possibility that humans may be found to benefit from the **dual action** of these two treatments together. While impressive evidence indicates that undenatured type II collagen **inhibits processes responsible for the progression of arthritis**, the glucosamine-and-chondroitin combination has previously been shown to **repair damaged joints**.^{10,14} Scientists then shifted their focus to the effect of UC-II® on **osteoarthritis in humans**.

Targeting Osteoarthritis in Humans

Evidence had already established the effectiveness of undenatured type II collagen in inhibiting the symptoms of **rheumatoid arthritis** in humans. However, it would be necessary to *separately* establish this unique ability of UC-II® in human cases of **osteoarthritis**. To achieve this, researchers employed a stringent study protocol: a **randomized, double-blind, clinical study on humans**.

In a study of this type, 52 adults suffering from osteoarthritis with an average age of 59 were randomly assigned to receive daily either **two 20 mg** capsules of UC-II®, or a combination of **four 375 mg** capsules of glucosamine plus **four 300 mg** chondroitin sulfate. All patients were assessed at 30-day intervals.⁴

The researchers found that in just **90 days**, UC-II® provided **“significant enhancement** in daily activities, suggesting an improvement in their quality of life.”⁴

In the same trial, the researchers employed the standardized **WOMAC (Western Ontario McMaster Osteoarthritis Index)** scale to accurately assess symptoms. They concluded that **40 mg a day** of UC-II® reduced osteoarthritis symptoms assessed by the WOMAC scale by **33%**—in only **90 days**. By comparison, the combination of **1,500 mg a day** of



glucosamine and **1,200 mg a day** of chondroitin sulfate reduced WOMAC scores in the same period by only **14%**.⁴

The team of scientists then used the *Visual Analog Scale (VAS)*—which is used to assess pain—to corroborate these results. Using this measure, they found pain scores decreased by **40%** for the UC-II® group, while pain scores for the glucosamine/chondroitin group decreased just **15%**.⁴

Finally, using the *Lequesne’s Functional Index*—a measure specifically of pain during daily activities, such as walking—the study team found that UC-II® reduced the score for this type of pain by **20%**, while the combination of glucosamine plus chondroitin lowered the score by only **6%**.⁴

All results were observed in just **90 days**.

This compelling human research crowns a series of studies indicating that undenatured type II cartilage **induces oral tolerance** to exposed collagen, inhibiting the immune response that inflames joints and further degrades joint cartilage.

Summary

Recent research has revealed that cartilage erosion caused by wear-and-tear is not the immediate cause of osteoarthritis—it is only the initial trigger.

Scientists now know that osteoarthritis, like rheumatoid arthritis, is an abnormal immune-system over-reaction to exposed collagen fibers in joint cartilage.

Until this discovery, the standard treatment has been risky NSAIDs and immune suppressants, which have no effect on the underlying cause of this immune reaction.

Oral introduction of **type II chicken collagen** desensitizes the immune system to collagen fibers, “teaching” inflammatory killer T-cells to ignore exposed collagen in the joints.

This unique intervention works by activating **induced oral tolerance**, the natural pathway that effectively “short-circuits” the immune response behind arthritis—halting disease activity.

Controlled clinical studies indicate that **undenatured type II collagen uniquely inhibits** inflammatory joint pain, joint swelling, and impaired function in **both rheumatoid and osteoarthritis**. ●

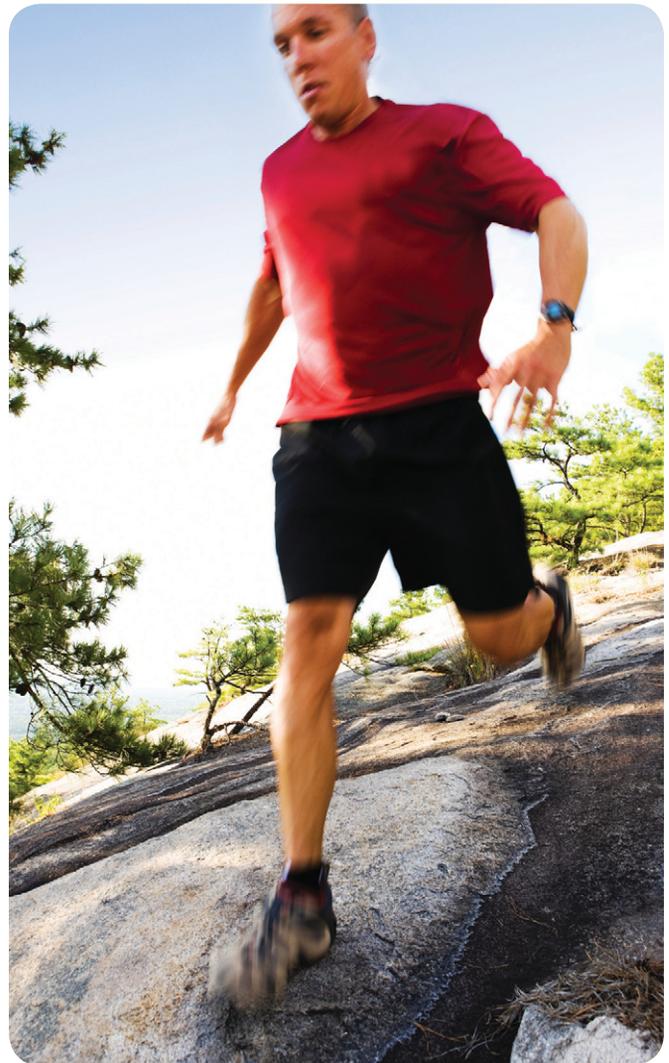
If you have any questions on the scientific content of this article, please call a **Life Extension®** Health Advisor at 1-866-864-3027.

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PURE, HEART HEALTHY

Super Omega-3

EPA/DHA



Item # 01482

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, and easy-to-tolerate fish oil supplement, **Life Extension® SUPER OMEGA-3 EPA/DHA** is *molecularly distilled*. This proprietary technology ensures any environmental pollutants are reduced to extremely low 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 ranking 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 **fish oil** combined with **olive oil** 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 (4 softgels) supplies the equivalent content of **6 tablespoons of extra virgin olive oil**. Take two softgels twice daily with meals.

A bottle containing 120 softgels of **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract** retails for \$32. If a member buys four bottles, the price is reduced to just **\$21** per bottle. If **10 bottles** are purchased, the cost is just **\$18.68** per bottle. (Item # 01482)



Ratings based on results of the 2012 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com.

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

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

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

EPA Pure+™ Extract (eicosapentaenoic acid)	1400 mg
DHA Pure+™ Extract (docosahexaenoic acid)	1000 mg
Olive Fruit Extract [std. to 6.5% polyphenols (39 mg), 1.73% hydroxytyrosol/tyrosol (10.4 mg), 0.5% verbascoside/oleuropein (3 mg)]	600 mg
Sesame Seed Lignan Extract	20 mg

A SMALLER SOFTGEL for easier swallowing!

Some members have requested we make **Super Omega-3** available in a smaller capsule for easier swallowing. We have accomplished this by making **half-size** softgels available.

A bottle containing 240 half-size softgels of **Super Omega-3 EPA/DHA with Sesame Lignans and Olive Fruit Extract** retails for \$32. If a member buys four bottles, the price is reduced to just **\$21** per bottle. If **10 bottles** are purchased, the cost is just **\$18.68** per bottle. (Item # 01619)

For those with sensitive stomachs, **Super Omega-3** is also available with **enteric coating** and retails for **\$34**. If a member buys four bottles, the price is reduced to **\$23.25** per bottle. If **10 bottles** are purchased, the cost is just **\$21** per bottle. (Item # 01484)

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

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Introducing New FULL-STRENGTH Formula

BIO-COLLAGEN WITH PATENTED UC-II®

NEW CONCENTRATED SUPPORT FOR JOINT COMFORT!

Tender, sensitive joints can limit everyday activities. As you age and continue to put stress on your joints, you can compromise joint cartilage—which exposes **small collagen fibers**.

Your body's immune system mistakenly identifies these collagen fibers as "**foreign cells**." This triggers an inflammatory response against the **collagen-containing** cartilage in your own joints. Inflammation and joint discomfort can soon follow.

New data show that a patented collagen provides targeted support for the immune issues related to joint discomfort.¹

To meet this urgent need, **Life Extension®** now offers **Bio-Collagen with Patented UC-II®**—a novel form of **undenatured** type II collagen from chicken cartilage.

Taken orally, **UC-II®** travels to the intestinal tract where it "introduces" the immune system to the **same** type of collagen molecules found in **joint cartilage**.

ADVANCED MOLECULAR STRUCTURE

Not just *any* form of collagen will do. Normally, when chicken collagen is **processed**, its molecular shape is changed. It loses bioactivity and becomes **denatured**—which researchers found has *no beneficial effect*² on the immune system.

Fortunately, a **unique processing technique preserves the correct molecular shape** of the collagen^{3,4}—*and preserves its bioactivity*⁵—producing a form known as **undenatured collagen**.

The result of this innovative process is an **undenatured chicken collagen** called **Bio-Collagen with Patented UC-II®**.

SCIENTIFICALLY VALIDATED

Scientific studies have found that **UC-II® reduced sensitive joint discomfort** and **eased joint function**.^{1,6-10} One double-blind, placebo-controlled study on patients found that **UC-II® provided relief by 33%**, and **decreased joint discomfort scores by a remarkable 40%—in just 90 days!**¹

CONVENIENT ONE-PER-DAY DOSE

The suggested daily serving of one capsule of **Bio-Collagen with Patented UC-II®** supplies **40 mg** of this proprietary blend.

The retail price of a bottle of 60 capsules of **Bio-Collagen with Patented UC-II®** is \$36. If a member buys four bottles, the price is reduced to **\$24 per bottle** or just **\$12 a month**.

To order Life Extension® Bio-Collagen with Patented UC-II®, call 1-800-544-4440 or visit www.LifeExtension.com



Item #01631

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BLUEBERRIES

BOOST LONGEVITY



BY SUSAN EVANS

Until recently, the majority of scientific research on blueberries has focused on the cognitive benefits of this fruit. Multiple studies have shown that blueberries slow age-related damage to brain cells and protect memory-associated brain regions from oxidant and inflammatory damage.^{1,2} The result is improvements in overall cognitive function.^{3,4}

Researchers have uncovered new data showing that blueberries delay aging and promote longevity. In laboratory experiments, blueberries and their extracts have extended the life span in two different models of aging.^{5,6} Additionally, blueberries have been shown to fight DNA damage, metabolic syndrome, heart disease, and even cancer.

Rich in anthocyanins and pterostilbenes, blueberries are becoming a critical component of a science-based longevity program. > >

Blueberries Increase Life Span Across Species

In studying longevity benefits of various compounds, scientists often use fruit flies as a laboratory model of aging. What researchers discovered is that fruit flies live **10%** longer when fed a regular diet containing blueberry extract.⁵ Not only do the fruit flies live longer but they also show improved levels of physical activity. These enhancements arise both from increased tolerance of oxidant stress and from beneficial changes in the way certain important genes are expressed.

Still more dramatic life span extension has been shown in another aging model called *C. elegans*. After supplementation with blueberry extract, these organisms lived an average of **28%** longer, and the maximum life span increased by **14%**.⁶ The supplemented animals showed a **20%** reduction in an age-related protein that impairs function, and vastly improved tolerance of stress in their environment.⁶

Mammals experience increased longevity and slowed aging processes when fed blueberry extracts, as shown by a study of mice on calorie restriction. When calorie-restricted mice had blueberry extracts added to their food ration, they not only outlived the normally-fed mice, but also the calorie-restricted mice who were not given the supplement as well.⁷

In addition to extending the life span of whole organisms, blueberries and their extracts slow aging in individual tissues, providing wide physiological benefits. (See table 1). Along with increasing all around longevity, blueberries can specifically decrease the risk of various degenerative diseases that reduce the human life spans.

Lose Weight and Lower Obesity-Related Risk Factors

Americans have enjoyed a steady rise in life expectancy for more than two centuries, but that is likely to change, due to the spiraling increase in obesity rates.⁸ If we don't change our ways, average life span may decrease by 5 years or more, say members of an expert panel convened by the *National Institute on Aging*.⁹

Blueberry extracts have many positive effects that may help you lose weight and keep it off. Studies show that animals fed blueberry extracts while on a high-fat diet had lower overall weight gain, and smaller accumulations of body fat, than control animals.¹⁰⁻¹²

Importantly, the loss of body fat is especially prominent in the abdominal areas and the liver; fat in those areas poses the greatest risk of cardiovascular disease and other life-shortening complications of obesity.^{13,14}

Some of blueberries' anti-obesity benefits come from their ability to block enzymes in the intestines that promote carbohydrate absorption.¹⁵ Once absorbed into the body, blueberry flavonoids slow the rate at which fat cells develop and multiply, and decrease the amount of fat stored by each cell.¹⁶ Blueberry extracts promote sugar uptake into muscle cells, where it can be used as energy, rather than being stored as fat.¹³ Finally, blueberry extracts suppress the inflammation and other unfavorable biochemical effects produced by fat tissue.¹⁷⁻¹⁹



TABLE 1: Effects of Aging and their Reversal by Blueberry Extracts

Tissue	Impact of aging	Effect of Blueberry Supplementation
Brain	Slowed response to sounds	Restoration of responses to youthful speeds ⁸¹
Skin	Wrinkling, thinning, roughness, sagging	Improved overall appearance, restoration of skin thickness, smoothness, radiance, and firmness; reduction in wrinkling ⁸²
Eye	Retinal cell death from light-induced damage, abnormal increase in blood vessels leading to macular degeneration and loss of vision	Improved cell survival, reduced damage from light, reduced new blood vessel formation ⁵⁷
Bone	Increased bone loss	More active bone-reproducing cells and reduced post-menopausal bone loss ⁸³

Avoid the Metabolic Syndrome and Diabetes

Obesity is the central component of metabolic syndrome, which includes insulin resistance (pre-diabetes), high blood pressure, and elevated blood lipid and cholesterol levels. Metabolic syndrome kills early: people younger than age 65 who have it are **35%** more likely to die from all causes, and **78%** more likely to die from cardiovascular causes, than those who have avoided the syndrome.²⁰

Blueberry extracts offer hope at many levels, combating the components of metabolic syndrome.²¹⁻³⁶ Here's how:

Blueberry extracts fight elevated blood sugar levels and reduce insulin resistance. In published studies, blueberries block carbohydrate metabolism in the intestine by up to **90%** compared with the prescription drug acarbose.^{15,22} That can help prevent dangerous after-meal sugar spikes associated with metabolic syndrome's increased heart attack risk.^{22,23} Additionally, blueberries have been shown to lower baseline blood sugar levels in those diagnosed with type 2 diabetes by **37%**.^{17,24,25}

Large-scale human studies show that people with the highest blueberry intake are **23%** less likely to develop type 2 diabetes, one of the outcomes of metabolic syndrome.²⁶ Other studies show that blueberry extracts reduce the body's resistance to insulin, especially in those that are obese, further reducing the risk for metabolic syndrome.^{13,18,19,25,27}

Blueberry extracts lower blood pressure. People with the highest regular intake of blueberries have up to an **8%** reduction in their risk for developing hypertension compared with those having the lowest intake.²⁸ Studies show that blueberry extracts lower both systolic (top number) blood pressure and diastolic (bottom number) blood pressure in people with metabolic syndrome.²⁷ Naturally hypertensive rats, fed blueberry extract for 8 weeks, showed a **30%** lower systolic blood pressure level at 6 weeks.²⁹ That can prevent kidney damage, a common consequence of hypertension.³⁰

Blueberries' blood pressure-lowering effects are the result of multiple mechanisms of action. Blueberries help blood vessels to relax, reducing the resistance to blood flow that produces high pressure (think of your finger on the end of a garden hose).³¹⁻³³ And blueberry extracts inhibit a protein called *angiotensin converting enzyme* (ACE) that your body uses to keep blood pressure elevated; prescription drugs such as enalapril and lisinopril work in the same way, but have side effects.³⁴



Broad-Spectrum Benefits of Blueberries

- Scientific interest in blueberries has been increasing since the first suggestion that they protect brain function and cognition some 10 years ago.
- That interest has now revealed multiple additional health benefits provided by blueberries.
- Blueberries are rich in flavonoid molecules, which have potent antioxidant, anti-inflammatory, and gene regulatory characteristics.
- Consumption of blueberry flavonoids is associated with longer life and slower aging.
- Blueberry flavonoid supplementation produces reduced obesity rates and improved weight loss, as well as reduction in all components of metabolic syndrome, and risk reduction for specific conditions including heart attacks, strokes, cancer, and loss of cognitive function.
- Whole blueberry fruit are both impractical and less effective at delivering all of these health benefits; standardized blueberry extracts provide the most reliable means of delivering the vital flavonoid components to your body.

Blueberries' Multiple Health Benefits Explained

Fruits and vegetables are good for your health, and most of us don't get enough of them. They contain important biological molecules called flavonoids, of which more than 6,000 have been discovered to date. Blueberries are especially rich in flavonoids and related molecules.⁷⁶

How do flavonoids from blueberries improve your health? Scientists are still looking for definitive answers, but intriguing details are beginning to emerge. Flavonoids and polyphenols in blueberries have powerful antioxidant capabilities that protect your brain and other tissues from the ever-present oxidant molecules produced by normal life processes.^{2,70,77} Blueberry flavonoids help suppress inflammation, a major cause not only of chronic brain impairment but of aging in other parts of the body as well.⁷⁷

Blueberry flavonoids stabilize vital brain proteins, preserving their function in areas needed for learning and memory. And flavonoids influence how your DNA expresses, or "turns on," individual genes necessary to maintain brain health, and to repair damaged cells. Finally, these versatile molecules enhance the way cells communicate internally and with other cells.^{77,78}

In fact, most scientists now agree that while the antioxidant function of blueberries is important, it is likely to be overshadowed by the more complex, and often indirect, actions of blueberry flavonoids on overall cell and tissue survival.^{76,79}



Blueberries enhance exercise effects. Regular moderate exercise is one of the most important ways for you to combat metabolic syndrome. Most people, however, fall far short of getting sufficient exercise. Blueberries reduce the oxidant stress of exercise, which in turn can limit the duration and intensity of your workouts.³⁷ Blueberry extracts prevent exercise-induced muscle damage that can leave you sore and aching and disinterested in future workouts.³⁸ And supplementing with blueberry extracts adds to the immune-system boost that regular workouts can provide, helping to keep you vigorous both inside and out.³⁹

Reduce Your Risk of Cardiovascular Disease

Heart disease is the number one killer of Americans, affecting more than 27 million and causing nearly 600,000 deaths annually.⁴⁰ Blueberries can combat heart disease by reducing your likelihood of developing major risk factors such as obesity, diabetes, lipid disorders, and the metabolic syndrome. They directly address some of the major biological changes in your body that lead to atherosclerosis, or "hardening of the arteries."⁴¹

Blueberry extracts reduce blood levels of total and low-density lipoprotein (LDL) cholesterol; research shows this reduction can be as much as **12%** and **15%**, respectively.^{35,36} Triglyceride levels, (a potentially dangerous form of fat in the body), are lowered in the blood of blueberry-supplemented animals.¹³ Supplemented animals on a high-fat diet showed reduced triglyceride accumulation in the liver, one of the hallmarks of the metabolic syndrome.¹⁴ In one particularly compelling study, animals fed a very high-fat diet (**60%** of calories from fat) had marked elevations in serum cholesterol and triglyceride levels, but those levels were decreased to normal when blueberry extracts were added to the diet.¹¹ Blueberry extracts reduce cholesterol production in the liver, and enhance excretion of cholesterol in the feces.³⁶

Blueberry extracts help your blood vessels regulate themselves by tightening up or relaxing in response to blood flow.^{32,42,43} Loss of this control is an early feature of atherosclerosis; left unchecked, it produces undesirable thickening (“hardening”) of arterial walls and a reduction in blood flow to vital tissues that ultimately produces a heart attack or stroke.

Blueberry extracts fight the oxidation of fat that triggers inflammation, eventually leading to cholesterol-filled inflammatory plaques and thickening of the muscular layer of your arteries.^{21,44-46} When those plaques break loose, they can abruptly block an artery, triggering an infarction (tissue death from loss of blood flow). Blueberry-treated animals subjected to experimentally-induced heart attacks are partially protected from heart muscle injury;⁴⁷ when such injury does occur they show significantly smaller areas of heart muscle damage than control animals.⁴⁸

Survivors of heart attacks often face seemingly permanent loss of function and exercise tolerance, the result of a weakened heart muscle commonly known as heart failure. That can lead to premature death. Blueberry extracts can strengthen heart muscle contractions and boost the heart’s ability to pump blood effectively, even after a heart-failure-inducing heart attack.⁴⁸ One animal study demonstrated a **22%** reduction in death over the 12 months following a heart attack.⁴⁸

Protect Yourself Against Cancer

Nearly 20 million Americans (almost **9%** of us) have been diagnosed with some form of cancer.⁴⁹ Cancer kills more than 567,000 US citizens annually, making it overall the second most common cause of death.⁴⁹ Blueberries, with their rich supplies of flavonoids and other biologically active molecules, are uniquely equipped to block many of the complex processes that lead to cancer—and they do so through multiple mechanisms.

Blueberry extracts block DNA damage. Damage to DNA, the universal cellular blueprint for reproduction, underlies every form of cancer. By preventing such damage, blueberry extracts can block the malignant transformation of healthy cells.⁵⁰

Blueberry extracts stop excessive proliferation. Uncontrolled cell reproduction results in formation of dangerous tumors, as cells ignore the normal signals to stop growing. By restoring normal cellular signaling, blueberry extracts stop such out-of-control proliferation.⁵¹⁻⁵³

Blueberry extracts prevent development of pre-cancerous lesions. Many cancers, such as those of the colon and cervix, begin as so-called “pre-cancerous” lesions, or areas of abnormal, but not yet malignant, cell growth. Blueberry compounds sharply reduce the number of such abnormal tissues, by as much as **94%** in the case of colon cancer.^{54,55}





Blueberry extracts stop tumors' blood supply.

Rapidly-growing cancers recruit new blood vessels to meet their ravenous appetites for nutrients and oxygen. Blueberry compounds shut down that new vessel growth, or angiogenesis, and enhance survival rates.^{56,57}

Blueberry extracts slow tumor spread by invasion and metastasis. Solid cancers produce “protein-melting” enzymes that help them invade adjacent tissues and that enable them to metastasize, or spread to distant parts of the body. Blueberry flavonoids block those enzymes, helping to control cancer’s aggressive spread.^{58,59}

Blueberry extracts trigger cancer cells' suicide. Normal cells are programmed to die if they replicate too fast, through a phenomenon called “apoptosis.” Cancerous cells, by contrast, ignore that programming, constantly doubling their population unchecked. Blueberry components restore normal programming and induce apoptosis in cells from a variety of cancers, putting the brakes on their rapid growth.^{51,60-62}

To date, these multiple pathways of cancer prevention have been successfully applied to reduce tumor occurrence, growth, and progression in experimental models of breast, colon, prostate, lung, and oral cancers.^{53,58-60,62-64}

Think More Clearly and Remember More Vividly

Loss of memory and cognitive skills with age is frightening and tragic. Alzheimer’s disease is the sixth leading killer in America, causing more than 19,000 deaths annually and keeping nearly 232,000 people in nursing homes.⁶⁵ Many of the remarkable healing powers of blueberries were first discovered in the area of neurocognitive diseases, and the evidence for their benefits continues to grow.

Blueberry components enter and remain in the brain. Not all substances that you consume make their way into your brain, thanks to the powerful “blood-brain-barrier.” While this barrier protects your brain from dangerous and toxic substances, it can also limit access to potentially beneficial substances. Nutrient molecules extracted from blueberries have been detected in measurable quantities in brain tissue, especially in areas that serve memory functions.¹

Blueberry extracts enhance memory and improve cognition. Older animals lose the ability to find their way around a maze, just as humans can forget their way home. Blueberry-supplemented older animals perform better on spatial and short-term memory tests, and have improved cognitive performance, compared to unsupplemented animals.^{1,66,67} The supplements reverse impairments in learning.^{68,69} Humans with mild cognitive impairment, often seen in advancing age, show increased performance on tasks of verbal memory following supplementation with blueberry extracts.⁷⁰

Blueberry flavonoids reduce the impact of the “Alzheimer’s Disease Protein.” People with Alzheimer’s and other neurodegenerative diseases have collections of abnormal brain proteins that cause memory loss and cognitive decline. Blueberry extracts interfere with both production of those proteins, and with their destructive impact on the brain.⁷¹⁻⁷⁴

Blueberry extracts protect brain tissue during stroke. Animals subjected to experimental strokes have smaller areas of infarction (brain cell death) if they are first supplemented with blueberries.⁷⁵ They return sooner to normal activity levels than do control animals.⁷⁵

Summary

Blueberries have appropriately been labeled as “superfruits,” possessing the ability to block and even reverse many of the consequences of aging.

Long thought to mainly deliver their benefits through their antioxidant effects, blueberries are now

Are You Getting Enough Blueberry Benefits?

The average American only eats about 12 ounces of blueberries—*per year*.³ In most studies of whole blueberry fruit supplementation, subjects were given about that amount as a single serving *per day*.²¹ That would be expensive and impractical for most of us.

But eating that many whole berries might not even be the wisest choice, even if you could do it. Several studies have compared the effects of whole blueberries vs. their flavonoid-rich extracts on obesity and cholesterol levels. While the extracts consistently reduced body weight and fat content while lowering total lipids and triglycerides, inclusion of the whole fruit not only failed to improve those parameters, but made them worse.^{10,11} One reason is that like most fruits, blueberries contain relatively high amounts of fructose that can contribute to excess glucose and triglycerides in the blood and fat storage on the body. Even a fairly low dose of blueberry extract proved superior to blueberry juice in preventing obesity.¹²

There's one final, practical reason why extracts make more sense than whole fruit for supplementation purposes. Blueberries, like all fruits, show considerable variation in their biochemical content depending on the season and location of their growth.⁸⁰ Properly-formulated extracts, on the other hand, are standardized to a consistent flavonoid content, eliminating the guess-work.

So, keep on enjoying blueberries for their great taste and appearance on your table, but to get the best of their health benefits, choose a reliable blueberry extract.



recognized as having impacts on many different aging processes. In fact, recent studies prove that blueberry extracts can extend life span by significant amounts.

It's the specific flavonoid components of blueberries, rather than the whole fruits, that provide so many health benefits. Those compounds are now seen to prevent obesity, ameliorate the high blood pressure, lipid disturbances, and sugar intolerance of the metabolic syndrome, reduce cardiovascular risk, prevent cancer, and of course protect brain function both after stroke and from neurodegenerative diseases. ●

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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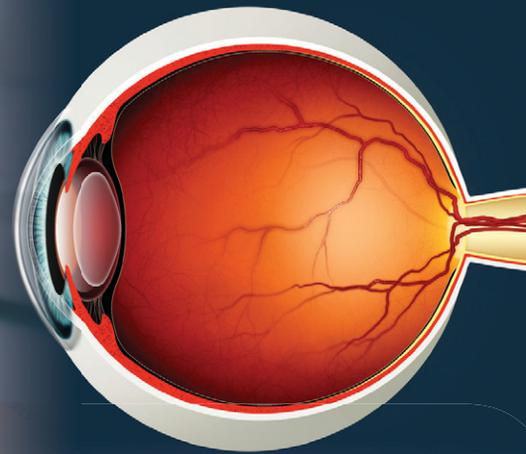
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LETTERS TO THE EDITOR

Greetings!

Yesterday I had the pleasure of spending two exciting hours at the 21st Century Medical Building learning about their research on the vitrification* of corneas. I was very impressed with Dr. Greg Fahy, his large laboratory, and the careful quality of his studies. Bottom line is that he has devised a method to enable the vitrification of corneas that does not cause damage to their delicate cellular structures, particularly the all-important corneal endothelial cells. When the vitrified corneas are brought back to room temperature the endothelial cells have the same physical characteristics and structure as before they were frozen. I forgot to ask him about the epithelial cells but it seems reasonable to believe that they also would be unchanged.

He demonstrated the success of his studies by showing human corneal endothelial cell photos before and after vitrification. His research clearly shows that the endothelial cells were without change after being brought back to room temperature. He showed several stained human corneas that demonstrated the vitality of the endothelial cells. Much of his original research was done with rabbit corneas; however, he did show photos of human vitrified corneas that had been implanted in monkeys. The corneas were clear and details of the iris could easily be seen.

Having eye banks stocked with vitrified corneas available to be implanted when needed would be a great advance.

As an added benefit, these could be prepared as full thickness corneas or in a form that could be utilized for the newer partial thickness procedures as well. A study proposal is underway to gain FDA approval for the process. In an effort to expedite the initiation of the study, tomorrow I will speak with Roger Steinert, MD, Chairman of Ophthalmology UCI, Stuart Cumming, MD, inventor of the first accommodating intraocular lens, and Steven Ryan, MD, former Chairman of Ophthalmology USC, former Dean of USC Medical School in hopes that they will be able to help identify a location where this study could be carried out.

Sincerely,
Richard Kratz, MD, DSci

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

* **Editor's Note:** Vitrification is a form of cryopreservation. The process of vitrification involves cooling tissues to a temperature low enough to stop all biological processes indefinitely without damaging the delicate cells and structural components of the tissue. The ultimate test in vitrification is to develop a way to safely allow the tissue to pass through a specific temperature range where it is vulnerable to low-temperature injury and successfully reach the safe harbor of temperatures low enough to prevent any further change over virtually unlimited periods of time. **21st Century Medicine is funded by the Life Extension Foundation.®**



Defuse the Metabolic Time Bomb!



Ever since a landmark report was published in a prestigious medical journal back in 1927,¹ researchers around the world have compiled impressive data on the power of **berry extracts** to support healthy metabolic function.

Today, the need for natural metabolic support is greater than ever as **24%** of the US population² faces a host of co-occurring health issues related to long-term carbohydrate exposure. And all of us are confronted with unavoidable, age-related **metabolic changes** that can affect **blood glucose, triglycerides, cholesterol, insulin, body weight, heart health**—even **normal cellular reproduction**.³⁻¹⁶

Broad-Spectrum Defense with Berry Extracts

To meet this urgent need, **Life Extension**[®] has developed an integrated set of standardized, high-potency **berry extract formulas**—for unrivalled protection.

Specific *polyphenols* (plant-based compounds) found in **blueberries, pomegranate** and other brightly colored fruits—along with dark fruits like **açaí** and **blackcurrant**—have been shown to provide **broad-spectrum** support for total metabolic health.

In addition to their extraordinary antioxidant capacity,¹⁷⁻²¹ compounds found in **blueberries** (including **anthocyanins** and **pterostilbene**) target multiple factors that support healthy utilization of carbohydrate calories. Taken together, published studies show that they promote:

- Glucose levels already within normal range²²⁻²⁴
- Healthy body weight²⁵
- Insulin levels already within normal range^{26,27}
- Healthy DNA structure^{28,29}
- Blood lipids (triglycerides, cholesterol) already within normal range³⁰
- Youthful cellular function and reproduction^{15,16}
- Endothelial and vascular function³¹⁻⁴²
- Blood pressure already within normal range⁴³



Tailored Formulas to Meet Your Needs

Life Extension[®] offers four comprehensive berry extract formulas to meet the varying dietary needs of aging individuals.

Berry Complete “High-ORAC Complex” 30 vegetarian capsules

Retail: \$21

Four-bottle Member Price: **\$14** ea.

Item #01206



Item #01206

Even if you're getting your recommended five servings of fruits and vegetables each day, chances are you're not getting *enough* of the beneficial **anthocyanins** and other polyphenols found in brightly colored and dark-skinned varieties. This value-priced formula contains standardized extracts, powders, and concentrate from seasonal fruits, vegetables, and legumes. Scientists measure the antioxidant potency of these and other foods using what's called the ORAC index (**Oxygen Radical Absorbance Capacity**).⁴⁴ The ingredients contained in **Berry Complete** boast the highest ORAC values, ensuring maximum metabolic *and* antioxidant support. Just one capsule supplies the equivalent antioxidant potency of more than **50%** of the daily recommended five servings of fruits and vegetables.
Contains soybeans.



Enhanced Berry Complete with RZD™ Açai

"High ORAC Complex"

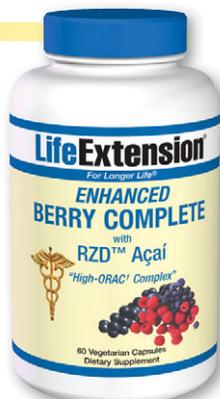
60 vegetarian capsules

Retail: \$29

Four-bottle Member Price: **\$19.50** ea.

Item #01406

For even greater phenolic and antioxidant potency, this formula includes **RZD™ Açai**. The açai berry ranks *highest* on the ORAC index of any known plant. Using a cutting-edge technology called Radiant Zone Drying™, **Enhanced Berry Complete with RZD™ Açai** delivers the fullest possible polyphenolic and nutritional profile of açai. Just one capsule supplies the equivalent antioxidant strength of more than **100%** of the recommended five-per-day servings of fruits and vegetables. **Contains soybeans and corn.**



Item #01406

Blueberry Extract with Pomegranate

60 Vegetarian Capsules

Retail: \$30

Four-bottle Member Price: **\$20.25** ea.

Item #01438

To augment the multiple benefits of blueberry extract, this formula includes a proprietary, standardized pomegranate extract called POMELLA®. It is rich in *punicalagins*—polyphenols contained in pomegranate that have been shown to benefit arterial health through their power to support healthy **endothelial** function.⁴⁷⁻⁴⁹

Contains corn.



Item #01438

Each vegetarian capsule of Blueberry Extract with Pomegranate provides:

Wild Blueberry (<i>Vaccinium angustifolium</i>) extract (fruit)	375 mg
POMELLA® Pomegranate (<i>Punica granatum</i>) extract (fruit)	200 mg
[standardized to 30% punicalagins (60 mg)]	
AuroraBlue® Wildcrafted Blueberry Complex	100 mg
BlueActive™ Wild Blueberry (<i>Vaccinium angustifolium</i>)	75 mg
Anthocyanin extract (fruit)	

NOTE: Life Extension®'s **Cognitex with NeuroProtection Complex**, with or without pregnenolone, *also* contains a standardized **wild blueberry anthocyanin** extract.

RZD™ and Radiant Zone Dried™ are trademarks of Columbia PhytoTechnology, LLC. POMELLA® Extract is covered under U.S. Patent 7,638,640 and POMELLA® is a registered trademark of Verdure Sciences, Inc. AuroraBlue is a registered trademark of Denali Bio Technologies, LLC.

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Blueberry Extract

60 vegetarian capsules

Retail: \$22.50

Four-bottle Member Price: **\$15** ea.

Item #01214

Over 80 years' worth of published studies confirm blueberries' power to support healthy metabolic function.^{1,22-24,26,27} Interestingly, some of the most recent research indicates that blueberry extract may provide greater metabolic support than whole berries or juice.^{45,46} Rich in **anthocyanins**, **Life Extension®'s Blueberry Extract** consists of only **wild blueberries**—nutritionally superior to cultivated varieties—for optimal nutritional and metabolic support. **Contains corn and rice.**



Item #01214

Each vegetarian capsule of Blueberry Extract provides:

Wild Blueberry (<i>Vaccinium angustifolium</i>) extract (fruit)	375 mg
BlueActive™ Wild Blueberry (<i>Vaccinium angustifolium</i>)	75 mg
Anthocyanin extract (fruit)	
AuroraBlue® Wildcrafted Blueberry Complex	50 mg

To order any of these **HIGH-POTENCY BERRY EXTRACT FORMULAS**, call 1-800-544-4440 or visit www.LifeExtension.com





Repair Sun-Damaged SKIN

BY ROBERT GOLDFADEN AND GARY GOLDFADEN, MD

Years of daily exposure to ultraviolet radiation from the sun take their toll on your skin. Sun-damaged skin becomes dry and rough, uneven patches and dark spots begin to appear, fine lines and wrinkles deepen, and your skin loses its firmness and elasticity. And, if you spent any part of your youth sunbathing you may find that your skin looks years older than you feel. Scientific research has led to the discovery of natural compounds that can help support the structure of skin as well as minimize signs of aging, such as crow's feet, lines, sagging, and uneven tone. Many of these natural compounds come from the foods we eat. Dermatological research increasingly focuses on the value of topical application of concentrated extracts of nutrient-rich foods!

Some examples are leafy green vegetables and cruciferous vegetables such as cabbage, kale, and broccoli, which provide many internal health benefits. What you may not know is that key phytonutrients in these vegetables can also visibly improve the health and appearance of your skin.

Concentrated extracts from cruciferous vegetables like broccoli contain bioactive phytonutrients that can help to reverse and repair a lifetime of skin damage¹—revealing smoother, clearer, and more radiant skin. > >



Naturally Occurring Compounds Provide Powerful Protection for Your Skin

Young broccoli from freshly sprouted seeds is particularly rich in a compound called *glucoraphanin*.² Glucoraphanin and other phytonutrients play a vital role in cancer prevention, immune system function, and the maintenance of healthy, youthful skin.

Broccoli sprouts, the youngest broccoli plants, first made the news in the late 1990s when researchers at the Johns Hopkins School of Medicine found that glucoraphanin, a potent anti-cancer compound, was highly concentrated in them.³ While the fully-grown broccoli stalks and florets we buy at the grocery store contain a biologically significant amount of glucoraphanin, the tender, three-day old broccoli sprouts are naturally packed with as much as **100 times** more glucoraphanin by weight.³

Broccoli Sprouts are Bursting with Phytonutrients

When broccoli sprout cells break open—which happens when the plant is damaged or eaten—glucoraphanin is released and mixes with a naturally occurring companion enzyme called myrosinase.³ When these two compounds meet, they form a new substance called *sulforaphane*.

Sulforaphane has demonstrated a wide range of health benefits. It supports your skin's ability to detoxify,

inhibits bacterial growth, has anticancer activity, and provides powerful protection against damage caused by UV radiation.⁴⁻⁷ It acts by stimulating production of enzymes (including glutathione S-transferase in the skin) that boost its ability to defend against sun damage⁸—the UV rays that cause your skin to wrinkle and age prematurely.

Applied topically to the skin, concentrated broccoli sprout extract helps to minimize inflammatory processes, which can diminish redness, puffiness, and irritation, and improve the appearance, tone, and texture of your skin.¹ In addition to protecting against—and even reversing—the appearance of sun-damaged skin, sulforaphane offers protection against the UV-induced oxidative damage that can lead to skin cancer.⁹⁻¹¹

Broccoli sprouts also contain a variety of antioxidants, including beta-carotene, a naturally occurring form of vitamin A that can be enzymatically converted to retinol. Healthy human skin contains beta-carotene and the enzymes to convert it to other retinoid compounds.¹²

Retinol and synthetic forms of vitamin A such as tretinoin are often included in anti-aging skin care treatments because retinol has potent anti-wrinkle activity—reversing even coarse wrinkling and improving the appearance of sun-damaged skin.¹³ One disadvantage of the use of synthetic tretinoin is that for many people, especially those with sensitive skin, it irritates the skin, causing it to become red-dened and inflamed.¹⁴

In contrast, naturally occurring beta-carotene, can be converted to retinol in the body, yet it does not cause irritation, redness or other unpleasant side effects. In addition to antioxidant activity, beta-carotene stimulates collagen production, which helps to smooth wrinkles and maintain tighter and suppler skin. It also boosts the elasticity and resilience of the skin and calms ruddy complexions, evening skin tone.¹⁵

The synergistic effect of these phytonutrients can help to support and protect the skin, enabling it to perform its most important function—serving as the first line of defense against environmental toxins, microbial pathogens and other harmful influences. These phytonutrients can also effectively counter the effects of environmental stress on your skin, enabling your skin to look and feel healthy and rejuvenated.

Antioxidants Join Forces to Combat Signs of Aging

Because antioxidants interact synergistically,¹⁶ researchers have combined the phytonutrients derived from broccoli sprouts with the bioactive polyphenols contained in red and green tea. The result increases the antioxidant quotient of skin revitalizing and restoring compounds. Like other teas, red tea contains a host of bioflavonoids, it is the only natural source of *aspalthin*, a potent free radical scavenger that has been used to treat inflammation of the skin.¹⁷ The antioxidant activity of the flavonoids in red tea has been studied and *aspalthin* has been shown to be an effective inhibitor of cellular damage brought on by oxidative stress.^{18,19}

Red tea is not the only tea with special benefits for the skin. Antioxidant rich green tea adds to the anti-aging and anti-inflammatory effects of sulforaphane and beta-carotene. Epigallocatechin-3-gallate is the principal antioxidant polyphenol in green tea and in addition to its antioxidant activity, it also demonstrates photoprotective, anti-inflammatory, and anti-angiogenic²⁰ (inhibits the growth of new blood vessels) properties, which may help to reduce the appearance of small, dilated blood vessels around the nose, cheek, and chin. The polyphenols in green tea have also been shown to increase the tensile strength of skin and enhance wound healing.²¹ In combination, these potent antioxidants can not only improve skin health and reverse the signs of aging in photo-damaged skin but also help to prevent future damage from free radicals and ultraviolet radiation.²²

Protect Your Skin from UV Damage

- Most visible signs of skin aging are caused by ultraviolet radiation—a process known as photoaging.
- UV radiation not only increases production of free radicals causing damage to DNA and the enzymes involved in DNA repair, it also causes inflammation that damages collagen and elastin, the proteins that give skin its resilience.
- Sulforaphane, a compound found in broccoli and other cruciferous vegetables, supports your skin's ability to detoxify and provides powerful protection against damage caused by UV radiation.
- Broccoli sprouts contain glucoraphanin, which is converted to sulforaphane, as well as a variety of potent antioxidants, including beta-carotene, a naturally occurring form of vitamin A that is converted to retinol.
- In combination, these phytonutrients improve skin health and can reverse and help prevent signs of aging.



Ultraviolet Radiation Accelerates Aging

Time, gravity, heredity, and other environmental exposures all affect how skin ages, but the overwhelming majority of visible signs of aging are caused by exposure to ultraviolet radiation. Because the complex outer layer of our skin, the epidermis, is fully exposed to the external environment, it's always under attack through dehydration, abrasion and most especially, ionizing damage from high-energy ultraviolet (UV) radiation.

The accumulated damage from UV radiation, called photoaging, is one of the unique challenges our skin must constantly face.

Photoaged skin is prematurely lined, wrinkled and frequently has broken capillaries and irregular pigmentation. It loses its elasticity earlier than healthy aging skin.

Although precisely how ultraviolet radiation causes skin aging is not yet known, we do know that cumulative UV radiation increases production of free radicals, damaging DNA and the enzymes involved in DNA repair. UV radiation increases inflammation and damages collagen and elastin, the proteins that give skin its resilience.²³ It also acts to suppress immune function in the skin.²⁴

The sulforaphane in broccoli sprouts extract has proven to be an effective, natural sunscreen, capable of preventing sunburn and other visible signs of skin damage as well as the cellular damage caused by ultraviolet solar rays.⁷



Summary

Glucoraphanin, which is abundant in fresh broccoli sprouts, can protect your skin from damage caused by ultraviolet radiation. Applied to the skin, concentrated broccoli sprout extract soothes inflammation, and diminishes redness, swelling, and irritation, improving the look, tone, and texture of your skin. In addition to protecting against—and even reversing—the appearance of sun-damaged skin, sulforaphane offers protection against the UV-induced oxidative damage that can lead to skin cancer. ●

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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High Potency **FAT-SOLUBLE** NUTRIENTS in ONE Softgel

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

Just one **SUPER BOOSTER** provides:

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

- **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.



Item # 01680

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

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

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

JUST ONE SOFTGEL OF SUPER BOOSTER SUPPLIES:

Vitamin K2 (as menaquinone-7)	200 mcg	Chlorophyllin	100 mg
Vitamin K2 (as menaquinone-4)	1000 mcg	Sesame lignans	20 mg
Vitamin K1 (as phytonadione)	1000 mcg	Lycopene	10 mg
Mixed tocopherols	359 mg	Lutein	2 mg
(providing Gamma Tocopherol 230 mg)		Vitamin B12	300 mcg
Ginkgo extract	120 mg	Vitamin C	95 mg

A bottle of 60 **Super Booster** softgels retails for \$42. If a member buys four bottles, the price is reduced to just **\$28.50** per bottle.

The **Super Booster** saves consumers **huge dollars** by combining a wide variety of costly nutrients into one daily softgel. If you add up the price of the individual ingredients contained in the **Super Booster**, you would spend **two to three times more** for this potency if taken separately.

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

Contains soybeans, corn and sesame.

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

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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.

REINFORCE YOUR SKIN AGAINST UV RADIATION

Scientists have found that topically applied sulforaphane has the ability to help **protect** the skin against the visible signs of **sun damage!**

Sulforaphane promotes the production of certain **enzymes**—such as *glutathione S-transferase*—that help support the skin's natural ability to **fortify** itself against the visible damage caused by sun radiation.^{1,2}

Broccoli contains **glucoraphanin**,³ which is *enzymatically converted into sulforaphane*. Three-day-old broccoli sprouts are packed with up to **100 times more** glucoraphanin by weight than mature broccoli plants!⁴

The extracts from glucoraphanin-rich broccoli sprouts—found in **Cosmesis Broccoli Sprout cream**—offer *maximum support* against the visible effects of UV rays!

VISIBLE PHOTO-AGING AND ANTIOXIDANT SYNERGY

In addition to glucoraphanin, several potent antioxidants are included such as **aspalathin** from rooibos tea and **epigallocatechin-3-gallate** from green tea to help **reduce** visible effects of *UV radiation* and *oxidative stress*.⁵⁻⁷

*Most of the visible effects of skin aging are caused by radiation from the sun. Applied directly to the skin, the unique and synergistic combination of extracts in the concentrated **Broccoli Sprout Cream** provides maximum, targeted support against the visible effects of sun-related stress on the skin.*

The retail price of a 1 oz. jar of **Cosmesis Broccoli Sprout Cream** is \$46. If a member buys two jars, the price is reduced to just **\$29.25** a jar.

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Item #80144

To order **Cosmesis Broccoli Sprout Cream**, call 1-800-544-4440 or visit www.LifeExtension.com.



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RejuveneX® Factor provides **10** new compounds to improve the health and appearance of your skin.

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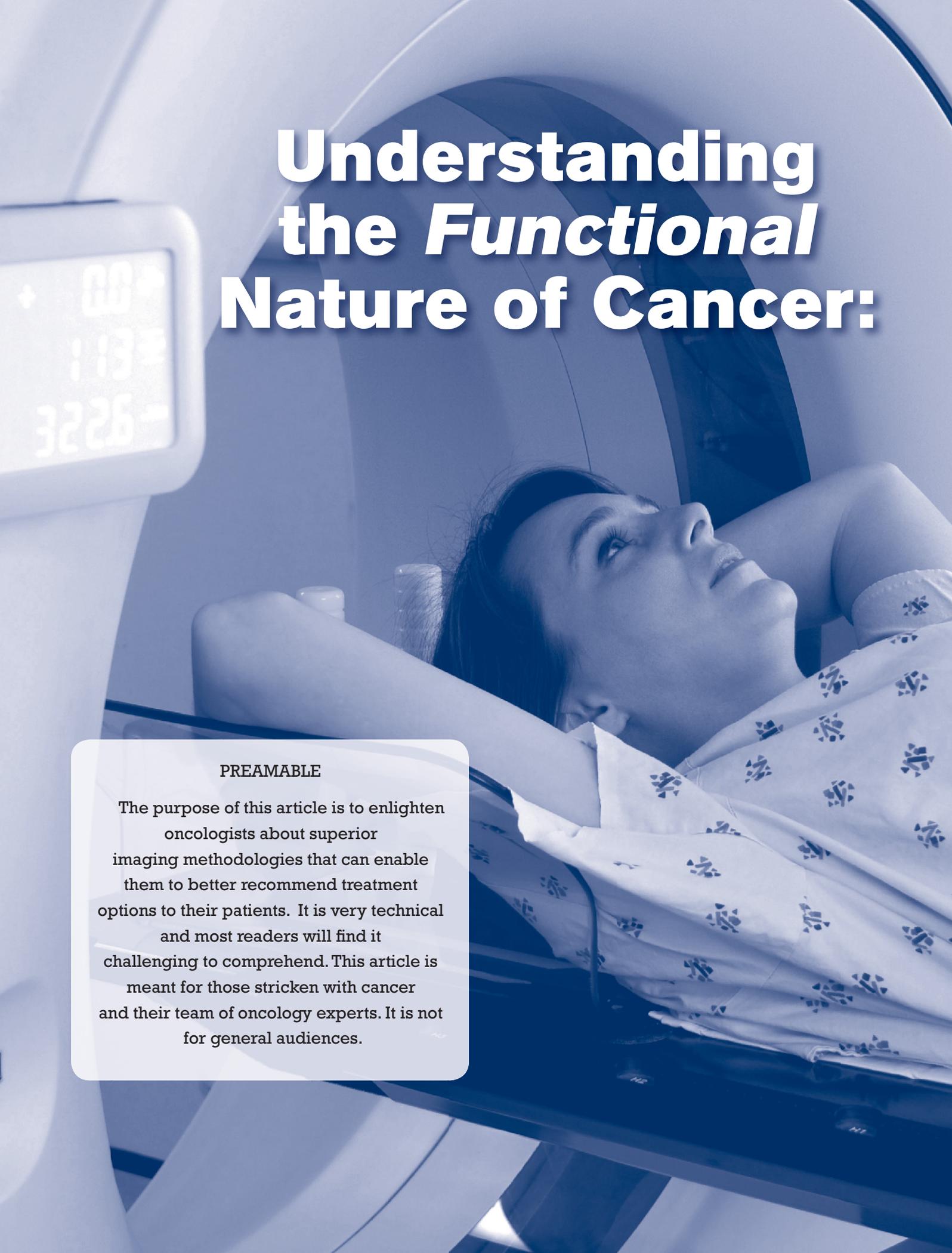
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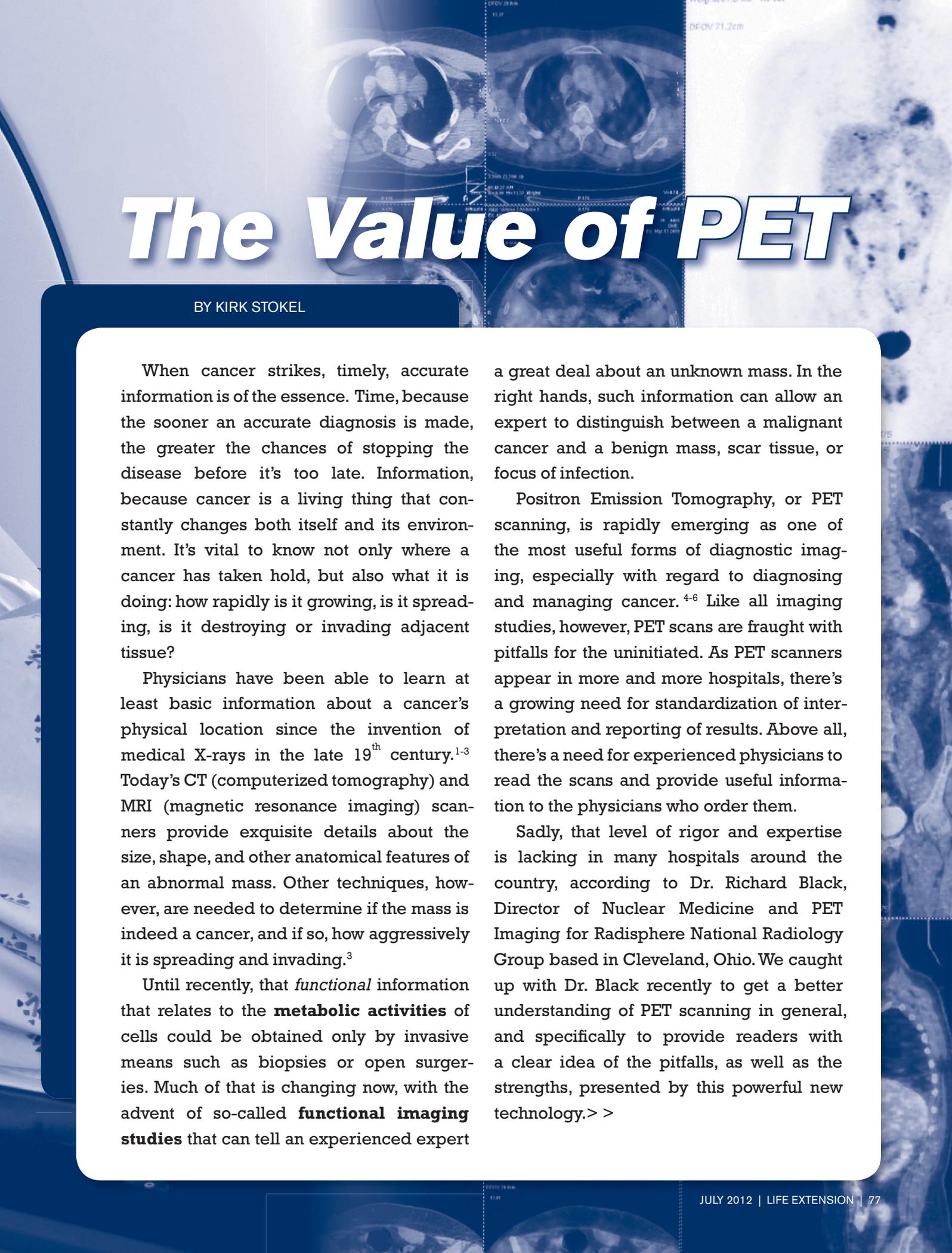
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Understanding the *Functional* Nature of Cancer:

PREAMBLE

The purpose of this article is to enlighten oncologists about superior imaging methodologies that can enable them to better recommend treatment options to their patients. It is very technical and most readers will find it challenging to comprehend. This article is meant for those stricken with cancer and their team of oncology experts. It is not for general audiences.



The Value of PET

BY KIRK STOKEL

When cancer strikes, timely, accurate information is of the essence. Time, because the sooner an accurate diagnosis is made, the greater the chances of stopping the disease before it's too late. Information, because cancer is a living thing that constantly changes both itself and its environment. It's vital to know not only where a cancer has taken hold, but also what it is doing: how rapidly is it growing, is it spreading, is it destroying or invading adjacent tissue?

Physicians have been able to learn at least basic information about a cancer's physical location since the invention of medical X-rays in the late 19th century.¹⁻³ Today's CT (computerized tomography) and MRI (magnetic resonance imaging) scanners provide exquisite details about the size, shape, and other anatomical features of an abnormal mass. Other techniques, however, are needed to determine if the mass is indeed a cancer, and if so, how aggressively it is spreading and invading.³

Until recently, that *functional* information that relates to the **metabolic activities** of cells could be obtained only by invasive means such as biopsies or open surgeries. Much of that is changing now, with the advent of so-called **functional imaging studies** that can tell an experienced expert

a great deal about an unknown mass. In the right hands, such information can allow an expert to distinguish between a malignant cancer and a benign mass, scar tissue, or focus of infection.

Positron Emission Tomography, or PET scanning, is rapidly emerging as one of the most useful forms of diagnostic imaging, especially with regard to diagnosing and managing cancer.⁴⁻⁶ Like all imaging studies, however, PET scans are fraught with pitfalls for the uninitiated. As PET scanners appear in more and more hospitals, there's a growing need for standardization of interpretation and reporting of results. Above all, there's a need for experienced physicians to read the scans and provide useful information to the physicians who order them.

Sadly, that level of rigor and expertise is lacking in many hospitals around the country, according to Dr. Richard Black, Director of Nuclear Medicine and PET Imaging for Radisphere National Radiology Group based in Cleveland, Ohio. We caught up with Dr. Black recently to get a better understanding of PET scanning in general, and specifically to provide readers with a clear idea of the pitfalls, as well as the strengths, presented by this powerful new technology.> >

Let's start with a basic synopsis of what a PET scanner does, and how it obtains functional or metabolic information about a tumor or other suspicious mass. Then we'll see real patients from Dr. Black's casebook on how PET scans are being used in caring for patients with malignancies. We'll touch briefly on the practical limitations of PET scan technology. Then we'll focus on Dr. Black's breakthrough efforts to change the way PET scans are interpreted and reported. Dr. Black is leading the field in developing standardized, reproducible reports on literally tens of thousands of patients for his customers that are situated throughout the United States and abroad and thus allowing oncologists and other clinicians to derive maximum benefit from these imaging studies.

What Is PET Scanning?

PET scanners produce *functional* information about a suspected tumor through the use of a technique that differs entirely from conventional radiology studies. The essence of the modus operandi—the method of operation—of PET is based in the world of quantum physics.

To conduct a PET scan, a technician injects a patient with a radioactive tracer material. The most commonly used material is fluorodeoxyglucose, or FDG. (See figure 1.) FDG consists of a molecule of glucose chemically linked to a radioisotope of fluo-

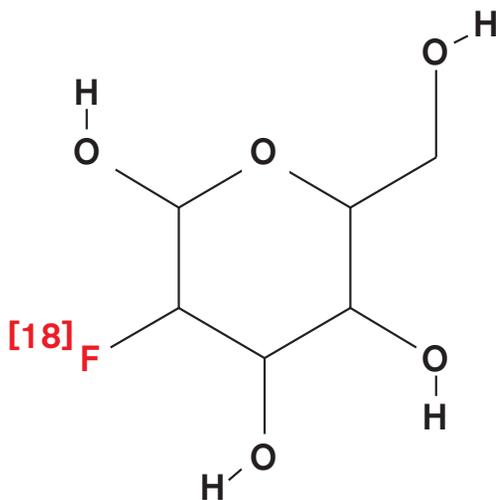


Figure 1. **FDG (fluorodeoxyglucose) Molecule.** A radioactive label or tag called Fluorine 18 (F18) is produced in a cyclotron. It is added to molecules that cells utilize in their metabolism; in the case of FDG, the “parent” molecule is glucose. The F18 replaces an oxygen molecule resulting in fluorodeoxyglucose. The clinician usually orders this test as a ^{18}F -FDG PET/CT scan.

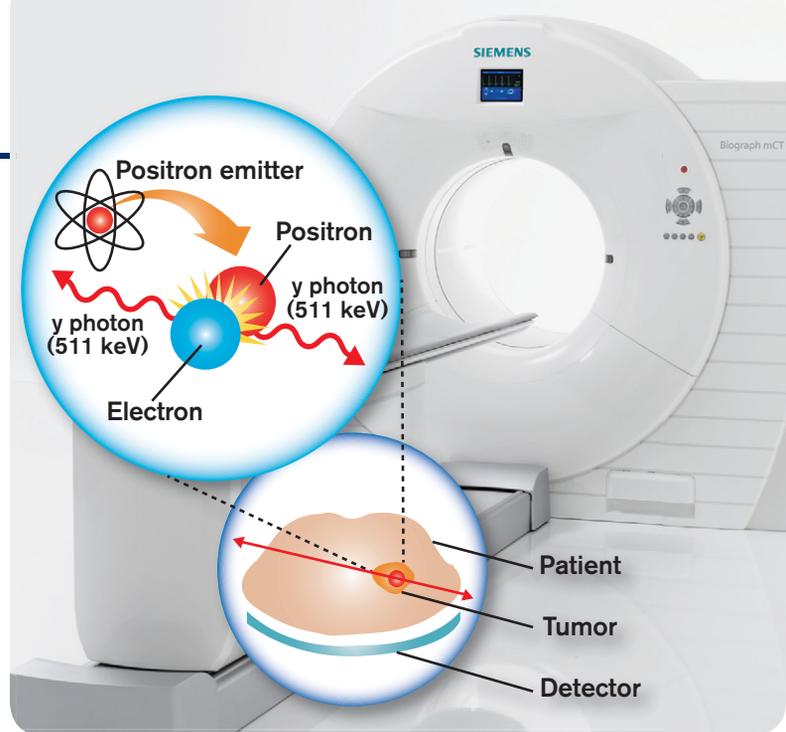


Figure 2. **PET Scanning.** If a patient undergoing a PET/CT scan has a malignant tumor that is avidly taking up glucose, it will also take up ^{18}F -FDG (fluorodeoxyglucose). The positrons emitted by the FDG will collide with electrons within the patient. This results in the emission of gamma rays (photons), a form of energy, which is picked up by the PET scanner—a gamma ray detector. When the scanner detects a matching pair of gamma rays, a software program determines their point of origin and creates a three-dimensional image—the PET scan.

rine called ^{18}F . Like glucose, FDG is taken up into cells through a variety of specialized transporters and enzyme systems. The more metabolically active a cell is, the more glucose, and hence, FDG, it takes up.⁷ Cancer cells are highly metabolically active because of their rapid rate of reproduction; that means that they take up FDG much more avidly than surrounding normal tissue.⁸⁻¹⁰

The radioactive fluorine isotope in FDG is constantly emitting a stream of positrons, the antimatter equivalent of electrons. Each time a positron encounters an electron, the two particles annihilate each other in a matter-antimatter implosion, giving off a pair of photons (little packets of energy).¹¹ The photons trigger a signal on detectors built into the PET scanner (See figure 2), and powerful computers assemble all of those signals into a coherent 3-dimensional image. Areas of the most intense glucose utilization, then, will “light up” as areas of high metabolic activity, which indicate the presence of cancer with a very high likelihood.^{7,9,11-13}

Of course, there's a trade-off for everything. While they produce vivid images of cells' *functional*, metabolic activity, PET scans by themselves don't produce a very precise *anatomical* picture. The solution is to

combine the findings of a PET scan with those of a conventional imaging study (usually a CT scan) that can provide detailed anatomical information. With both PET and CT images “in register,” they can be readily superimposed to provide the diagnostician with both anatomical and metabolic information about the tissues and organs of interest. This is the PET/CT scan that is in use today.

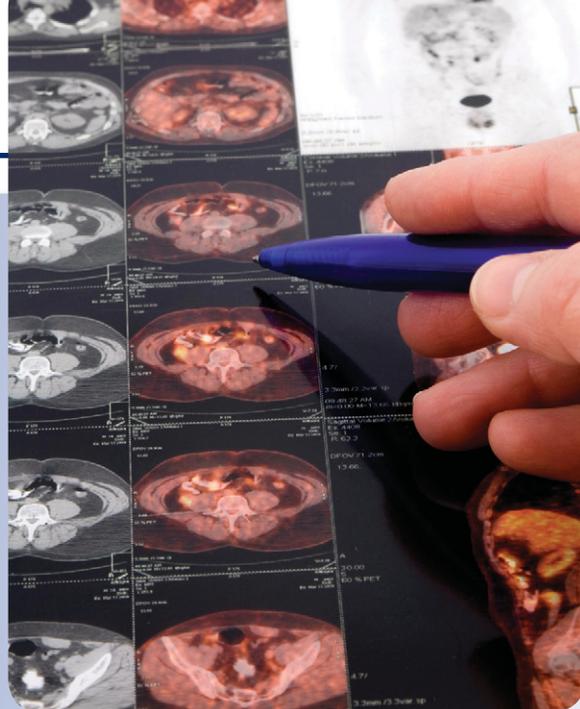
How Are PET/CT Scans Used?

With their rich supply of functional data on cellular metabolism, PET scans have tremendous potential in oncology. Dr. Black points out that, “A PET scan report should tell a clinician what he or she really wants and needs to know to facilitate and optimize individual patient management. The report should not be a long, convoluted listing of findings without interpretation and explanation. Most importantly, a PET scan should be able to change and assist how a clinician manages a patient.”

According to Dr. Black, PET scans can correctly and successfully change patient management in an average of **30%** of cases compared to conventional imaging techniques that include CT, MRI, plain film radiography etc. Other experts estimate that figure as high as **38%**.¹⁴ These findings translate to a huge impact on outcomes, given the millions of cases of cancer in the US each year.¹⁵ FDG PET/CT scans are useful for differentiating benign from malignant lesions, evaluating tumor stage, monitoring the response to therapy and detecting tumor recurrence in a variety of malignancies.⁵

Here are a few case studies from Dr. Black’s files and the medical literature, indicating just how PET scans were used, and the impact they had on management.

Case #1: Assigning a higher stage to a known cancer.¹³ A 63-year-old man with a recent diagnosis of a primary colon cancer was evaluated by PET/CT scan following surgical removal of the tumor. At surgery, no spread to lymph nodes, and no tumor metastases were found. The PET/CT study, however, revealed metastases in the patient’s liver, resulting in a higher clinical stage. Because of this finding, the treatment options for this patient were dramatically changed.



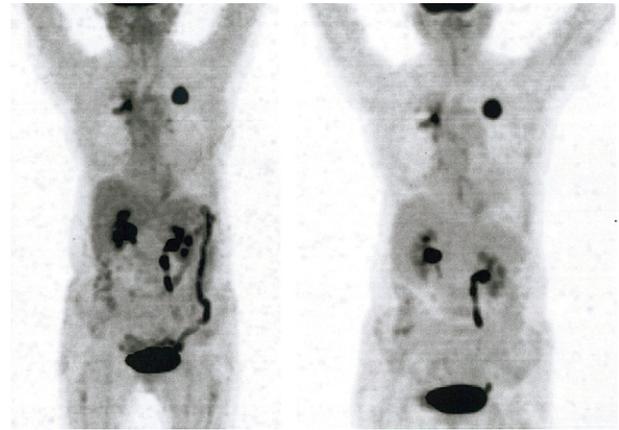
Role of Functional PET Scans in Cancer Care

- Effective treatment of cancer requires rapid and accurate acquisition of information about tumor size, location, and rate of growth.
- Diagnosing cancer also requires the ability to distinguish true malignancies from benign masses or sites of inflammation.
- Most modern medical imaging techniques can provide only anatomic or structural information about a mass, and offer no functional information (how the tumor tissue differs from healthy tissue surrounding it.)
- PET scans use principles of quantum physics to highlight areas of tissue that have abnormally high glucose requirements; such areas are very often cancers
- PET scans are extremely useful in primary diagnosis of cancer and in following a patient’s response to treatment, but their interpretation is fraught with a variety of readily-made errors.
- Dr. Richard Black is leading the field in his tireless activism for a standardized, quantifiable approach to interpreting PET scans in order to provide oncologists and their patients with full potential this technology has to offer.



Case #2: Assigning a lower stage to a known cancer.¹³ An 85-year-old man with a recent diagnosis of Merkel cell carcinoma, a rare and highly aggressive skin cancer, had undergone a CT scan that suggested three separate metastases in the liver. A PET/CT scan was done to confirm that metastatic spread, but instead it showed completely normal liver tissue.

This patient's disease was "down-staged," and he was spared unnecessary chemotherapy.



Case #4: Monitoring a patient's unfavorable response to therapy.¹³ A 72-year-old woman with lung cancer, treated in November of 2010, was given a CT scan in February 2011 to determine her response. Her tumor had not changed size, and the scan was therefore interpreted as showing stable disease with no progression. A PET/CT scan that same day was more informative, demonstrating that in fact her left lung was highly metabolically active, indicating progressive disease. This patient required additional treatment.

In each of these cases, PET/CT studies provided valuable information about the metabolic activity of tissue. Such information that could not be obtained from the anatomic data provided by CT alone (or, in Case 3, by direct examination during surgery). These cases provide persuasive evidence that PET/CT scans change patient management in a variety of important ways.

Let's now examine some of the limitations of PET technology, and learn how Dr. Black is working to overcome these limitations to obtain the most useful information possible.



Case #3: Monitoring a patient's favorable response to therapy.^{13,16} A 79-year-old woman with a history of lung cancer, treated with chemotherapy in April of 2009, underwent a PET/CT scan in July of that year. A CT scan still showed a nodule at the site of the original cancer, and was read as showing persistent disease. The PET scan, however, revealed a complete metabolic response to treatment, indicating in fact no residual tumor.



Limitations of PET Scans

As with all medical testing, PET/CT scan interpretation is associated with one of two kinds of statistical errors. They can result in a “false negative” result, incorrectly indicating absence of a tumor, when in fact a tumor is present. False negatives can occur when factors are present that limit how much FDG a tumor can take up from the blood.¹³ This may happen with blood vessel narrowing that reduces blood flow to the tumor, or when a tumor has grown so fast that many of its cells die off. Other contributing factors may include the unique cellular characteristics of the individual tumor.

On the other hand, a “false positive” i.e., incorrectly indicating presence of malignant tissue when cancer is absent, can arise when non-malignant cells have increased glucose uptake or utilization. This may occur in certain infections and with many inflammatory processes. False positive readings are not uncommon following cancer surgery, when a patient has residual inflammatory tissue that is incorrectly read as persistence of tumor. This can be circumvented with additional acquisitions of the abnormal area on the PET study and a proper understanding of the biochemistry of malignant and non-malignant conditions.

But there’s another type of error that is of serious concern to Dr. Black. It has nothing to do with the technology, and everything to do with how the PET/CT study is being interpreted, which in and of itself can produce either false negative or false positive results. The rapid expansion of PET technology has resulted in a large number of studies being read by physicians who simply haven’t been adequately trained. The issue is compounded by a lack of standardization in the way scans are read. Surprisingly, many PET/CT reports are simply narratives, which are lacking in standard categories and in quantifiable numerical values. Furthermore, many inexperienced readers fail to routinely correct the quantitative degree of uptake in the area of abnormality that is detected by the scanner. The uptake defined on the scan will vary considerably depending upon the elapsed time from when the radiotracer was injected into the patient. There are other issues as well, including the patient’s body weight and the proper calibration of the PET scanner itself.¹⁷

Without addressing such issues, Black comments, it is nearly impossible to accurately monitor response to therapy, or to determine real progression of disease, and these are two of PET scanning’s most potentially valuable contributions. Even simply detecting a real tumor is much more difficult without a standardized, corrected reading.

How Much Radiation Exposure Do I Get from a PET Scan?

PET scans do expose patients to ionizing radiation, though efforts are made to limit the dose. The radioactive fluorine isotope in the FDG tracer produces a dose of around 5-7mSv (millisieverts, a measure of the biological effects of ionizing radiation). An additional 23-26 mSv, however, may be acquired from the CT scan that typically accompanies the PET scan.¹⁹ Therefore, the PET component of the PET/CT accounts for about **20%** of the radiation dose, with the CT scan portion accounting for approximately **80%** of the radiation dose. These figures mean that PET scans can produce meaningful, though not immediately dangerous, levels of radiation. For this reason, experts like Dr. Black feel strongly that the risk of every PET scan as well as any imaging study resulting in radiation exposure should be thoroughly justified by the value of the information it provides.¹⁹ For comparison, average annual background radiation in the Northern Hemisphere is about 2.2 mSv; it has been estimated that airliner crews receive between 4-9 mSv per year.

Since PET/CT scans do expose patients to radiation, Dr. Black believes that every scan should yield the maximum amount of information. “Too often,” he says, “Physicians reading these scans describe findings without insight or provision of clinically useful and applicable information.” Often times the reports are essentially a discourse on the anatomic findings obtained from the CT portion of the study with little emphasis placed on the information delineated on the PET component of the examination. In the space remaining, we’ll demonstrate how Dr. Black approaches the interpretation of PET scans with an eye towards providing that insight in a way that helps physicians, and ultimately patients, optimally manage the challenges of cancer care.

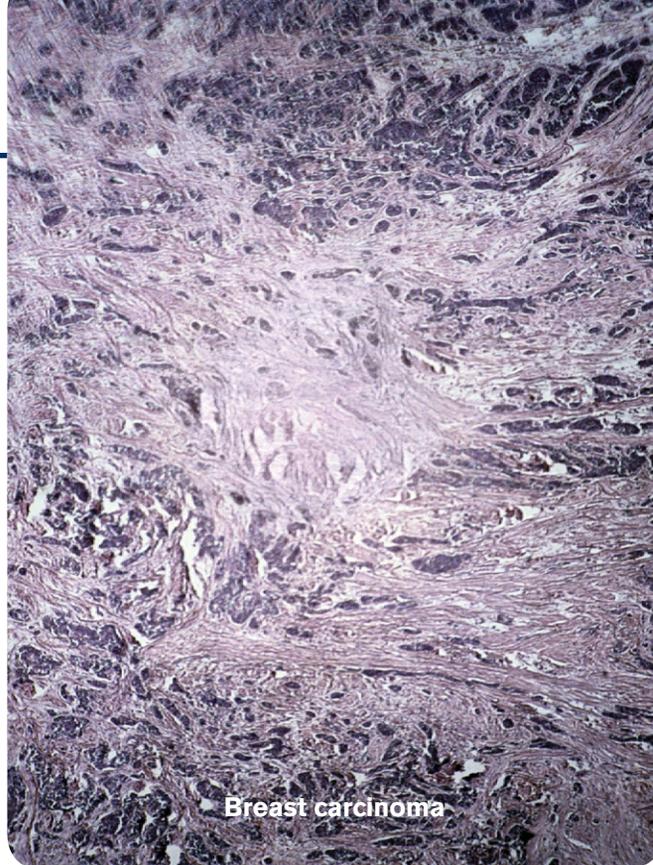
Standardized, Quantified PET/CT Scan Readings Provide Insight

Dr. Black optimizes his reading of PET/CT scans using five key features. This approach assures the oncologist that he is receiving the same kind and quality of information on every scan. That information can then be used to reliably monitor a patient’s response, or lack of response, to therapy. “In other words,” says Black, “the referring physician can compare apples with apples.”

Here is a brief overview of Black's 5 key report features, and why they are so vital:

1. PET/CT scan reporting should be **quantitative**. Too often reports contain only descriptive, qualitative information. Dr. Black showed one such report, in which the reader's diagnosis was, "Hypermetabolic right upper lobe pulmonary mass." Translated, that simply means that something in the lung was using glucose more rapidly than the rest of the body. There was no interpretation! Was the mass likely to be a tumor or not? There's also no way to compare this kind of a reading with past or future scans, since no objective information is provided. Dr. Black reports a "standardized uptake value," or SUV, on every object of concern in a scan.^{8,18} An SUV of greater than 2.5 is generally considered abnormal, providing a useful cut-off point for determining if an area is likely to be malignant or not. The numerical SUV also provides a value that can be compared with earlier or subsequent scans, an important improvement. The peer reviewed medical literature provides direction for the implementation and utilization of the SUV for different clinical situations and locations.

2. PET/CT reports should be **reproducible**, allowing different experts using different equipment to obtain similar results. "I've seen one lesion reported with an SUV of 10 from one facility, but only 5 at another on the same patient," says Black. "That kind of information is virtually meaningless. I realized early on that, reading studies from a variety of different vendors and platforms that variability in the quantitative degree of uptake could be standardized to the liver parenchyma which should be a relatively consistent number from case to case and machine to machine. The process is simple by selecting an area of preserved normal, homogenous tissue in the liver, and using it to generate a corrected SUV for every area of concern that I read," Dr. Black said. Black demonstrated his point with a scan that showed an uncorrected SUV of 10.4 in a case of suspected lung cancer recurrence — clearly an abnormal finding. Black's correction factor, using an area of healthy liver, brought that SUV down to 2.0, a normal value. This patient might have undergone dangerous and unnecessary chemotherapy had the correction not been applied. This kind of correction has been recommended by major nuclear medicine experts.¹⁷ This approach is especially important and relevant when assessing the impact of therapeutic intervention whether it be systemic cytotoxic therapy (chemotherapy) or radiation therapy. By standardizing the numbers from one study to the next, the information now administered to the clinician is accurate,



reproducible and can be used to predict response, stability or progression with a significantly greater degree of accuracy than anatomic imaging studies like CT and MRI. Astoundingly, Dr. Black has yet to see this approach implemented throughout the United States on review of thousands of FDG PET/CT studies undertaken nationwide.

3. PET/CT reports should focus on selected **index lesions**. There may be one or two, or five or ten "hotspots" indicating tumor activity generally grouped by anatomic localization.¹⁷ These lesions must be monitored from one study to the next in order to ascertain if the patient is responding to treatment. In cancer medicine, the patient's prognosis is dependent on whether the treatment results in a complete disappearance of all pathological lesions (complete remission) or **50%** or more reduction in these same lesions (partial remission). Again, this strategy allows each subsequent report to be compared with the original, enabling rapid and accurate measurement of changes over time or in response to therapy. The quantitative parameters uniquely applicable to PET imaging allow for more precise assessment of the clinical response to treatment, as metabolic changes (reflected in the degree of glucose uptake) on the PET scan change much earlier than do the anatomic abnormalities defined with CT or MRI.

4. PET scan reports should mandate **comparative readings**. That is, they should make reference to size, SUV, and other features of an index lesion(s) from

previous scans, and they should explicitly point out increases or decreases and what they mean. This often means the radiologist needs to know if the patient has had prior studies, and if so, where they were done. It also obligates the current radiologist to request those studies for a side-by-side comparison with the current study. Of course it is also imperative that any imaging study be done *before* a therapeutic intervention (surgery, radiation, chemotherapy, immunotherapy, metabolic therapy, cryosurgery, high intensity focused ultrasound, etc). “Once treatment has been started,” said Black, “I have no way to tell if an area is getting worse or getting better without a baseline for comparison.”

5. Finally, PET scan reports should include *image snapshots of the index lesions* so that the ordering physician visualizes the areas of abnormality, rather than trying to create a mind picture based solely on a written report.

You would think that these features would be more or less obvious requirements for any imaging technique whose purpose is to detect and track tissue abnormalities, be they cancer or any other pathology. Incredibly, Dr. Black was able to demonstrate dozens of reports containing none of the 5 key points above. “When I see a report like that,” Black says, “I feel terrible that the patient went through the whole scanning process without getting any useful information out of it.”

Every one of Dr. Black’s reports contains a table with headings for anatomical information (location and size of the tumor), for functional information (the corrected SUV, and, most importantly one for his interpretation, including comparison with previous studies, and a likely explanation for abnormal findings. Black’s reports include statements such as “interim metabolic progression” (bad news, indicating that a tumor is more metabolically active than before), or “quantitative partial metabolic response” (good news, indicating that a tumor is at least partially responding to treatment).

Any oncologist reading such a report immediately has a concise summary of the patient’s status at the time of the scan, a comparison with prior scans, and a clear understanding of what has changed and why. Thus the patient’s status is optimally presented to the clinician and an appropriate strategy can follow.

Summary

A diagnosis of cancer produces tremendous fear and uncertainty in patients and their loved ones. We need to trust that diagnostic studies aimed at understanding a cancer patient’s status do not add to the

uncertainty, and don’t introduce more risk than necessary.

PET/CT scanning offers a remarkably accurate and comprehensive way to look at patients being evaluated for a suspected cancer as well as pertaining to the followup of patients with known cancer as they progress or respond to therapy. But PET/CT scan interpretation is a mixture of genuine art and application of objective science, fraught with a variety of subjective pitfalls that can misdirect an inexperienced reader to dangerously false conclusions.

Dr. Richard Black is a tireless activist in the field of nuclear medicine, constantly exhorting his colleagues to better understand the technology involved in PET scans, to interpret them in a rigorous, standardized, and reproducible fashion, and to provide information that oncologists can immediately apply towards improving the care of their patients. The take home lessons of this article are summarized in the sidebar on page 79.

Dr. Richard Black

Dr. Richard Black is a Diplomate of the American Board of Nuclear Medicine and a board certified internist as well. He has interpreted more than 70,000 PET/CT studies, is licensed in more than 30 states in the US and previously served as Chair for the Society of Nuclear Medicine’s online physician education program in oncological PET imaging. He has had a career-long interest in improving patients’ lives through more accurate imaging. His original training as an internist, not a radiologist, gives him greater clinical insight into the functional-physiological aspects of PET imaging as well as the inherent diseases of the patients.

Black is also a consultant to major medical companies that seek his expertise on PET scans and related techniques. He is the author of numerous publications focused on the use of PET scanning. Dr. Black has provided a valuable contribution in standardizing all of the PET/CT image studies carried out during a recently completed breast cancer clinical trial which was funded by the Life Extension Foundation and coordinated by Dr. Orn Adalsteinsson. The results of the trial will be reported in upcoming issue of the *Life Extension Magazine*®.

Commentary on “Understanding the Functional Nature of Cancer: The Value of PET (positron emission tomography)”

by Stephen B. Strum, MD, FACP, (Board-Certified Medical Oncologist)
& Life Extension Scientific Advisory Board Member

All of us are patients at some time in our lives. Indeed, our life—and its quality—as well as our death—and its nature—is so evidently related to whether the healthcare delivered to us is wonderful, average, sub-optimal or downright dangerous. In cancer medicine or oncology, the testing that is done to establish either the presence of cancer, to determine cancer extent (stage of disease), and to discern if the treatment we are receiving is working or not, are all crucial determinants of our outcome. But for this physician involved in cancer medicine for a half century, it is obvious that metaphorically speaking, healthcare itself is a sick patient with a dire prognosis.

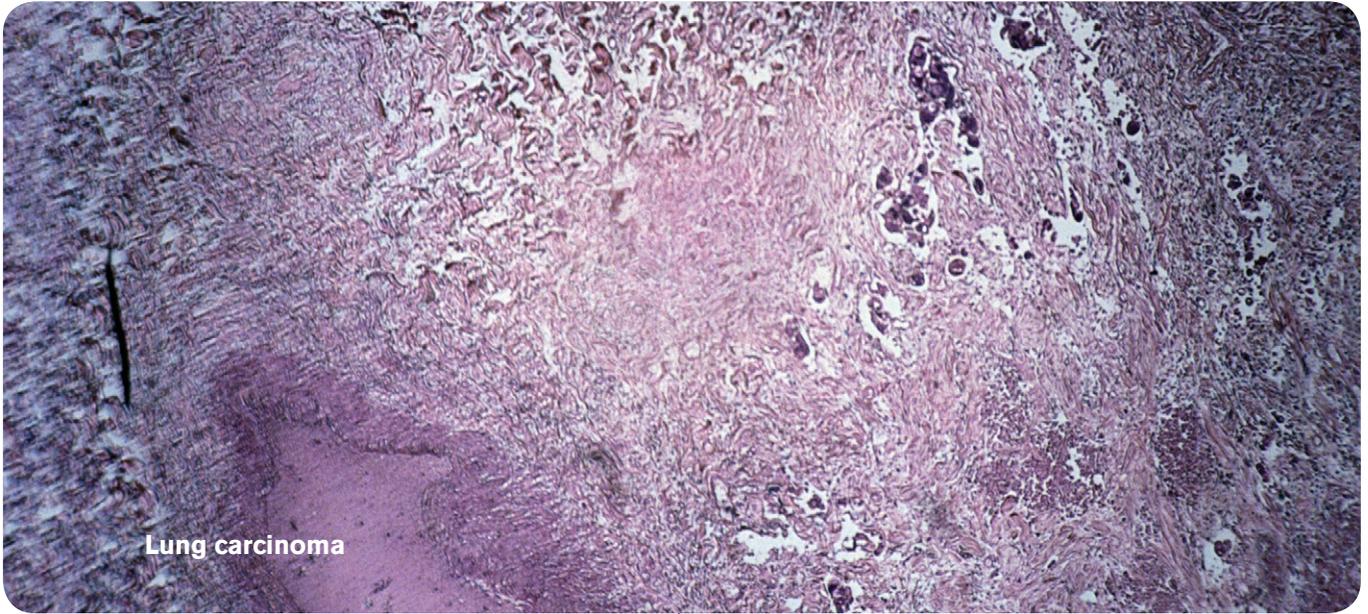
Many of you have heard me stress the importance of the key concept that “Status Begets Strategy.” I have chanted this theme in papers I have authored, in the book *The Primer on Prostate Cancer* by Strum & Pogliano, as well as in many lectures to patients and physicians. Status is what’s going on—what is the biologic reality of the patient as determined by every sense that we have available to us? Thus status relates to the patient’s history, the physical examination, laboratory testing, pathology evaluation and radiologic imaging. But blatantly lacking in today’s “healthcare” is standardization in reporting, and this deficiency spans virtually all of these areas of information relating to status. How can anyone intelligently direct our care when we do not know what’s going

on, what is our baseline, and are we getting better or worse? How can medical doctors vary so wildly, yes wildly, in their reporting that one report can be a work of a truly dedicated physician and another report on the same issue be akin to a cartoon? What we have here is a horrendous problem in communication. It is Cool Hand Luke, MD, but what’s at stake is your life, and mine.

I have been frustrated for decades with the lack of a scientific approach in all realms of the medical record. In this article on PET (Positron Emission Tomography), the rational, logical and yes, standardized approach by Dr. Rick Black, a radiologist specializing solely in PET imaging is beautifully presented. Hallelujah! This is the way medical reports should be generated, whether they relate to imaging studies like PET, or to other radiology studies like TRUSP (transrectal ultrasound of the prostate), MRI of the prostate, bone scans, or CT studies, etc. This same scientific thinking should apply to how MDs report their physical examination findings, how the pathologist reports the results of biopsies or other surgical specimens, and even how laboratories report their findings (see Appendix F in *The Primer on Prostate Cancer* for examples of some of these objectified reports).

The 5 key features of a solid medical report provided by Dr. Black should be foundational for every STATUS report involving a living entity i.e., you and





me and everyone we know. How can we achieve what Dr. Black so elegantly presented? It won't come from the physicians, since the lion's share of healthcare practitioners are more comfortable with the status quo than with change. The only way to evolve medical reporting will come from patients and patient groups who are sufficiently empowered to voice their opinion—loudly and clearly—to those that have the power to effect a change—our elected officials. Remember, for the vast majority of us, it is we the people that are paying for our healthcare, and like my grandma from Poland once said, “When you ain't got your health, you ain't got nothing.” ●

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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- **LUTEOLIN:** Systemic inflammation is involved in most undesirable consequences of aging. Culprits behind **inflammatory** reactions are pro-inflammatory **cytokines**, such as **interleukin-1** and **tumor necrosis factor-alpha**. Luteolin is a flavonoid that has been shown to modulate these dangerous inflammatory cytokines.¹¹⁻¹⁶
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A bottle of **Mitochondrial Energy Optimizer with BioPQQ™** containing **120 capsules** retails for \$94. If a member buys four bottles, the price is reduced to **\$63** per bottle. **Contains soybeans.**

Just four capsules of Mitochondrial Energy Optimizer with BioPQQ™ provide:

Carnosine	1000 mg
ArginoCarn® Acetyl-L-carnitine arginate DiHCl	675 mg
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Pyridoxal 5'-Phosphate	100 mg
BioPQQ™	10 mg
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Advanced Natural Sex for Women® 50+ provides a unique phyto blend that targets and supports the mechanisms that promote healthy sexual function and libido*:

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2. *Cynanchum wilfordii*
3. *Angelica gigas*

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The suggested three capsules a day of **Advanced Natural Sex for Women® 50+ (sexual health and menopausal formula)** provide the following extracts:

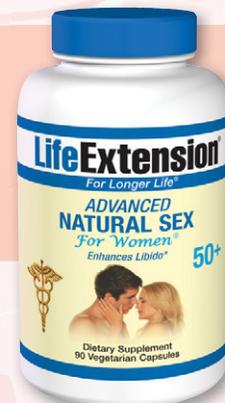
Proprietary Blend: 1,590 mg

MacaPure® Maca (*Lepidium meyenii*) extract

EstroG-100™ (proprietary blend of *Angelica gigas*, *Phlomis umbrosa*, *Cynanchum wilfordii* extracts)

Cordyceps Cs-4 (*Paecilomyces hepiali*) extract

A bottle of 90 vegetarian capsules of **Advanced Natural Sex for Women® 50+** retails for \$59. If a member buys four bottles, the price is reduced to **\$34** per bottle.



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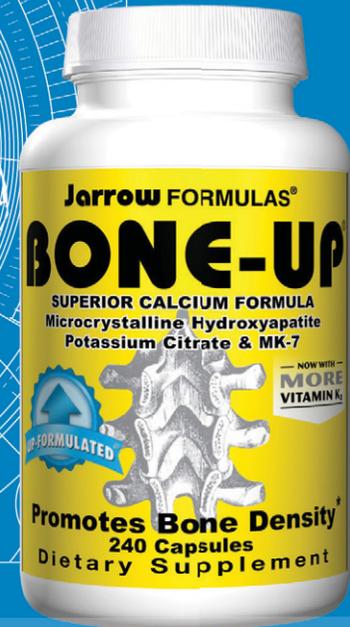
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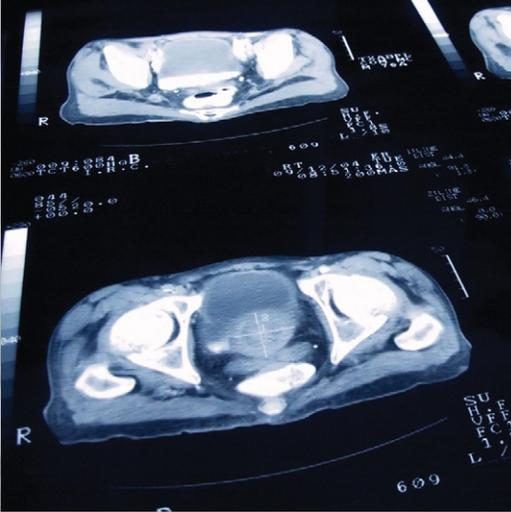
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WELLNESS PROFILE

BY KYLE RODERICK

Michael Milken

Seeking Faster Cures to Prostate Cancer and More

Would you stop eating red meats and dairy products and switch to a largely vegetarian diet if you thought it would save your life? Financier Michael Milken did in 1993, after doctor's diagnosed advanced prostate cancer and gave him 12 to 18 months to live. One of the most compelling points regarding Milken's diagnosis, at age 46, is that it came only *after he*

insisted on getting a prostate-specific antigen (PSA) test. His doctor initially told Milken that he was too young to be at risk. "Humor me," Milken said. Fortunately, his doctor did. As Milken notes, "Other than skin cancer, prostate cancer is the most common cancer in American men." The American Cancer Society's latest estimates for prostate cancer in the United States state that:

- About **240,890** new cases of prostate cancer will be diagnosed this year.
- About **33,720** men will die of prostate cancer this year.



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WELLNESS PROFILE

It's also worth noting that about 1 man in 6 will be diagnosed with prostate cancer during his lifetime. More than 2 million men in the United States who have been diagnosed with prostate cancer at some point are still alive today. Prostate cancer is the second leading cause of cancer death in American men, behind only lung cancer, and about one man in 36 will die of prostate cancer.

Almost 20 years after his terminal diagnosis, Milken is living proof that early testing for PSA is a wise decision, and that a health-enhancing dietary change can be highly beneficial. Milken's dramatic recovery, however, involved far more than eating primarily low-fat plant foods. His urologist, Stuart (Skip) Holden, MD, put him on androgen-deprivation therapy, which involved taking two pills three times a day, plus a monthly injection to deprive cancer cells of the male hormones they need to multiply. This therapy reduced his PSA levels over the course of several months to zero. Milken

also chose to undergo eight weeks of radiation therapy. Subsequent scans showed the swelling in his lymph nodes had disappeared. His cancer was in remission and remains so to this day.

There's more to his healing narrative, for Milken recognized that his prostate cancer may have developed as a result of a decades-long grueling work schedule, high stress levels, meat-heavy diet, and too little exercise. As a result, he began reading evidence-based medical research on how specific nutrients, exercise and other lifestyle modifications may help slow prostate cancer, and he started making adjustments based on the research he read.

Following his diagnosis, Milken and his wife Lori began researching aspects of holistic medicine. Their inquiries took them to the Maharishi Ayurveda Health Center in Lancaster, Massachusetts. This Berkshire Mountains facility treats people with therapies sourced from India's three thousand year-old healing tradition of Ayurveda.

Nutritional Approaches to Prostate Health

Given that the Milken Family Foundation, the Prostate Cancer Foundation, and FasterCures all work with the world's leading cancer and nutritional research centers and scientists, it follows that Michael Milken is hyper-knowledgeable about nutrition. Milken devotedly follows nutritional principles such as eating antioxidant-rich fruits and vegetables, plus free radical-scavenging powerhouses like powdered green tea extract, which has been confirmed to help inhibit prostate cancer. Powdered green tea extract is a staple ingredient in the smoothie drink recipes in *The Taste for Living Cookbook*, which Milken co-authored with chef Beth Ginsberg.

Another favorite Milken nutrient is the antioxidant lycopene, which abounds in cooked tomatoes and has been found to concentrate in the prostate gland. Lycopene is believed to have beneficial effects on prostate cells. (Milken cites a Harvard study of 47,000 men led by Dr. Edward Giovannucci which found that men who eat 10 or more servings a week of tomato-based foods are up to **45%** less likely to develop prostate cancer)*. Another study, conducted at the UCLA Center for Human Nutrition, showed that increased levels of lycopene in the blood, and a reduction in polyunsaturated fats, relate to reduced PSA levels in some men.

* Giovannucci E, Ascherio A, Rimm EB, Stampfer MJ, Colditz GA, Willett WC. Intake of carotenoids and retinol in relation to risk of prostate cancer. *J Natl Cancer Inst.* 1995;87:1767-76.





Here, the Milkens experienced Ayurvedic “herbal cures and relaxation,” he writes in *The Taste for Living Cookbook*,” co-authored with his personal and corporate chef, Beth Ginsberg. According to the US National Institutes of Health (NIH) National Center for Complementary and Alternative Medicine (NCCAM), Ayurveda is defined as a “whole medical system.” The NIH defines a whole medical system as “a complete system of theory and practice that has evolved over time in different cultures and apart from conventional medicine.” For more information on Ayurveda, log onto <http://nccam.nih.gov/health/ayurveda/introduction.htm>.

Intrigued by their initial experience of Ayurvedic healing, the Milkens arranged for a doctor trained in Western and Ayurvedic medicine to move into their home for a few months. “Early in the morning and late at night,” Milken recounts in Geoffrey E. Moore’s book, *A Call to Action*, he worked on “breathing techniques, herbal therapy, meditation and yoga.”

The Milkens also learned how massage can activate the body’s T-cells, which fight cancer, and that aromatherapy can energize the immune system. In addition to traveling to China to meet with what Milken calls “chi” doctors, he met with integrative physicians such as Deepak Chopra, MD. “I felt it was important to connect the mind with the body,” he notes in *A Call to Action*.

While Milken’s triumph over advanced prostate cancer is inspiring, even more so are the medical philanthropies he founded while he was battling the disease. In 1993, Milken used his still formidable energy and will to establish the prostate cancer charity CaP CURE, now called the Prostate Cancer Foundation (PCF). Milken is also

heavily involved in another foundation that he established called FasterCures (www.fastercures.org), a Washington, DC-based non-profit that creates action plans to speed scientific discovery for remedies to all major diseases.

CaP CURE and the Prostate Cancer Foundation came into existence after Milken discovered from consulting with influential researchers and bio-tech leaders such as Gordon Binder, then-CEO of Amgen, that prostate cancer ranked low on the national research agenda. Undaunted, Milken resolved to change the slow-motion pace of prostate cancer research, raise the disease’s public profile and catalyze a movement to increase funding for prostate cancer research while accelerating the awarding of grant

The Prostate Cancer Foundation

The Prostate Cancer Foundation (PCF) is the leading philanthropic organization funding and accelerating research globally.

Since 1993, their unique strategies for identifying and investing in the most promising research programs have generated life-saving results. They channel resources to the world’s top scientific minds—cutting red tape and encouraging collaboration to speed breakthroughs.

As a champion for increased government and private support, PCF has helped build a global research enterprise of nearly \$10 billion. Through the generous contributions of donors, they have funded more than 1,500 programs at nearly 200 research centers in 12 countries.

The Reliable Source for the Latest Developments

For more than 16 million men and their families fighting prostate cancer globally, PCF is a primary source for new standard-of-care and research information. They connect patients, loved ones, care providers, and scientists to critical updates, the latest developments, best practices, and news from the treatment pipeline.

Advancing Hope

Many important discoveries in the fight against prostate cancer since 1993 resulted from PCF funding or coordination—including the development of new medications, gene therapy approaches and the development of vaccines that may soon work with the body’s immune system to kill prostate cancer cells.

Thanks to these and other victories, the US death rate from prostate cancer has dropped nearly **40%** from what was once projected.

WELLNESS PROFILE

monies to researchers. Toward that end, the Milken Family Foundation committed \$25 million over five years to the PCF and later renewed with a second \$25 million commitment. Equally important, the PCF (www.pcf.org/) established a revolutionary and streamlined awards process which limits applications to five pages, and funds approved research applications within the comparatively rapid span of 90 days.

As Andrew von Eschenbach, formerly the director of the National Cancer Institute and a past director of the United States Food and Drug Administration, puts it, “Michael Milken changed the culture of medical research. He created a sense of urgency that focused on results and shortened the timeline,” he continues. “It took a business mindset to shake things up. What he has done is now the model.” (Dr. von Eschenbach has helped grow the Prostate Cancer Foundation since 1993 by serving on its Board and as a scientific advisor.) He also founded C-Change (www.c-changetogether.org), a forum that unites leaders of national cancer organizations that is in partnership with the Prostate Cancer Foundation.

While working to enhance medical research into prostate cancer, Milken continually saw how no one was trying to leverage the enormous political power of the millions of Americans with cancer and their families to change the so-called “war” on cancer. In 1998, the PCF took a leading role in organizing “The March: Coming Together to Conquer Cancer.” In September 1998, 150,000 people representing 600 cancer organizations gathered on the National Mall in Washington to demand increased federal funding for cancer research. Hundreds of thousands more rallied in 200

cities across the US. In the five years after The March, federal funding of cancer research increased nearly **70%**.

In 2003, Milken launched FasterCures, a Washington, DC, based center of the Milken Institute that is creating action plans to shorten the path of scientific discovery for all major diseases. The mission of FasterCures is to improve the process of medical research, prevention, and regulatory science.

Geoffrey E. Moore, who provides communications counsel to Michael Milken and his foundations, notes that clearly, care is an important issue since it accounts for **97%** of health spending, but Milken’s most intense focus “is on the other **3%**, or what some call the health cure system.” According to Moore, Milken “...believes that we will never be able to afford the rising costs of care if our nation continues to shy away from funding development of new cures.” Considering the dire economic

times we are weathering, Milken says, “The greatest long-term stimulus we can provide our economy will come from better prevention and from medical science. So let’s set our priorities. For example,” he continues, “for just half the cost of an aircraft carrier, we can double scientific investigations into heart disease.”

Milken’s argument in favor of more investment in medical research becomes even more compelling when we consider the routinely hefty expenditures made for products that provide dubious returns on investment. “National political campaigns in 2008 cost \$5.3 billion,” Milken explains. “Interestingly, Americans also spend \$5.3 billion a year on potato chips. Potato chips! Nearly double the federal budget for heart-disease research. More than the National Cancer Institute budget. Improved public health translates directly into greater national productivity, which underpins all economic growth. ●

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Why block a test that saves lives?

By Michael Milken

ORIGINALLY PUBLISHED: *The Washington Post*, October 12, 2011

Forty years ago, my mother-in-law learned from a mammogram at age 57 that she had breast cancer. We immediately sought the best available treatment. She lived for many happy years and enjoyed precious time with her grandchildren. Would she have died sooner without the mammogram? I don't know. But here's what I do know from four decades of working to accelerate progress against all life-threatening diseases: No screening test is perfect; well-informed patients consulting with their doctors are better equipped than a government agency to make decisions about their health; there are options other than screening everyone or screening no one; and finally, there's no comfort in ignorance.

The US Preventive Services Task Force (USPSTF), a panel supported by a congressional mandate, now recommends that healthy men not receive prostate-specific antigen (PSA) tests, which measure a protein in the blood produced by prostate tissue. I agree that the current PSA test is inexact and, in many cases, leads to overtreatment that can have terrible side effects such as incontinence and impotence. Research supported by the Prostate Cancer Foundation has led to the development of several new molecular markers that could soon complement or even replace the PSA test. These new tests, now in clinical trials pending approval from the Food and Drug Administration, should greatly improve diagnosis and treatment of prostate cancer.

However, in the meantime, the USPSTF recommendation is a disservice to the majority of men. While it would eliminate some short-term health-care costs, long-term costs of treating metastatic disease would be higher. And some men will die. A recent European study showed that testing reduced deaths significantly among men ages 55 to 69. These relatively younger patients are the ones the recent recommendation would most likely exclude from testing because they more often appear to be healthy.

The PSA test doesn't diagnose prostate cancer. But it can raise a red flag calling for a doctor-patient dialogue on medical options, risks, benefits and costs. We need to make better use of it, not ban it, and, as the American Cancer Society recommends, better inform patients of overtreatment risks.

When we founded the Prostate Cancer Foundation nearly two decades ago, more than 40,000 US men died annually from the disease. That toll was expected to rise sharply as population grew and baby boomers aged. Instead, deaths have dropped closer to 34,000. What happened? For one thing, we've supported research that has produced more effective therapies. But also, through

media, advocacy events, and congressional testimony, we have delivered the message that men should talk to their doctors about a PSA test, and that loved ones should give the same message to the men in their lives.

There's no precise way to know how many lives were saved by increased awareness that led to testing and how many by improved treatment. But experienced urologists tell me that before PSA tests, the vast majority of patients' prostate cancer had already metastasized by diagnosis. Today, only about **20%** of these diagnosed cancers have spread outside the prostate, partly because PSA tests provide early warning. We shouldn't turn the clock back to the pre-PSA days.

The USPSTF recommendation could produce a cruel form of rationing in which the well-off and well-informed would get PSA tests while many of the poor wouldn't. That could disproportionately affect African Americans, who have higher prostate cancer risk and death rates.

The argument against testing reflects the same false economy seen throughout America's health system. Spending on care skyrockets while funding for screening, prevention, and research drops. Out of each health-related dollar Americans spend, research by the National Institutes of Health represents little more than a penny; and the medical research programs of private industry, universities and governments together total just over a nickel.

Congress should consider research and funding for prevention an investment, not an expense. The Milken Institute estimates that America's gross domestic product will be \$5.7 trillion lower by mid-century if we don't contain the containable consequences of chronic diseases. We can save trillions - more than enough to balance the federal budget - by losing weight, exercising, avoiding tobacco, using seat belts, and getting regular tests such as PSAs, colonoscopies, and mammograms.

The Prostate Cancer Foundation agrees with the American Urological Association that PSA screening provides important information for men and their doctors. In 1993, I was one of those "healthy" men the task force says should not be tested. At least I seemed healthy and felt fine. But I'd recently lost a friend to prostate cancer, so I asked for the test. The result was a reading six times the upper limit of normal. If I'd been kept in the dark by a federal task force, I might not have been here to write this.

Michael Milken is chairman of the Prostate Cancer Foundation and of FasterCures, a Washington-based center of the Milken Institute focused on all serious diseases.

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	YES	NO
1. DO YOU HAVE A DECREASE IN LIBIDO (SEX DRIVE)?		
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3. DO YOU HAVE A DECREASE IN STRENGTH AND/OR ENDURANCE?		
4. HAVE YOU LOST HEIGHT?		
5. HAVE YOU NOTICED A DECREASED "ENJOYMENT OF LIFE?"		
6. ARE YOU SAD AND/OR GRUMPY?		
7. ARE YOUR ERECTIONS LESS STRONG?		
8. HAVE YOU NOTICED A RECENT DETERIORATION IN YOUR ABILITY TO PLAY SPORTS?		
9. ARE YOU FALLING ASLEEP AFTER DINNER?		
10. HAS THERE BEEN A RECENT DETERIORATION IN YOUR WORK PERFORMANCE?		

The above ADAM® questionnaire was developed by John E. Morley, M.B., B.Ch. It is to be used solely as a screening tool to assist a physician in diagnosing androgen (testosterone) deficiency. *Androgen Deficiency in the Aging Male.

IF YOU HAVE ANSWERED YES TO #1, #7, OR ANY THREE OTHERS, YOU MAY HAVE SYMPTOMS ASSOCIATED WITH LOW TESTOSTERONE.

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BY WILLIAM GAMONSKI

Bell Peppers:

The Ring of Sweetness and Nutritional Value

While the bell pepper takes a back seat to chili peppers in the research spotlight due to its limited amount of the compound capsaicin, this versatile vegetable shouldn't be overlooked as it possesses an overwhelming abundance of powerful nutrients. With over **30 carotenoids**, including **lycopene**, **alpha-carotene**, **cryptoxanthin**, **beta-carotene**, **lutein**, and **zeaxanthin** and rich

in flavonoids like **luteolin**, **hesperidin**, and **quercetin**, bell peppers are antioxidant powerhouses. The combina-

tion of their antioxidant potency, along with

their high levels of folate, **vitamin A**, **dietary fiber**, **vitamin E**, and **vitamin B6** make bell peppers one of the most effective weapons against cancer, cardiovascular disease, eye disorders, and diabetes.¹



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Bell Peppers Tale

Bell peppers (*Capsicum annuum*) are part of the *Solanaceae* family and have been cultivated for thousands of years, beginning in South and Central America before being brought back to Europe from North America by Christopher Columbus. They are grown throughout the world, but mainly in China, Mexico, and in the United States. While green, red, and yellow bell peppers are the most common ones you are going to encounter at your local supermarket, other varieties such as orange, purple, brown, and black are also grown.¹

Anti-Inflammatory Properties

Although bell peppers don't receive recognition as a vitamin C rich food, they contain a wealth of the vitamin, more than *twice* that found in an average orange.¹ Vitamin C is a vital component of any diet aimed at combating inflammation. A study published in the *American Journal of Nutrition* revealed that men with a higher dietary intake of vitamin C had lower levels of C-reactive protein (an inflammatory marker) and tissue plasminogen activator (a protein that dissolves clots inside arteries) compared to men with a lower dietary intake.²

Select the Perfect Bell Pepper¹

1. Bell peppers are available all year round, but are in season from July to November.
2. Pick colorful, firm, and smooth skinned bell peppers.
3. Avoid bell peppers with bruising, wrinkled skin, or soft spots.
4. Place them in a plastic bag and store in refrigerator for up to 7 to 10 days.

Cancer Prevention

There have been many studies showing that the nutrients found in bell peppers possess strong anti-cancer activity, particularly in prostate, breast, and lung cancer. Dutch researchers treated a group of mice with human prostate cancer cells, and after feeding them both lycopene and vitamin E, the growth of tumors were reduced by **73%**. However, each administered independently showed no effect on tumor size, suggesting a synergistic effect of these two compounds.³

Apigenin is another component of bell peppers that may reduce breast cancer risk associated with hormone replacement therapy, particularly that which involves the use of a synthetic hormone called progestin that has been linked with the increased rate of breast cancer development in postmenopausal women.⁴ In a 2011 study published in the journal *Cancer Prevention Research*, researchers exposed rats to the synthetic progestin, medroxyprogesterone acetate (MPA), and then treated one group with apigenin. A second group serving as the

control group received progestin (as medroxyprogesterone acetate) without apigenin. At the end of the study, apigenin-treated rats developed fewer breast cancer tumors compared to those that did not receive apigenin.⁵

Furthermore, a recent French study involving more than 519,000 people showed a strong connection between vitamin B6 and lung cancer risk. After adjusting for smoking history, researchers discovered a **56%** reduction in lung cancer risk in those with the highest plasma vitamin B6 levels.⁶

Cardiovascular Benefits

At the heart of bell pepper's benefits is its ability to support cardiovascular health. When plasma LDL cholesterol reacts with reactive oxygen species, it undergoes lipid peroxidation and becomes oxidized. Oxidized LDL cholesterol is more readily attracted into the arterial wall and starts the process known as atherosclerosis.⁷ Elevated plasma levels of oxidized LDL have been associated with increased risk for cardiovascular disease.⁸ With their high *quercetin* and *luteolin* content, bell peppers might protect against LDL oxidation. Japanese researchers discovered that luteolin ranked first and quercetin fourth in their ability to inhibit LDL oxidation out of ten tested *flavonoids*.⁹

A separate study suggests that bell peppers can reduce cholesterol oxidation during heating and cooking, according to a study published in the *Journal of Food Science*. Scientists found that cholesterol exposed to sweet bell pepper extracts during heating resulted in **84%** of unoxidized cholesterol compared with only **19%** for the control.¹⁰

Consuming folate rich foods, such as bell peppers, appears to lower the risk for heart attacks as well. In the Kuopio Ischemic Heart Disease Risk Factor Study, researchers uncovered an association between a higher intake of folate and heart attack risk after analyzing data collected from 1,980 men without heart disease at baseline. Taking into account confounding factors of age, family history of heart disease, BMI status, cardiovascular risk factors, and dietary intake of nutrients over the 10-year study, scientists concluded that those with the highest folate intake were **55%** less likely to have a heart attack compared to those with the lowest intake of the vitamin.¹¹

Folate may also have antihypertensive benefits due to its role in synthesizing nitric oxide, a molecule that dilates endothelial cells and improves blood flow, according to a study published in the journal *Circulation Research*.¹²

Although *alpha-carotene* is a lesser known carotenoid compound than the precursor to vitamin A *beta-carotene*, it may

reduce the risk of mortality from all causes including cardiovascular disease and cancer. In the Third National Health and Nutrition Examination Survey Follow-up Study (NHANES III), the highest blood levels of alpha-carotene reduced the risk of death from all causes by **39%** for those with the highest levels of alpha-carotene.¹³

Diabetes Protection

Bell peppers' arsenal of vitamin E, *cryptoxanthin* and dietary fiber make it a formidable weapon against diabetes risk. In a study performed by Finnish researchers at the National Public Health Institute in Helsinki, Finland involving more than 4,000 people, a diet rich in dietary antioxidants vitamin E and cryptoxanthin was linked to a decreased risk of type 2 diabetes by **31%** and **42%**, respectively.¹⁴

According to research published in the journal *Diabetes Care*, dietary fiber intake less than 20 grams a day was associated with a significant increase in type 2

Bell Pepper Nutritional Facts, One Cup²⁰

Nutrients	Amount	DV[%]
Vitamin C	190 mg	317%
Vitamin A	4,666 IU	93%
Vitamin B6	0.4 mg	22%
Folate	68.5 mcg	17%
Dietary Fiber	3.1 g	13%
Vitamin E	2.4 mg	12%
Potassium	3.14 mg	9%
Vitamin K	7.3 mcg	9%
Manganese	0.2 mg	8%
Niacin	1.5 mg	7%

SUPER FOODS

diabetes risk in 3,400 older men.¹⁵ Scientists also noted that low dietary fiber intake was correlated with increased levels of C-reactive protein and interleukin-6, suggesting that these inflammatory markers might play a role in diabetes development.

Caffeic acid, a constituent of bell peppers, might have anti-diabetic potential. In research done at the National Taiwan University in Taipei, Taiwan scientists found that caffeic acid stimulated glucose uptake by increasing the availability of glucose transporters in cells.¹⁶

Healthy Eyes

Two eye carotenoids, lutein and zeaxanthin, present in bell peppers, might protect against common eye diseases including cataracts and age-related macular degeneration. Both are pronounced in the macula lutea region of the retina, protecting photoreceptor cells from damage caused by ultraviolet light.¹⁷ A recent study published in the *British Journal of Nutrition* that involved 1,600 men and women showed a strong relationship between higher intakes of lutein and zeaxanthin and lower risk of nuclear cataracts.¹⁸ In addition, a study conducted at the University of Sydney revealed that those taking in the most dietary lutein and zeaxanthin reduced their risk of age-related macular degeneration by **65%**.¹⁹

Summary

More than just adding color and crunchiness to dishes, bell peppers pack a powerful punch of vitamins, minerals, and antioxidants that protect against the development of heart disease, cancer, and

diabetes, three of the most common health problems in America today. Although they don't receive enough attention in the research world, bell peppers should be an integral part of any healthy diet. To receive their amazing health properties, cook stuffed peppers or simply add the nutritious vegetable to salads, sauces, and main dishes. ●

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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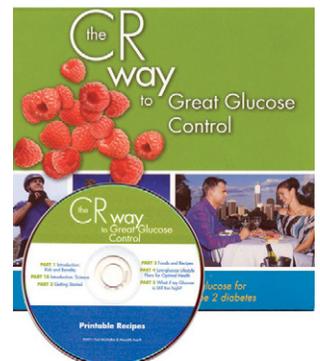
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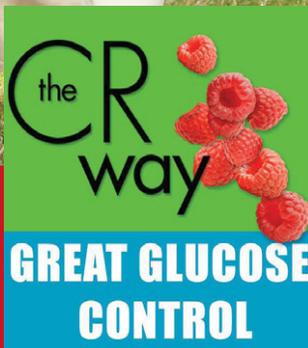
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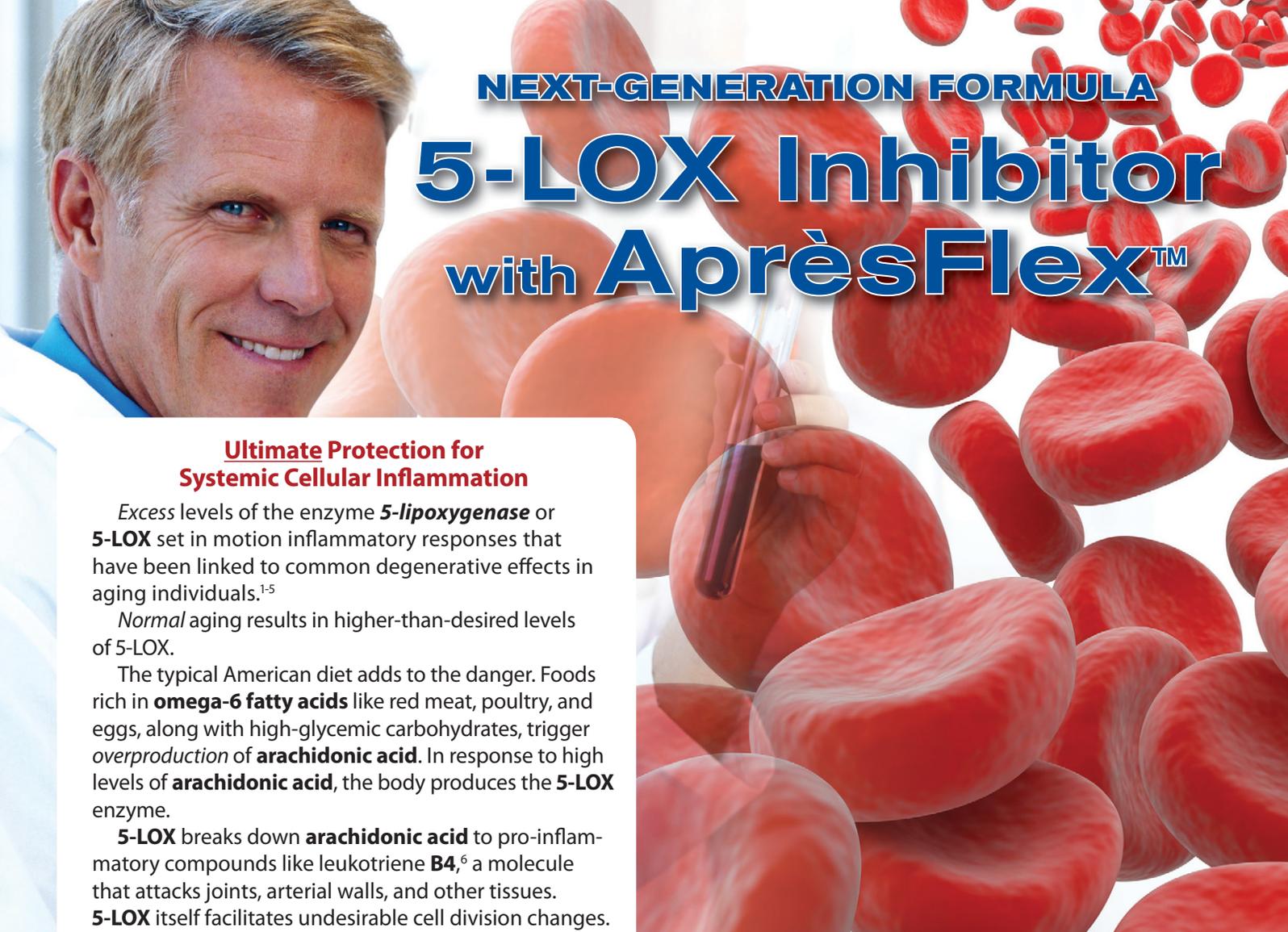


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*It should be noted that although Life Extension's previous 5-LOXIN® formulation contained at least a 30% concentration of AKBA, the new AprèsFlex™ formula delivers more AKBA into the bloodstream, offering greater efficacy at a 20% concentration. AprèsFlex™ has been added to the new ArthroMax™ and Ultra Natural Prostate Formulas.

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Can indicate if you are likely to have a heart attack or stroke. Even if you take folic acid, you still may have dangerously high levels of this artery-clotting metabolic debris that can be lowered with high doses of TMG, vitamin B6, and vitamin B12.

VAP™ TEST (LC804500) **\$90**
The VAP cholesterol test provides a more comprehensive coronary heart disease (CHD) risk assessment than the conventional lipid profile. Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.

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

FREE-PSA (INCLUDES TOTAL PSA)* (LC480780) **\$61**
Recommended to determine if an elevated PSA is indicative of prostate cancer.

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

DPD CROSS LINK URINE TEST (LC511105) **\$79**
The deoxypyridinoline (DPD) urine test can be used to measure bone re-absorption rates in healthy individuals and in those with enhanced risk of developing metabolic bone diseases. Deoxypyridinoline can be used to monitor therapies (which may include bisphosphonate drugs) in people diagnosed with osteoporosis.

This is NOT a complete listing of LE blood test services. Call 1-800-208-3444 for additional information.

ORDER LIFE-SAVING BLOOD TESTS FROM VIRTUALLY ANYWHERE IN THE US!

TERMS AND CONDITIONS

This blood test service is for informational purposes only and no specific medical advice will be provided. National Diagnostics, Inc., and the Life Extension Foundation contract with a physician who will order your test(s), but will not diagnose or treat you. Both the physician and the testing laboratory are independent contractors and neither National Diagnostics, Inc., nor the Life Extension Foundation® will be liable for their acts or omissions. Always seek the advice of a trained health professional for medical advice, diagnosis, or treatment. When you purchase a blood test from Life Extension/National Diagnostics, Inc., you are doing so with the understanding that you are privately paying for these tests. There will be absolutely no billing to Medicare, Medicaid, or private insurance. I have read the above Terms and Conditions and understand and agree to them.

Signature of Life Extension Member

X

Life Extension Foundation Members only

MEMBER NO.

Male Female

Name

Date of Birth (required) / /

Address

City

State

Zip

Phone

Credit Card No.

Expiration Date /

Mail your order form to:

LifeExtension
NATIONAL DIAGNOSTICS, INC.

3600 West Commercial Boulevard
Fort Lauderdale, FL 33309

Phone your order to: 1-800-208-3444

Fax your order to: 1-866-728-1050

Products

AMINO ACIDS

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

BONE & JOINT HEALTH

ArthroMax™ with Theaflavins and AprèsFlex™
ArthroMax™ Advanced with UC-II® and AprèsFlex™
Bone-Up™
Bone Restore™
Bone Strength Formula w/KoAct™
Chondroitin Sulfate
Chondrox
Fast Acting Joint Formula
Glucosamine Chondroitin Capsules

BRAIN HEALTH

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
CDP Choline Capsules
Cognitex® with NeuroProtection Complex
Cognitex® with Pregnenolone & NeuroProtection Complex
Cognitex® Basics
DMAE
Ginkgo Biloba Certified Extract™
Huperzine A
Lecithin with B5 and BHA
Lecithin Granules
Methylcobalamin Lozenges
Neuro-Mag™ Magnesium L-Threonate
Optimized Ashwagandha Extract
Phosphatidylserine Capsules
Rhodiola Extract
Super Ginkgo Extract
Vinpocetine

DIGESTIVE

Bifido GI Balance
Bromelain Powder
Carnosoothe w/PicroProtect
Daily Ginger®
Digest RC™
Enhanced Super Digestive Enzymes
Life Flora™
Natural EsophaGuard
Pancreatin
Probiotic All-Flora®
Probiotic Anti-Aging
Probiotic Cleanse™
Probiotic Colon™
Regimint
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 & Meso-Zeaxanthin and C3G
(Plus Astaxanthin also available)
Vision Optimizer

FIBER

AppleWise Polyphenol
Apple Pectin Powder
Fiber Food
Hi-Lignan® Nutri-Flax®
TruFiber®
WellBetX PGX® Soluble Fiber Blend

FOOD

Spicy Cruciferous Vegetable Soup
Cruciferous Vegetable Soup
Rich Rewards Coffee

HAIR CARE

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

HEART HEALTH

AppleWise Polyphenol
Advanced Lipid Control
Aspirin (Enteric Coated)
Blood Fruit
Cho-Less™
D-Ribose Capsules
D-Ribose Powder
Endothelial Defense™ with Full-Spectrum Pomegranate™
Fibrinogen Resist
Forskolin
Garlicforce™
Homocysteine Resist
Krill Healthy Joint Formula
Natural BP Management
Olive Leaf Vascular Support
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
Syrtrinol™
Theaflavin Standardized Extract
TMG Powder
TMG Tablets

HERBAL/PHYTO PRODUCTS

Artichoke Leaf Extract
Astaxanthin
Berry Complete
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
Floradix® Iron & Herbs
Floravital® Iron & Herbs
Full-Spectrum Pomegranate™
Grapeseed Extract with Resveratrol & Pterostilbene
Huperzine A with Natural Vitamin E
Kyolic® Garlic Formula 105
Kyolic® Reserve
Mega Green Tea Extract
Mega Green Tea Extract (Decaffeinated)
(also w/CoffeeGenic Green Coffee extract)
Mega Lycopene Extract
Nutrim
Optimized Ashwagandha Extract
Optimized Garlic
Pomegranate Extract
Pomegranate Juice Concentrate
ProGreens®
Pure-Gar™
Pycnogenol
Optimized Quercetin
Resveratrol with Synergistic Grape-Berry Actives
Rhodiola Extract
Rosmarinic Acid Extract
Silymarin
SODzyme™ with GliSODin®
Stevia Extract
Super Bio-Curcumin®

Super Ginkgo Extract
Triple Action Cruciferous Vegetable Extract
Venotone
Whole Grape Extract

HORMONES

Advanced Natural Sex for Women®
Cordyceps CS-4
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

AHCC® (Active Hexose Correlated Compound)
Aloe Vera Force™
Buffered Vitamin C Powder
Echinacea
Enhanced Life Extension Whey Protein
i26 Hyperimmune 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
Supercritical Oreganoforce™
Thymic Immune Factors
Ultimate Flora Advanced Immunity
Vitamin C with Dihydroquercetin
Zinc Lozenges with Vitamin C

INFLAMMATORY REACTIONS

Arthro-Immune Joint Support
ArthroMax™ with Theaflavins
Boswella
Boswella™ Topical Cream
Bromelain (Specially-coated)
DHA 240
Emulsified Norwegian Cod Liver Oil
Emulsified Super Twin EPA/DHA
Fast Acting Joint Formula
Ginger Force
Krill Oil
5-LOX Inhibitor w/AprèsFlex™
Mega EPA/DHA
Mega GLA with Sesame Lignans
MSM
Natural Relief 1222™ Cream
Omega-3 Chewables
Serrafazyme
SODzyme™ with GliSODin® and Wolfberry
Super Omega-3 EPA/DHA with Sesame Lignans & Olive Fruit Extract
Tart Cherry
Udo's Choice Oil
Zyflamed Easy

LIVER HEALTH

Branch Chain Amino Acids
N-Acetyl Cysteine
Liver Force
Liver Efficiency Formula
Certified European Milk Thistle
Hepatopro
SAME
Silymarin

MINERALS

Biosil
Bone Restore
Bone Strength Formula w/KoAct®
Bone-Up™
Boron Capsules
Calcium Citrate with D3
Chromium Ultra
Copper
Dr. Strum's Intensive Bone Formula
Floradix® Iron & Herbs

Floravital® Iron & Herbs
Iodoral
Iron Protein Plus
Magnesium
Magnesium Citrate
Mineral Formula for Men
Mineral Formula for Women
Only Trace Minerals
Optimized Chromium w/Crominex® 3+
OptiZinc
Sea-Iodine™
Selenium
Se-Methyl L-Selenocysteine
Strontium
Vanadyl Sulfate
Zinc/Vitamin C Lozenges

MISCELLANEOUS

Blender
Blood Pressure Monitor Arm Cuff Medium
Cell Sensor Gauss Meter™
CR Way Edition Advanced Dietary Software
Empty Gelatin Capsules
LifeShield® Breathe™
The Capsule Filler Machine

MITOCHONDRIAL SUPPORT

Acetyl-L-Carnitine
Acetyl-L-Carnitine-Arginate
Mitochondrial Basics w/BioPQQ™
Mitochondrial Energy Optimizer w/BioPQQ™
Optimized Carnitine with GlycoCarn®
Super Absorbable CoQ10™ with d-Limonene
Super Alpha Lipoic Acid with Biotin
Super R-Lipoic Acid
Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™

MOOD RELIEF

Adrenal Energy Formula™
Bioactive Milk Peptides
Holy Basil
LifeShield® Cordyceps
L-Theanine
5 HTP
Enhanced Natural Sleep® w/ Melatonin
Enhanced Natural Sleep® w/o Melatonin
Natural Stress Relief
Optimized TryptoPure® Plus
Stabilium® 200
SAME
St. John's Wort Extract
Tryptopure® L-Tryptophan

MOUTH CARE

Advanced Oral Hygiene
Mist Oral III™ with CoQ10
Mouthwash w/Pomegranate
Toothpaste

MULTIVITAMIN

Children's Formula Life Extension Mix
Comprehensive Nutrient Pack
Life Extension Booster
Life Extension Mix™ Capsules
Life Extension Mix™ Powder
Life Extension Mix™ Tablets
Life Extension Mix™ w/o Copper Capsules
Life Extension Mix™ w/o Copper Tablets
Life Extension Mix™ w/Extra Niacin
Life Extension Mix™ w/Extra Niacin w/o Copper
Life Extension Mix™ w/Stevia Powder
Life Extension Mix™ w/Stevia w/o Copper Powder
Life Extension One-Per-Day
Life Extension Two-Per-Day
Super Booster Softgels w/Advanced K2 Complex

PET CARE

Cat Mix
Dog Mix

PROSTATE & URINARY HEALTH

BetterWOMAN®
Optimized Cran-Max® with UTIRose™
5-LOXIN®
(Water-Soluble) Pumpkin Seed Extract
Super Saw Palmetto with Beta-Sitosterol
Super Saw Palmetto/Nettle Root Formula
w/Beta-Sitosterol
Ultra Natural Prostate Formula

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
Antioxidant Rejuvenating Hand Scrub
Anti-Redness & Blemish Lotion
Bio-Collagen w/Patented UC-II®
Broccoli Sprout
Corrective Clearing Mask
DermaWhey
DNA Repair Cream
Dual-Action MicroDermAbrasion
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
LifeShield® Reishi
Melatonin Cream
Mild Facial Cleanser
Neck Rejuvenating Antioxidant Cream
Peel Off Cleansing Mask
Pigment Correcting Cream
(Ultra) Rejuvenex®
Rejuvenex® Body Lotion
Rejuvenex® Factor
Rejuvenex® Factor Firming Serum
Rejuvenating Serum
Resveratrol Anti-Oxidant Serum
Skin Lightening Serum
Skin Restoring Ceramides w/Lipowheat™
Skin Stem Cell Serum
Stem Cell Cream w/Alpine Rose
Supercritical Omega 7™
Sun Protection Spray
Total Sun Protection Cream
Ultra Rejuvenex®
Ultra RejuveNight® w/ Progesterone
Ultra RejuveNight® w/o Progesterone
Ultra Lip Plumper
Ultra Wrinkle Relaxer
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
Benfotiamine w/Thiamine
Breast Health Formula
Butterbur Extract w/Standardized Rosmarinic Acid
Chlorella
Chlorophyllin w/Zinc
Cleanse Smart
Green Coffee Extract CoffeeGenic™ (also w/Glucose control)
Coriolus Super Strength
CR Mimetic Longevity Formula
Cinsulin® w/InSea2® and Crominex® 3+
EDTA
European Leg Solution Diosmin 95
Fem Dophilus
Femmenessence MacaPause®
Flush & Be Fit
GlucoFit™
Hearos™ Ear Plugs

Ideal Bowel Support 299
Maitake SX-Fraction™
Migra-eeze™
Natural Female Support
Organic Total Body Cleanse
Pecta-Sol®
Potassium Iodide
PQQ Caps w/BioPQQ™
PteroPure™
Prelox® Natural Sex for Men®
Pyridoxal 5' - Phosphate
Rosmarinic Acid Extract
Ultra Natural Prostate w/AprèsFlex™ and Standardized Lignans

SPORTS PERFORMANCE

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

VITAMINS

Ascorbic Acid Powder
Ascorbyl Palmitate Capsules
B1
B2
B12
Beta-Carotene
Biotin Capsules
Biotin Powder
Buffered Vitamin C Powder
Complete B Complex
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
Supercritical Omega 7™
Tocotrienols w/Sesame Lignans
Vitamin A Nutrisorb
Vitamin B3 (Niacin) 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

Alli® Refill Pack
Advanced Anti-Adipocyte Formula w/AdipoStat & Integra Lean®
Anti-Adipocyte Formula w/AdipoStat
Calorie Control Weight Management Formula w/CoffeeGenic™ Green Coffee Extract
7-Keto DHEA
DHEA® Complete
Fucoxanthin Slim™
HCA
Integra-Lean® Irvingia
LuraLean® 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

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
A					
00449	ACETYL-L-CARNITINE - 500 mg, 100 caps	\$34.00	\$25.50		
	Buy 4 bottles, price each	30.00	22.50		
00788	ACETYL-L-CARNITINE ARGINATE - 100 caps	59.00	44.25		
	Buy 4 bottles, price each	50.99	38.24		
01628	ADRENAL ENERGY FORMULA™ - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01308	ADVANCED LIPID CONTROL - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01521	ADVANCED ORAL HYGIENE - 60 veg. mint lozenges	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
00681	AHCC - 500 mg, 30 caps	59.98	44.99		
	Buy 4 bottles, price each	53.33	40.00		
*46925	ALLI® REFILL PACK - 120 caps	69.95	58.00		
01375	ALOE VERA FORCE™ - 60 veg. caps	34.95	26.21		
00457	ALPHA-LIPOIC ACID w/BIOTIN (SUPER) - 250 mg, 60 caps	37.00	27.75		
	Buy 4 bottles, price each	32.00	24.00		
01440	ANTI-ALCOHOL ANTIOXIDANTS w/HEPATOPRO - 100 caps	26.00	19.50		
	Buy 4 bottles, price each	23.00	17.25		
01510	ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT - 60 veg. caps	35.00	26.25		
	Buy 4 bottles, price each	32.00	24.00		
01509	ANTI-ADIPOCYTE FORMULA w/ADIPOSTAT & INTEGRA LEAN® (ADVANCED) - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
00105	APPLE PECTIN POWDER - 227 grams	14.75	11.06		
	Buy 4 bottles, price each	13.75	10.31		
01625	APPLEWISE POLYPHENOL EXTRACT - 600 mg, 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	19.00	14.25		
01039	ARGININE/ORNITHINE - 500/250, 100 caps	16.00	12.00		
	Buy 4 bottles, price each	14.50	10.88		
00038	ARGININE/ORNITHINE POWDER - 150 grams	22.95	17.21		
	Buy 4 bottles, price each	19.00	14.25		
01624	(L)-ARGININE CAPS - 700 mg, 200 veg. caps	26.50	19.88		
	Buy 4 bottles, price each	23.25	17.44		
01025	(L)-ARGININE FREE-FORM POWDER - 100 grams	15.98	11.99		
	Buy 4 bottles, price each	14.31	10.73		
01617	ARTHRONAX™ w/THEAFLAVINS & APRESFLEX™ - 120 veg. caps	44.00	33.00		
	Buy 4 bottles, price each	40.00	30.00		
01618	ARTHRONAX™ ADVANCED w/UC-II® & APRESFLEX™ - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
01404	ARTHRO-IMMUNE JOINT SUPPORT - 60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
00919	ARTICHOKE LEAF EXTRACT - 500 mg, 180 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.38	19.04		
00080	ASCORBIC ACID POWDER - 454 grams	38.00	28.50		
	Buy 4 bottles, price each	34.93	26.20		
00082	ASCORBYL PALMITATE - 500 mg, 100 caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		

SUB-TOTAL OF COLUMN 1

No.		Retail Each	Member Each	Qty	Total
00888	ASHWAGANDHA EXTRACT (OPTIMIZED) - 60 veg. caps	\$10.00	\$7.50		
	Buy 4 bottles, price each	9.00	6.75		
01066	ASPIRIN - 81 mg, 300 enteric coated tablets	6.00	4.50		
	Buy 4 bottles, price each	5.33	4.00		
00708	ASTAXANTHIN - 2 mg, 30 softgels	10.25	7.69		
B					
00920	BENFOTIAMINE w/ THIAMINE - 100 mg, 120 veg. caps	\$19.95	\$14.96		
	Buy 4 bottles, price each	18.60	13.95		
00925	BENFOTIAMINE (MEGA) - 250 mg, 120 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01206	BERRY COMPLETE - 30 veg. caps	21.00	15.75		
	Buy 4 bottles, price each	18.67	14.00		
01406	BERRY COMPLETE w/RZD™ ACAI (ENHANCED) - 60 veg. caps	29.00	21.75		
	Buy 4 bottles, price each	26.00	19.50		
00664	BETA-CAROTENE - 25,000 IU, 100 softgels	11.25	8.44		
	Buy 4 bottles, price each	10.13	7.60		
00653	BETTERWOMAN® - 40 caps	40.00	30.00		
	Buy 4 bottles, price each	38.00	28.50		
01622	BIFIDO GI BALANCE - 60 caps	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01073	BILBERRY EXTRACT - 100 mg, 100 veg. caps	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
01512	BIOACTIVE MILK PEPTIDES - 30 caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
01631	BIO-COLLAGEN w/PATENTED UC-II® - 60 caps	36.00	27.00		
	Buy 4 bottles, price each	32.00	24.00		
*01006	BIOSIL™ - 5 mg, 30 veg. caps	18.95	15.16		
*01007	BIOSIL™ - 1 fl oz	29.99	23.99		
00102	BIOTIN - 600 mcg, 100 caps	7.50	5.63		
	Buy 4 bottles, price each	6.50	4.88		
00145	BIOTIN POWDER - 30 grams	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
01008	BLAST™ - 600 grams of powder	26.95	20.21		
51526	BLENDER - 28 oz bottle	8.99	6.74		
01636	BLOOD FRUIT - 32 oz bottle	49.95	37.46		
70000	BLOOD PRESSURE MONITOR - ARM CUFF (medium)	99.95	64.97		
70004	BLOOD PRESSURE MONITOR - WRIST (travel size)	69.95	52.46		
01214	BLUEBERRY EXTRACT - 60 veg. caps	22.50	16.88		
	Buy 4 bottles, price each	20.00	15.00		
01438	BLUEBERRY EXTRACT w/ POMEGRANATE - 60 veg. caps	30.00	22.50		
	Buy 4 bottles, price each	27.00	20.25		
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) - 300 veg. caps	56.00	42.00		
	Buy 4 bottles, price each	50.00	37.50		
01611	BONE RESTORE - 150 caps	22.50	16.88		
	Buy 4 bottles, price each	19.50	14.63		
01211	BONE STRENGTH FORMULA w/KOACT® - 120 caps	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00313	BONE-UP® - 240 caps	24.95	18.71		
	Buy 4 bottles, price each	22.50	16.88		
01379	BOOSTER - 60 softgels	48.00	36.00		
	Buy 4 bottles, price each	44.00	33.00		
01680	BOOSTER w/ADVANCED K2 COMPLEX (SUPER) - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00621	BORON - 3 mg, 100 caps	5.95	4.46		
	Buy 4 bottles, price each	5.25	3.94		

SUB-TOTAL OF COLUMN 2

No.		Retail Each	Member Each	Qty	Total
00202	BOSWELLA - 100 caps Buy 4 bottles, price each	\$38.00 30.00	\$28.50 22.50		
00258	BOSWELLA TOPICAL CREAM - 4 oz Buy 4 jars, price each	15.00 13.00	11.25 9.75		
01253	BRANCHED CHAIN AMINO ACIDS - 90 veg. caps Buy 4 bottles, price each	19.50 17.00	14.63 12.75		
00999	BREAST HEALTH FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
00893	BRITE EYES III - 2 vials, 5 ml each Buy 4 boxes, price each	34.00 32.00	25.50 24.00		
00136	BROMELAIN POWDER - 100 grams Buy 4 bottles, price each	21.00 18.75	15.75 14.06		
01203	BROMELAIN (SPECIALLY-COATED) - 500 mg, 60 enteric coated tablets Buy 4 bottles, price each	21.00 19.00	15.75 14.25		
00884	BUTTERBUR EXT. w/STANDARDIZED ROSMARINIC ACID - 60 softgels Buy 4 bottles, price each	44.00 39.60	33.00 29.70		
C					
01015	CALCIUM CITRATE w/VITAMIN D - 300 caps Buy 4 bottles, price each	\$24.00 21.25	\$18.00 15.94		
00535	CALCIUM D-GLUCARATE - 200 mg, 60 caps Buy 4 bottles, price each	18.00 15.00	13.50 11.25		
01693	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC™ GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 414 grams powder Buy 4 jars, price each Buy 8 jars, price each	60.00 54.00 50.00	45.00 40.50 37.50		
01694	CALORIE CONTROL WEIGHT MANAGEMENT FORMULA w/COFFEEGENIC™ GREEN COFFEE EXTRACT BLUEBERRY FLAVOR - 60 individual packs Buy 4 boxes, price each Buy 8 boxes, price each	64.00 60.00 56.00	48.00 45.00 42.00		
00118	CAPSULE FILLER MACHINE FOR "00" CAPSULES Buy 4 machines, price each	18.95 18.25	14.21 13.69		
00613	CAPSULE FILLER MACHINE FOR "0" CAPSULES Buy 4 machines, price each	18.95 18.25	14.21 13.69		
00916	CARNITINE w/GLYCOCARN® (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01041	L-CARNITINE - 500 mg, 30 caps Buy 4 bottles, price each	15.00 13.20	11.25 9.90		
01258	CARNOSOOTHE w/PICROPROTECT™ - 60 veg. caps Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
01287	CARNOSINE (SUPER) - 500 mg, 90 caps Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01003	CAT MIX - 100 grams powder Buy 4 jars, price each	15.00 12.00	11.25 9.00		
00390	CDP CHOLINE CAPS - 250 mg, 60 caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
00998	CELL SENSOR-EMF DETECTION METER	39.95	29.95		
01370	CHILDREN'S FORMULA LIFE EXTENSION MIX™ - 100 chewable tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00550	CHLORELLA - 500 mg, 200 tablets Buy 4 bottles, price each	23.50 21.00	17.63 15.75		
01571	CHLOROPHYLLIN w/ZINC - 100 mg, 100 veg. caps Buy 4 bottles, price each	24.00 20.00	18.00 15.00		
01359	CHO-LESS™ - 90 capsules	32.50	24.38		
00541	CHOLINE CHLORIDE - 16 oz liquid Buy 4 bottles, price each	14.95 14.00	11.21 10.50		

SUB-TOTAL OF COLUMN 3

No.		Retail Each	Member Each	Qty	Total
00364	CHONDROITIN SULFATE CONCENTRATE - 400 mg, 60 tablets Buy 4 bottles, price each	\$19.95 18.00	\$14.96 13.50		
01477	CHROMIUM ULTRA - 100 veg. caps Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
01504	CHROMIUM W/CROMINEX® 3+ (OPTIMIZED) - 500 mcg, 60 veg. caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
00551	CILANTRO HERBAL EXTRACT - 1 oz Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
01503	CINSULIN® W/INSEA® AND CROMINEX® 3+ - 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
00069	CITRUS BIOFLAVONOID - 100 caps Buy 4 bottles, price each	16.79 15.56	12.59 11.67		
00818	CLA BLEND w/SESAME LIGNANS (SUPER) - 1000 mg, 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	36.00 33.00 26.33	27.00 24.75 19.75		
00819	CLA BLEND w/GUARANA & SESAME (SUPER) -1000 mg, 120 softgels Buy 4 bottles, price each	42.00 38.33	31.50 28.75		
01078	CLEANSE SMART - 60 caps	31.99	23.99		
00050	COD LIVER OIL (EMULSIFIED) - 12 fl oz (355 ml) Buy 4 bottles, price each	14.58 12.27	10.94 9.20		
00293	COD LIVER OIL (EMULSIFIED) - 100 softgels (Emulsified) Buy 4 bottles, price each	10.97 10.34	8.23 7.76		
00922	COGNITEX® w/PREGNENOLONE & NEUROPROTECTION COMPLEX - 90 softgels Buy 4 bottles, price each Buy 12 bottles, price each	74.00 66.60 64.00	55.50 49.95 48.00		
00921	COGNITEX® w/o PREGNENOLONE w/NEUROPROTECTION COMPLEX - 90 softgels Buy 4 bottles, price each Buy 12 bottles, price each	72.00 64.00 62.00	54.00 48.00 46.50		
01421	COGNITEX® BASICS - 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
00110	COMPLETE B-COMPLEX - 180 caps Buy 4 bottles, price each	21.50 18.00	16.13 13.50		
01595	COMPREHENSIVE NUTRIENT PACK - 30-day supply Buy 4 bottles, price each	189.00 171.00	141.75 128.25		
00119	COPPER CAPSULES - 2 mg, 100 caps Buy 4 bottles, price each	9.91 8.96	7.43 6.72		
00949	COQ10™ w/ α-LIMONENE (SUPER ABSORBABLE) - 50 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	25.00 22.00 20.00	18.75 16.50 15.00		
00950	COQ10™ w/ α-LIMONENE (SUPER ABSORBABLE) - 100 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	66.00 60.00 56.00	49.50 45.00 42.00		
01226	COQ10 (SUPER UBIQUINOL) - 100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	56.00 52.00 48.00	42.00 39.00 36.00		
01426	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -100 mg, 60 softgels Buy 4 bottles, price each Buy 10 bottles, price each	62.00 56.00 52.00	46.50 42.00 39.00		
01425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 100 softgels Buy 4 bottles, price each Buy 10 bottles, price each	58.00 53.00 50.00	43.50 39.75 37.50		
01427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -50 mg, 30 softgels Buy 4 bottles, price each	20.00 18.00	15.00 13.50		

SUB-TOTAL OF COLUMN 4

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
C CONTINUED					
01431	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (SUPER UBIQUINOL) -200 mg, 30 softgels	\$62.00	\$46.50		
	Buy 4 bottles, price each	56.00	42.00		
	Buy 10 bottles, price each	52.00	39.00		
01397	CORDYCEPS CS-4™ - 60 veg. caps	29.99	22.49		
01053	CORIOLUS SUPER STRENGTH - 600 mg, 150 veg. caps	99.95	74.96		
80140	COSMESIS ADVANCED UNDER EYE SERUM w/STEM CELLS - 33 oz	49.00	36.75		
	Buy 2 bottles, price each	42.00	31.50		
80139	COSMESIS AMBER SELF MICRODERMABRASION - 2 oz	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80118	COSMESIS ANTI-AGING MASK - 2 oz	72.00	54.00		
	Buy 2 bottles, price each	63.36	47.52		
80134	COSMESIS ANTI-GLYCATION SERUM - 1 oz W/BLUEBERRY & POMEGRANATE EXTRACTS	33.00	24.75		
	Buy 2 bottles, price each	31.35	23.51		
80133	COSMESIS ANTIOXIDANT FACIAL MIST - 2 oz	32.00	24.00		
	Buy 2 bottles, price each	30.40	22.80		
80127	COSMESIS ANTIOXIDANT REJUVENATING FOOT CREAM - 2 oz	45.00	33.75		
	Buy 2 jars, price each	42.80	32.10		
80128	COSMESIS ANTIOXIDANT REJUVENATING FOOT SCRUB - 2 oz	59.00	44.25		
	Buy 2 jars, price each	51.92	38.94		
80117	COSMESIS ANTIOXIDANT REJUVENATING HAND CREAM - 2 oz	64.00	48.00		
	Buy 2 jars, price each	57.49	43.12		
80121	COSMESIS ANTIOXIDANT REJUVENATING HAND SCRUB - 2 oz	58.00	43.50		
	Buy 2 jars, price each	51.04	38.28		
80105	COSMESIS ANTI-REDNESS & BLEMISH LOTION - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80144	COSMESIS BROCCOLI SPROUT CREAM - 1 oz	46.00	34.50		
	Buy 2 jars, price each	39.00	29.25		
80120	COSMESIS CORRECTIVE CLEARING MASK - 2 oz	64.50	48.38		
	Buy 2 jars, price each	56.76	42.57		
80141	COSMESIS DNA REPAIR CREAM - 1 oz jar	49.00	36.75		
	Buy 2 jars, price each	42.00	31.50		
80108	COSMESIS ESSENTIAL PLANT LIPIDS REPARATIVE SERUM - 1 oz	74.95	56.21		
	Buy 2 bottles, price each	65.95	49.46		
80123	COSMESIS FACE REJUVENATING ANTIOXIDANT CREAM - 2 oz	69.50	52.13		
	Buy 2 jars, price each	61.16	45.87		
80107	COSMESIS FINE LINE-LESS - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80131	COSMESIS HAIR SUPPRESS FORMULA - 4 oz	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80137	COSMESIS HEALING FORMULA ALL-IN-ONE CREAM - 1 oz	53.00	39.75		
	Buy 2 jars, price each	45.43	34.07		
80115	COSMESIS HEALING MASK - 2 oz	64.50	48.38		
	Buy 2 bottles, price each	56.76	42.57		
80102	COSMESIS HEALING VITAMIN K CREAM - 1 oz	79.50	59.63		
	Buy 2 bottles, price each	69.96	52.47		
80109	COSMESIS HYALURONIC FACIAL MOISTURIZER - 1 oz	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80110	COSMESIS HYALURONIC OIL-FREE FACIAL MOISTURIZER - 1 oz	58.00	43.50		
	Buy 2 bottles, price each	51.04	38.28		
80138	COSMESIS HYDRATING ANTI-OXIDANT FACE MIST - 4 oz	39.95	29.96		
	Buy 2 bottles, price each	38.00	28.50		
80103	COSMESIS LIFTING & TIGHTENING COMPLEX - 1 oz	74.50	55.88		
	Buy 2 tubes, price each	65.56	49.17		

SUB-TOTAL OF COLUMN 5

No.		Retail Each	Member Each	Qty	Total
80135	COSMESIS MELATONIN CREAM - 1 oz	\$33.00	\$24.75		
	Buy 2 jars, price each	27.10	20.33		
80114	COSMESIS MILD FACIAL CLEANSER - 8 oz	59.00	44.25		
	Buy 2 bottles, price each	51.92	38.94		
80122	COSMESIS NECK REJUVENATING ANTIOXIDANT CREAM - 2 oz	64.00	48.00		
	Buy 2 jars, price each	56.32	42.24		
80111	COSMESIS PIGMENT CORRECTING CREAM - 1/2 oz	74.00	55.50		
	Buy 2 bottles, price each	65.12	48.84		
80106	COSMESIS REJUVENATING SERUM - 1 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80142	COSMESIS RESVERATROL ANTI-OXIDANT SERUM - 1 oz	46.00	34.50		
	Buy 2 bottles, price each	39.00	29.25		
80112	COSMESIS SKIN LIGHTENING SERUM - 1/2 oz	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80130	COSMESIS SKIN STEM CELL SERUM - 1 oz	74.00	55.50		
	Buy 2 bottles, price each	69.00	51.75		
80143	COSMESIS SKIN STEM CELL CREAM W/ALPINE ROSE - 1 oz jar	66.00	49.50		
	Buy 2 jars, price each	58.00	43.50		
80116	COSMESIS ULTRA LIP PLUMPER - 1/3 oz	64.00	48.00		
	Buy 2 bottles, price each	56.32	42.24		
80101	COSMESIS ULTRA WRINKLE RELAXER - 1 oz	89.95	67.46		
	Buy 2 bottles, price each	79.76	59.82		
80113	COSMESIS UNDER EYE REFINING SERUM - 1/2 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80104	COSMESIS UNDER EYE RESCUE CREAM - 1/2 oz	74.50	55.88		
	Buy 2 bottles, price each	65.56	49.17		
80129	COSMESIS VITAMIN C SERUM - 1 oz	85.00	63.75		
	Buy 2 bottles, price each	74.80	56.10		
80136	COSMESIS VITAMIN D LOTION - 4 oz	36.00	27.00		
	Buy 2 bottles, price each	33.66	25.25		
00862	CRAN-MAX® - 500 mg, 60 veg. caps	17.50	13.13		
	Buy 4 bottles, price each	15.00	11.25		
01424	CRAN-MAX® with UTIrose™ (OPTIMIZED) - 60 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00609	CREATINE CAPSULES - 120 caps	10.95	8.21		
	Buy 4 bottles, price each	9.25	6.94		
00610	CREATINE POWDER - 500 grams	29.00	21.75		
	Buy 4 bottles, price each	26.63	19.97		
01096	CREATINE WHEY GLUTAMINE POWDER - 1000 grams (vanilla)	54.00	40.50		
	Buy 4 bottles, price each	52.00	39.00		
01530	CRUCIFEROUS VEGETABLE SOUP - 32 oz. pouch	11.95	8.96		
	Buy 6 pouches, price each	11.25	8.44		
01531	(SPICY) CRUCIFEROUS VEGETABLE SOUP - 32 oz. pouch	11.95	8.96		
	Buy 6 pouches, price each	11.25	8.44		
01429	CR MIMETIC LONGEVITY FORMULA - 60 veg. caps	39.00	29.25		
	Buy 4 bottles, price each	36.00	27.00		
*33840	CRWAY GREAT GLUCOSE CONTROL CD	98.00	82.00		
**CRWAY	CR WAY OPTIMAL HEALTH PROGRAM SOFTWARE	195.00	195.00		
00407	CURCUMIN® (SUPER BIO) - 400 mg, 60 veg. caps	38.00	28.50		
	Buy 4 bottles, price each	35.00	26.25		

D

01376	DAILY GINGER® - 90 veg. caps	\$21.95	\$16.46		
01313	DERMAWHEY - 400 mg, 60 caps	65.00	48.75		
	Buy 4 bottles, price each	59.00	44.25		
00995	DHA 240 - 240 mg, 60 softgels	19.00	14.25		
	Buy 4 bottles, price each	17.00	12.75		

SUB-TOTAL OF COLUMN 6

No.		Retail Each	Member Each	Qty	Total
00658	7-KETO® DHEA METABOLITE - 25 mg, 100 caps Buy 4 bottles, price each	\$28.00 24.00	\$21.00 18.00		
01479	7-KETO® DHEA METABOLITE - 100 mg, 60 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00607	DHEA - 25 mg, 100 tablets (dissolve in mouth) Buy 4 bottles, price each	14.00 11.75	10.50 8.81		
01478	DHEA COMPLETE - 60 veg. caps Buy 4 bottles, price each	48.00 43.20	36.00 32.40		
00335	DHEA - 25 mg, 100 caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
00454	DHEA - 15 mg, 100 caps Buy 4 bottles, price each	12.00 10.00	9.00 7.50		
00882	DHEA - 50 mg, 60 caps Buy 4 bottles, price each	16.00 14.00	12.00 10.50		
00883	DHEA - 100 mg, 60 caps Buy 4 bottles, price each	22.50 19.00	16.88 14.25		
01358	DIGEST RC - 30 tablets Buy 4 boxes, price each	19.95 17.00	14.96 12.75		
01272	DIGESTIVE ENZYMES (ENHANCED SUPER) - 100 veg. caps Buy 4 bottles, price each	18.95 16.00	14.21 12.00		
00034	D,L-PHENYLALANINE CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	18.75 16.00	14.06 12.00		
00257	DMAE BITARTRATE - 150 mg, 200 caps Buy 4 bottles, price each	14.00 10.50	10.50 7.88		
00059	DMG - 125 mg, 60 tablets Buy 4 boxes, price each	22.80 21.00	17.10 15.75		
01570	DNA PROTECTION FORMULA - 60 veg. caps Buy 4 bottles, price each	34.00 32.00	25.50 24.00		
00544	DOG MIX - 100 grams powder Buy 4 jars, price each	19.50 16.00	14.63 12.00		
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA - 2 oz Buy 4 bottles, price each	39.95 32.00	29.96 24.00		
00320	DR. PROCTOR'S HAIR FORMULA SHAMPOO - 8 oz Buy 4 bottles, price each	24.95 22.00	18.71 16.50		
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE - 2.4 oz Buy 4 jars, price each	39.95 38.95	29.96 29.21		
00240	DUAL-C - 90 caps Buy 4 bottles, price each	12.00 10.50	9.00 7.88		
E					
00388	ECHINACEA EXTRACT - 250 mg, 60 caps Buy 4 bottles, price each	\$14.35 12.50	\$10.76 9.38		
01395	EDTA - 500 mg, 60 caps	9.98	7.49		
01321	ELASTIN & COLLAGEN BODY FIRING LOTION - 8 fl. oz.	10.00	7.50		
01498	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ - 60 softgels Buy 4 bottles, price each	56.00 52.00	42.00 39.00		
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® - 60 veg. caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
00625	EPA/DHA (MEGA) - 120 softgels Buy 4 bottles, price each	19.95 18.00	14.96 13.50		
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 - 600 mg, 30 veg. tabs Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01514	EYE PRESSURE SUPPORT w/MIRTOGENOL® - 30 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		

SUB-TOTAL OF COLUMN 7

No.		Retail Each	Member Each	Qty	Total
F					
01054	FACE MASTER® PLATINUM	\$199.00	\$199.00		
00965	FAST-ACTING JOINT FORMULA - 30 caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
20053	FEM DOPHILUS® - 30 caps	25.95	19.46		
20055	FEM DOPHILUS® - 60 caps	39.95	29.96		
01064	FEMMENESENCE MACAPAUSE® - 120 veg. caps	34.99	26.24		
01311	FERNBLOCK® w/SENDARA™ (ENHANCED) - 30 veg. caps Buy 4 bottles, price each	39.00 35.00	29.25 26.25		
00229	FIBER FOOD CAPS - 200 caps Buy 4 bottles, price each Buy 10 bottles, price each	15.00 12.50 11.90	11.25 9.38 8.93		
00718	FIBRINOGEN RESIST™ - 30 veg. caps Buy 4 bottles, price each	49.00 44.00	36.75 33.00		
00873	FLAXSEED POWDER (HI-LIGNAN® NUTRI-FLAX®) - 16 oz powder	9.95	7.46		
01384	FLORADIX® IRON & HERBS - 17 fl. oz	43.99	35.19		
01382	FLORAVITAL® IRON & HERBS - 17 fl. oz	43.99	35.19		
01212	FLUSH + BE FIT - 2- week cleanse for women	29.99	22.49		
01439	FOLATE (OPTIMIZED) (L-METHYLFOLATE) 1000 mcg - 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00347	FOLIC ACID + B12 CAPSULES - 200 caps Buy 4 bottles, price each	10.50 9.50	7.88 7.13		
00300	FORSKOLIN - 10 mg, 60 caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
01513	FUCOIDAN w/MARITECH® 926 (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 33.00	27.00 24.75		
00993	FUCOXANTHIN-SLIM™ - 90 softgels Buy 4 bottles, price each	44.00 39.00	33.00 29.25		
G					
00127	GABA POWDER - 100 grams Buy 4 bottles, price each	\$23.75 22.50	\$17.81 16.88		
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS - 60 softgels Buy 4 bottles, price each	42.00 37.00	31.50 27.75		
00759	GAMMA E TOCOPHEROL w/SESAME LIGNANS - 60 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01394	(OPTIMIZED) GARLIC - 200 veg. caps Buy 4 bottles, price each	24.95 21.00	18.71 15.75		
01378	GARLIC FORCE™ - 30 softgels	34.95	26.21		
00117	GELATIN CAPSULES - 1000 empty caps size "00" Buy 4 bags, price each	19.00 18.00	14.25 13.50		
01301	GH PITUITARY SUPPORT DAY FORMULA - 120 vegetarian tabs Buy 4 bottles, price each	48.00 44.00	36.00 33.00		
01302	GH PITUITARY SUPPORT NIGHT FORMULA - 120 veg. caps Buy 4 bottles, price each	25.00 22.50	18.75 16.88		
01228	GINGER FORCE - 60 softgels	29.95	22.46		
00778	GINKGO BILOBA CERTIFIED EXTRACT™ - 120 mg, 365 caps Buy 2 bottles, price each	46.00 43.50	34.50 32.63		
00504	GINKGO EXTRACT (SUPER) - 120 mg, 100 caps Buy 4 bottles, price each	29.00 26.50	21.75 19.88		
01032	(PANAX RED) GINSENG - 60 veg. caps	29.99	22.49		
00756	GLA WITH SESAME LIGNANS (MEGA) - 60 softgels Buy 4 bottles, price each	19.50 18.00	14.63 13.50		
00345	(L) GLUTAMINE CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00141	(L)-GLUTAMINE POWDER - 100 grams Buy 4 bottles, price each	19.00 16.88	14.25 12.66		

SUB-TOTAL OF COLUMN 8

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
00522	GLUCOSAMINE/CHONDROITIN CAPSULES - 100 caps Buy 4 bottles, price each	\$38.00 32.00	\$28.50 24.00		
00512	GLUCOFIT™ - 100 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00113	GLUTATHIONE, CYSTEINE & C - 750 mg, 100 caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00314	L-GLUTATHIONE (MEGA) - 250 mg, 60 caps Buy 4 bottles, price each	39.64 35.68	29.73 26.76		
00795	GLYCINE - 1000 mg, 100 caps Buy 4 bottles, price each	12.00 10.80	9.00 8.10		
00128	GLYCINE POWDER - 300 grams Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01091	GRAPE EXTRACT w/RESVERATROL (WHOLE) - 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01411	GRAPE SEED EXTRACT w/RESVERATROL & PTEROSTILBENE - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 34.00	27.00 25.50		
01604	GREEN COFFEE EXTRACT COFFEEGENIC™ - 200 mg, 90 veg. caps Buy 4 bottles, price each	25.00 22.00	18.75 16.50		
01620	GREEN COFFEE EXTRACT COFFEEGENIC™ - 400 mg, 90 veg. caps Buy 4 bottles, price each	38.00 34.00	28.50 25.50		
01607	GREEN COFFEE EXTRACT COFFEEGENIC™ - 90 veg. caps w/GLUCOSE CONTROL COMPLEX Buy 4 bottles, price each	58.00 52.00	43.50 39.00		
00953	GREEN TEA EXTRACT (MEGA) - lightly caffeinated - 100 veg. caps Buy 4 bottles, price each	28.00 26.50	21.00 19.88		
00954	GREEN TEA EXTRACT (MEGA) - decaffeinated - 100 veg. caps Buy 4 bottles, price each	28.00 26.50	21.00 19.88		
01606	GREEN TEA w/COFFEEGENIC™ GREEN COFFEE EXTRACT (MEGA) 120 veg. caps, low caffeine Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01605	GREEN TEA w/COFFEEGENIC™ GREEN COFFEE EXTRACT (MEGA) 120 veg. caps Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
H					
01074	5 HTP - 100 mg, 60 caps	\$27.95	\$20.96		
00010	HAIR CONDITIONER - 16 oz Buy 4 bottles, price each	6.00 4.50	4.50 3.38		
00230	HCA - 90 caps Buy 4 bottles, price each	18.00 15.50	13.50 11.63		
01629	HEAROS™ EAR PLUGS - 1 pack - regular size	14.00	10.50		
01635	HEAROS™ EAR PLUGS - 1 pack - small size	14.00	10.50		
01393	HEPATOPRO - 900 mg, 60 softgels Buy 4 bottles, price each	50.00 46.00	37.50 34.50		
01433	HOLY BASIL - 60 softgel caps	34.95	26.21		
01434	HOLY BASIL - 120 softgel caps	54.95	41.21		
01435	HOMOCYSTEINE RESIST - 100 caps Buy 4 bottles, price each	24.00 21.60	18.00 16.20		
01527	HUPERZINE A - 200 mcg, 60 veg caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
00661	HYDRODERM® - 1 oz Buy 2 bottles, price each	79.95 65.33	59.96 49.00		
I					
*01060	i26® HYPERIMMUNE EGG - 140 grams powder	\$49.99	\$42.00		
*01319	i26® HYPERIMMUNE EGG - 135 capsules	31.99	25.59		
*01318	i26® HYPERIMMUNE EGG CHEWABLES - (vanilla) 45 tablets	31.99	25.59		
01065	IDEAL BOWEL SUPPORT 299V - 30 veg. caps	21.95	16.46		
SUB-TOTAL OF COLUMN 9					

No.		Retail Each	Member Each	Qty	Total
00955	IMMUNE PROTECT w/PARACTIN® - 30 veg. caps Buy 4 bottles, price each	\$29.50 26.55	\$22.13 19.91		
01049	INNERPOWER™ - 555 grams powder	42.00	31.50		
00155	INOSINE - 500 mg, 60 caps Buy 4 bottles, price each	22.95 21.00	17.21 15.75		
00410	INOSITOL CAPSULES - 1000 mg, 360 caps Buy 4 bottles, price each	48.00 43.75	36.00 32.81		
00108	INOSITOL POWDER - 100 grams Buy 4 bottles, price each	18.00 16.88	13.50 12.66		
01292	INTEGRA-LEAN® IRVINGIA - 150 mg, 60 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01002	IODORAL® - 180 tabs	50.00	37.50		
00563	IRON PROTEIN PLUS - 300 mg, 100 caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01492	IRVINGIA w/PHASE 3™ - 120 veg. caps CALORIE CONTROL COMPLEX (OPTIMIZED) Buy 4 bottles, price each	56.00 48.00	42.00 36.00		
J, K					
00056	JARRO-DOPHILUS EPS™ - 60 veg. caps	\$21.95	\$16.46		
01387	JARRO-DOPHILUS ORAL PROBIOTIC GUM - Pom-Berry flavor, 8 pieces	4.95	3.71		
01388	JARRO-DOPHILUS ORAL PROBIOTIC LOZENGES - Pom-Berry flavor, 8 pieces	4.95	3.71		
01224	K w/ADVANCED K2 COMPLEX (SUPER) - 90 softgels Buy 4 bottles, price each	26.00 23.00	19.50 17.25		
01600	KRILL HEALTHY JOINT FORMULA - 30 softgels Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01050	(NKO) KRILL OIL - 60 softgels	33.95	25.46		
00316	KYOLIC® GARLIC FORMULA 102 - 200 caps Buy 4 bottles, price each	23.95 20.50	17.96 15.38		
00214	KYOLIC® GARLIC FORMULA 105 - 200 caps Buy 4 bottles, price each	22.95 18.25	17.21 13.69		
00789	KYOLIC® RESERVE - 600 mg, 120 caps Buy 4 bottles, price each	24.75 21.45	18.56 16.09		
L					
00513	LACTOFERRIN (APOLACTOFERRIN) CAPS - 60 caps Buy 4 bottles, price each	\$44.00 40.00	\$33.00 30.00		
00017	LAVILIN UNDERARM DEODORANT - 12.5 grams cream Buy 4 jars, price each	16.99 15.75	12.74 11.81		
00020	LECITHIN - 16 oz. granules Buy 4 jars, price each	15.00 12.50	11.25 9.38		
01655	LIFE EXTENSION MIX™ - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01657	LIFE EXTENSION MIX™ w/EXTRA NIACIN - 315 tablets Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
01654	LIFE EXTENSION MIX™ - 490 caps Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01656	LIFE EXTENSION MIX™ POWDER - 14.81 oz Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
01665	LIFE EXTENSION MIX™ - 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 69.50	73.50 64.50 52.13		
SUB-TOTAL OF COLUMN 10					

No.		Retail Each	Member Each	Qty	Total
01667	LIFE EXTENSION MIX™ W/EXTRA NIACIN 315 tablets w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	\$98.00 86.00 69.50	\$73.50 64.50 52.13		
01664	LIFE EXTENSION MIX™ - 490 caps w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	110.00 98.00 85.00	82.50 73.50 63.75		
01666	LIFE EXTENSION MIX™ POWDER - 14.81 oz w/o copper Buy 4 bottles, price each Buy 10 bottles, price each	98.00 86.00 72.00	73.50 64.50 54.00		
00263	LIFE FLORA™ - 300 mg, 120 caps Buy 4 bottles, price each	20.50 18.75	15.38 14.06		
01377	LIFESHIELD® BREATHE™ - 60 veg. caps	34.95	26.21		
01349	LIFESHIELD® CORDYCEPS - 60 veg. caps	34.95	26.21		
01314	LIFESHIELD® IMMUNITY™ - 60 veg. caps	39.95	29.96		
01339	LIFESHIELD® REISHI™ - 60 veg. caps	34.95	26.21		
01608	LIVER EFFICIENCY FORMULA - 30 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01227	LIVER FORCE - 30 veg. caps	34.95	26.21		
01639	5-LOX INHIBITOR W/APRESFLEX™ - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01013	L-LYSINE - 620 mg, 100 caps Buy 4 bottles, price each	9.00 8.00	6.75 6.00		
00129	L-LYSINE POWDER - 300 grams Buy 4 bottles, price each	16.00 13.75	12.00 10.31		
01470	LURALEAN® CAPS SPECIAL PROPOLMANNAN PARTICLE SIZE - 120 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
00455	LYCOPENE EXTRACT (MEGA) - 15 mg, 90 softgels Buy 4 bottles, price each	35.00 30.00	26.25 22.50		
M					
01369	MAGNESIUM CAPS - 500 mg, 100 veg. caps Buy 4 bottles, price each	\$10.00 9.00	\$7.50 6.75		
00502	MAGNESIUM CITRATE - 160 mg, 100 caps Buy 4 bottles, price each	9.00 7.50	6.75 5.63		
00704	MAITAKE™ SX-FRACTION - 90 veg. tablets	49.95	37.46		
00547	MELATONIN - 300 mcg, 100 caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		
01083	MELATONIN - 500 mcg, 200 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00329	MELATONIN - 1 mg, 60 caps Buy 4 bottles, price each	5.00 4.63	3.75 3.47		
00330	MELATONIN - 3 mg, 60 caps Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01086	MELATONIN - 3 mg, 60 time-release veg. caps Buy 4 bottles, price each	10.50 9.38	7.88 7.04		
00331	MELATONIN - 10 mg, 60 caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00332	MELATONIN - 3 mg, 60 lozenges Buy 4 bottles, price each	8.00 6.88	6.00 5.16		
01087	MELATONIN TIME RELEASE - 300 mcg, 100 veg. caps Buy 4 bottles, price each	6.25 5.63	4.69 4.22		
01088	MELATONIN TIME RELEASE - 750 mcg, 60 veg. caps Buy 4 bottles, price each	5.75 5.00	4.31 3.75		

SUB-TOTAL OF COLUMN 11

No.		Retail Each	Member Each	Qty	Total
01009	MEMORY UPGRADE™ - 600 grams powder	\$26.95	\$20.21		
01536	METHYLCOBALAMIN - 1 mg, 60 lozenges (vanilla) Buy 4 bottles, price each	9.95 8.00	7.46 6.00		
01537	METHYLCOBALAMIN - 5 mg, 60 lozenges (vanilla) Buy 4 bottles, price each Buy 10 bottles, price each	32.00 25.00 23.00	24.00 18.75 17.25		
00709	MIGRA-EEZE™ (BUTTERBUR) - 60 softgels Buy 4 bottles, price each	29.50 26.33	22.13 19.75		
01522	MILK THISTLE (CERTIFIED EUROPEAN) - 750 mg, 60 veg. caps Buy 4 bottles, price each	34.00 30.00	25.50 22.50		
01517	MILK THISTLE (CERTIFIED EUROPEAN) - 120 veg. caps Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
00623	MINERAL FORMULA FOR MEN - 100 caps Buy 4 bottles, price each Buy 12 bottles, price each	15.00 12.50 10.83	11.25 9.38 8.13		
00624	MINERAL FORMULA FOR WOMEN - 100 caps Buy 4 bottles, price each Buy 12 bottles, price each	15.00 12.50 10.83	11.25 9.38 8.13		
01315	MIRAFORTE w/STANDARDIZED LIGNANS (SUPER) - 120 caps Buy 4 bottles, price each	62.00 56.00	46.50 42.00		
01569	MITOCHONDRIAL BASICS w/BIOPQQ™ - 30 caps Buy 4 bottles, price each	52.00 46.00	39.00 34.50		
01568	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPQQ™ - 120 caps Buy 4 bottles, price each	94.00 84.00	70.50 63.00		
00803	MIST ORAL III w/COQ10 - 2 fl oz Buy 4 bottles, price each	28.00 25.33	21.00 19.00		
00065	MK-7 - 90 mcg, 60 softgels Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01279	MOUTHWASH W/POMEGRANATE - 16 oz Buy 4 bottles, price each	18.50 17.00	13.88 12.75		
00451	MSM (METHYLSULFONYLMETHANE) - 1000 mg, 100 caps Buy 4 bottles, price each	14.00 11.95	10.50 8.96		
N					
00215	N-ACETYL-L-CYSTEINE - 600 mg, 60 caps Buy 4 bottles, price each	\$14.00 13.50	\$10.50 10.13		
00066	NATTOKINASE - 60 softgels	24.98	18.74		
00891	NATURAL APPETITE CONTROL - 90 softgels Buy 4 bottles, price each	28.00 25.20	21.00 18.90		
00984	NATURAL BP MANAGEMENT - 60 tablets Buy 4 bottles, price each	42.00 37.80	31.50 28.35		
00913	NATURAL ESOPHAGUARD - 10 softgels Buy 2 boxes, price each	19.95 19.00	14.96 14.25		
00712	NATURAL ESTROGEN w/POMEGRANATE EXTRACT - 60 caplets Buy 4 bottles, price each	38.00 33.00	28.50 24.75		
01221	NATURAL FEMALE SUPPORT - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01471	NATURAL GLUCOSE ABSORPTION CONTROL - 60 veg. caps Buy 4 bottles, price each	39.00 36.00	29.25 27.00		
00698	NATURAL RELIEF 1222™ - 2 oz Buy 4 tubes, price each	28.00 25.00	21.00 18.75		
01627	NATURAL SEX FOR WOMEN® (ADVANCED) - 60 veg. caps Buy 4 bottles, price each	42.00 38.00	31.50 28.50		

SUB-TOTAL OF COLUMN 12

Buyers Club Order Form

To order call: 1.954.766.8433 or 1.800.544.4440

No.		Retail Each	Member Each	Qty	Total
N CONTINUED					
01626	NATURAL SEX FOR WOMEN® 50+ (ADVANCED) - 90 veg. caps Buy 4 bottles, price each	\$59.00 45.33	\$44.25 34.00		
01084	NATURAL SLEEP® - 3 mg, 60 veg. caps Buy 4 bottles, price each	12.99 10.00	9.74 7.50		
01507	NATURAL SLEEP® (ENHANCED) W/ MELATONIN - 30 caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01511	NATURAL SLEEP® (ENHANCED) W/O MELATONIN - 30 caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
01085	NATURAL SLEEP MELATONIN® - 5 mg, 60 veg. caps Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00987	NATURAL STRESS RELIEF - 30 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
01603	NEURO-MAG™ MAGNESIUM L-THREONATE - 90 veg. caps Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
01602	NEURO-MAG™ L-THREONATE W/CALCIUM & VITAMIN D 205 grams - Lemon flavor Buy 4 bottles, price each	40.00 36.00	30.00 27.00		
00373	NO-FLUSH NIACIN - 800 mg, 100 caps Buy 4 bottles, price each	19.00 17.00	14.25 12.75		
01035	NUTRIM - 225 grams powder	25.95	19.46		
O					
01623	OLIVE LEAF VASCULAR SUPPORT - 500 mg, 60 veg. caps Buy 4 bottles, price each	\$22.00 20.00	\$16.50 15.00		
01518	OMEGA-3 CHEWABLES - 60 softchews, 120 mg EPA/DHA Buy 4 pouches, price each	24.00 22.00	18.00 16.50		
01483	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 60 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
01482	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 24.90	24.00 21.00 18.68		
01484	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) - 120 enteric coated softgels Buy 4 bottles, price each Buy 10 bottles, price each	34.00 31.00 28.00	25.50 23.25 21.00		
01619	OMEGA 3 EPA/DHA W/SESAME LIGNANS & OLIVE FRUIT EXTRACT (SUPER) (SMALL SOFTGEL) - 240 softgels Buy 4 bottles, price each Buy 10 bottles, price each	32.00 28.00 24.90	24.00 21.00 18.68		
01601	ONE-PER-DAY - 60 veg. tablets Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01328	ONLY TRACE MINERALS - 90 caps Buy 4 bottles, price each	15.00 12.50	11.25 9.38		
00915	OPTIZINC® - 30 mg, 90 veg. caps Buy 4 bottles, price each	5.95 5.00	4.46 3.75		
01348	OREGANOFORCE™ - 30 softgels	34.95	26.21		
01070	ORGANIC TOTAL BODY CLEANSE™ - 14-day supply	34.99	26.24		
P					
00107	PABA CAPS - 500 mg, 100 caps Buy 4 bottles, price each	\$15.42 13.59	\$11.57 10.19		
00073	PANCREATIN - 500 mg, 50 caps Buy 4 bottles, price each	13.22 12.12	9.92 9.09		

SUB-TOTAL OF COLUMN 13

No.		Retail Each	Member Each	Qty	Total
01323	PEAK ATP® WITH GLYCO-CARN® - 60 veg. caps Buy 4 bottles, price each	\$59.00 56.00	\$44.25 42.00		
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN - 454 grams powder Buy 4 jars, price each	99.95 95.70	74.96 71.78		
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN - 270 veg. caps	69.95	52.46		
00673	PGX™ SOLUBLE FIBER BLEND (WELLBETX®) -180 caps	34.95	26.21		
00865	PHARMAGABA™ - 60 chewable tablets Buy 4 bottles, price each	29.95 27.00	22.46 20.25		
00368	PHOSPHATIDYLSERINE CAPS - 100 mg, 100 caps Buy 4 bottles, price each	54.00 48.00	40.50 36.00		
00561	POLICOSANOL - 10 mg, 60 tablets Buy 6 bottles, price each	24.00 18.00	18.00 13.50		
01423	POMEGRANATE™ (FULL-SPECTRUM) - 30 softgels Buy 4 bottles, price each	24.00 21.00	18.00 15.75		
00956	POMEGRANATE EXTRACT - 30 veg. caps Buy 4 bottles, price each	19.50 17.55	14.63 13.16		
00957	POMEGRANATE JUICE CONCENTRATE - 16 oz. liquid Buy 4 bottles, price each	25.95 24.00	19.46 18.00		
00577	POTASSIUM IODIDE - 1 box, 14 tablets Buy 4 boxes, price each	6.95 5.25	5.21 3.94		
01500	PQQ CAPS W/BIOPQQ™ - 10 mg, 30 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
00302	PREGNENOLONE - 50 mg, 100 caps Buy 4 bottles, price each	24.00 19.00	18.00 14.25		
00700	PREGNENOLONE - 100 mg, 100 caps Buy 4 bottles, price each	26.00 22.50	19.50 16.88		
***01373	PRELOX® NATURAL SEX FOR MEN® - 60 tablets Buy 4 bottles, price each	52.00 48.00	39.00 36.00		
00571	PRIMAL DEFENSE™ - 90 caplets Buy 4 bottles, price each	49.95 48.50	37.46 36.38		
01329	PROBIOTIC ALL-FLORA® - 60 veg. caps	25.95	19.46		
01326	PROBIOTIC ANTI-AGING™ - 90 veg. caps	30.95	23.21		
01324	PROBIOTIC CLEANSE™ - 90 veg. caps	29.95	22.46		
01322	PROBIOTIC COLON™ - 90 veg. caps	30.95	23.21		
00525	PROBOOST THYMIC PROTEIN A™ - 4 mcg, 30 packets	59.95	44.96		
00869	PRO FEM CREAM - 2 fl oz (Progesterone Cream) Buy 4 bottles, price each	32.00 29.00	24.00 21.75		
01020	PROGREENS® - 15 stick pack	22.50	16.88		
01072	PRO-M INTERNAL DEODORIZER - 500 mg, 100 veg. caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		
01695	PROSTATE FORMULA W/APRESFLEX™ STAND. LIGNANS (ULTRA NAT) 60 softgels Buy 4 bottles, price each Buy 12 bottles, price each	38.00 35.00 32.00	28.50 26.25 24.00		
01092	PROTEIN - VANILLA - (Enhanced Life Extension) -1000 grams powder Buy 4 bottles, price each	54.00 52.00	40.50 39.00		
01093	PROTEIN - CHOCOLATE - (Enhanced Life Extension) -1000 grams powder Buy 4 bottles, price each	54.00 52.00	40.50 39.00		
01094	PROTEIN - NATURAL - (Enhanced Life Extension) -1000 grams powder Buy 4 bottles, price each	54.00 52.00	40.50 39.00		
01095	PROTEIN - BERRY - (Enhanced Life Extension) -1000 grams powder Buy 4 bottles, price each	54.00 52.00	40.50 39.00		
01508	PTEROPURE™ - 50 mg Pterostilbene 60 veg. caps Buy 4 bottles, price each	32.00 30.00	24.00 22.50		
01075	PURE PLANT PROTEIN - Natural Vanilla 450 grams powder Buy 4 jars, price each	36.00 33.00	27.00 24.75		

SUB-TOTAL OF COLUMN 14

No.		Retail Each	Member Each	Qty	Total
01209	PUMPKIN SEED EXTRACT (WATER-SOLUBLE) - 60 veg. caps Buy 4 bottles, price each	\$20.00 18.00	\$15.00 13.50		
01210	PUMPKIN SEED EXT w/SOY ISOFLAVONES (WATER-SOLUBLE) - 60 veg. caps Buy 4 bottles, price each	22.00 20.00	16.50 15.00		
01031	PHYCNOGENOL® - 60 veg. caps	89.95	67.46		
01217	PYRIDOXAL 5'-PHOSPHATE - 100 mg, 60 veg. caps Buy 4 bottles, price each	22.00 19.80	16.50 14.85		
Q, R					
01309	QUERCETIN (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	\$18.00 17.00	\$13.50 12.75		
01030	RED YEAST RICE (Bluebonnet)- 600 mg, 60 veg. caps	17.50	13.13		
00979	RED YEAST RICE (Nature's Plus)- 600 mg, 60 veg. caps	23.95	17.96		
00060	RED YEAST RICE EXTENDED RELEASE - 30 veg. tablets	21.50	16.13		
00605	REGIMINT - 60 enteric-coated caps Buy 4 bottles, price each	19.95 18.67	14.96 14.00		
01448	REJUVENEX® BODY LOTION - 6 oz Buy 4 tubes, price each Buy 8 tubes, price each	24.00 19.80 17.00	18.00 14.85 12.75		
00918	REJUVENEX® FACTOR - 1.7 oz airless pump Buy 2 bottles, price each Buy 4 bottles, price each Buy 8 bottles, price each	65.00 60.00 55.00 49.91	48.75 45.00 41.25 37.43		
01621	REJUVENEX® FACTOR FIRING SERUM - 1.7 oz Buy 2 bottles, price each Buy 4 bottles, price each Buy 8 bottles, price each	65.00 60.00 55.00 49.91	48.75 45.00 41.25 37.43		
01220	REJUVENEX® (ULTRA) - 2 oz Buy 2 jars, price each Buy 4 jars, price each Buy 8 jars, price each	52.00 48.00 44.00 39.93	39.00 36.00 33.00 29.95		
00676	REJUVENIGHT® (ULTRA) - 2 oz Buy 4 jars, price each	39.95 36.00	29.96 27.00		
00706	REJUVENIGHT® w/PROGESTERONE (ULTRA) - 2 oz Buy 4 jars, price each	42.00 38.00	31.50 28.50		
01413	RESVERATROL W/PTEROSTILBENE - 20 mg, 60 veg. caps Buy 4 bottles, price each	24.00 22.00	18.00 16.50		
01410	RESVERATROL W/PTEROSTILBENE - 100 mg, 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
01430	RESVERATROL w/SYNERGISTIC GRAPE-BERRY ACTIVES (OPTIMIZED) - 250 mg, 60 veg. caps Buy 4 bottles, price each	46.00 41.33	34.50 31.00		
00889	RHODIOLA EXTRACT - 250 mg, 60 veg. caps Buy 4 bottles, price each	11.75 10.58	8.81 7.94		
00972	(D) RIBOSE POWDER - 150 grams Buy 4 jars, price each	27.50 24.75	20.63 18.56		
01473	(D) RIBOSE TABLETS - 100 veg. tabs Buy 4 bottles, price each	32.00 28.00	24.00 21.00		
01609	RICH REWARDS BREAKFAST GROUND COFFEE - 12 oz. bag	13.00	9.75		
01610	RICH REWARDS DECAFFEINATED ROAST GROUND COFFEE - 12 oz. bag	14.00	10.50		
01208	R-LIPOIC ACID (SUPER) - 300 mg, 60 veg. caps Buy 4 bottles, price each	49.00 45.00	36.75 33.75		
00070	RNA CAPSULES - 500 mg, 100 caps Buy 4 bottles, price each	17.95 16.16	13.46 12.12		
00917	ROSMARINIC ACID EXTRACT - 60 veg. caps Buy 4 bottles, price each	59.00 53.00	44.25 39.75		

SUB-TOTAL OF COLUMN 15

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

No.		Retail Each	Member Each	Qty	Total
S					
01067	SACCHAROMYCES BOULARDII+MOS - 90 veg. caps	\$21.95	\$16.46		
01432	SAFFRON w/SATIREAL (OPTIMIZED) - 60 veg. caps Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
*00573	SAMBU® GUARD - 175 ml	17.79	14.23		
00358	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 20 enteric coated tablets Buy 8 boxes, price each	16.00 14.00	12.00 10.50		
00453	SAME (S-ADENOSYL-METHIONINE) - 200 mg, 50 enteric coated tablets Buy 4 bottles, price each	36.00 32.00	27.00 24.00		
00557	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 20 enteric coated tablets Buy 6 boxes, price each	28.00 24.00	21.00 18.00		
01055	SAME (S-ADENOSYL-METHIONINE) - 400 mg, 50 enteric coated tablets Buy 4 bottles, price each	66.00 60.00	49.50 45.00		
01043	SEA-IODINE™ - 1000 mcg, 60 veg. caps Buy 4 bottles, price each	8.00 7.20	6.00 5.40		
00046	SELENIUM - 2 oz dropper bottle Buy 4 bottles, price each	9.95 9.45	7.46 7.09		
00567	SE-METHYL L-SELENOCYSTEINE - 200 mcg, 100 caps Buy 4 bottles, price each	12.00 11.00	9.00 8.25		
00318	SERRAFLAZYME - 100 tablets Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00011	SHAMPOO - 16 fl oz Buy 4 bottles, price each	6.00 4.75	4.50 3.56		
00284	SHARK LIVER OIL (NORWEGIAN) - 1000 mg, 30 softgels Buy 4 bottles, price each	18.00 16.00	13.50 12.00		
00184	SILYMARIN - 100 mg, 50 caps Buy 4 bottles, price each	9.25 8.25	6.94 6.19		
01502	SKIN RESTORING CERAMIDES w/LIPOWHEAT™ - 30 liquid caps Buy 4 bottles, price each	25.00 23.00	18.75 17.25		
00961	SODZYME® w/GLISODIN® AND WOLFBERRY - 90 veg. caps Buy 4 bottles, price each	28.00 24.00	21.00 18.00		
00657	SOLARSHIELD SUNGLASSES - 1 pair smoke color Buy 2 pairs, price each	12.99 11.50	9.74 8.63		
01097	SOY EXTRACT (ULTRA) - 150 veg. caps Buy 4 bottles, price each	87.00 78.00	65.25 58.50		
00286	SOY PROTEIN CONCENTRATE - 16 oz of powder Buy 4 jars, price each	12.00 10.63	9.00 7.97		
01099	STABILUM® 200 - 30 caps	30.00	22.50		
00432	STEVIA EXTRACT - 100 packets, 1 gram each Buy 4 boxes, price each	9.95 9.00	7.46 6.75		
01396	ST. JOHN'S WORT EXTRACT - 300 mg, 60 veg. caps Buy 4 bottles, price each	10.98 10.00	8.24 7.50		
00327	ST. JOHN'S WORT EXTRACT (PLANETARY) - 600 mg, 60 tablets Buy 4 bottles, price each	16.75 13.85	12.56 10.39		
01476	STRONTIUM - 750 mg, 90 veg. caps Buy 4 bottles, price each	20.00 18.00	15.00 13.50		
00971	SUN PROTECTION SPRAY W/BETA GLUCAN - SPF30 - 6 oz Buy 4 bottles, price each	14.95 13.50	11.21 10.13		
00747	SUNGLASSES (OVERCAST POLARIZED) - gray color, large Buy 2 pairs, price each	27.00 21.00	20.25 15.75		
00748	SUNGLASSES (OVERCAST POLARIZED) - gray color, medium Buy 2 pairs, price each	27.00 21.00	20.25 15.75		
00758	SUPER ABSORBABLE SOY ISOFLAVONES - 60 caps Buy 4 bottles, price each	28.00 25.00	21.00 18.75		

SUB-TOTAL OF COLUMN 16

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No.		Retail Each	Member Each	Qty	Total
S CONTINUED					
01381	SUPERCritical OMEGA 7™ - 60 softgels caps	\$56.95	\$42.71		
01408	SUPER SAW PALMETTO/NETTLE ROOT W/BETA-SITOSTEROL 60 softgels	28.00	21.00		
	Buy 4 bottles, price each	26.00	19.50		
	Buy 12 bottles, price each	24.00	18.00		
01407	SUPER SAW PALMETTO W/BETA-SITOSTEROL - 30 softgels	15.00	11.25		
	Buy 12 bottles, price each	12.00	9.00		
00578	SUPER SELENIUM COMPLEX - 200 mcg, 100 caps	12.00	9.00		
	Buy 4 bottles, price each	10.00	7.50		
	Buy 12 bottles, price each	9.00	6.75		
00674	SYTRINOL™ - 60 softgels	32.00	24.00		
	Buy 4 bottles, price each	28.00	21.00		
T					
TAL-SHI™ COSMETICS • For information please call 1-800-544-4440 or visit www.LifeExtension.com					
01062	TART CHERRY - 600 mg, 60 caps	\$18.95	\$14.21		
00199	TAURINE - 1000 mg, 50 caps	8.95	6.71		
	Buy 4 bottles, price each	8.00	6.00		
00133	TAURINE POWDER - 300 grams	20.00	15.00		
	Buy 4 bottles, price each	16.88	12.66		
01304	THEAFLAVIN STANDARDIZED EXTRACT - 30 veg. caps	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		
00555	(L) THEANINE - 100 mg, 60 caps	24.00	18.00		
	Buy 4 bottles, price each	20.50	15.38		
01038	THERALAC PROBIOTICS - 30 caps	44.95	33.71		
00224	THYMIC IMMUNE FACTORS - 100 caps	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
00668	THYROID FORMULA™ (METABOLIC ADVANTAGE) - 100 caps	21.95	16.46		
00349	TMG POWDER - 50 grams	14.00	10.50		
	Buy 4 bottles, price each	11.00	8.25		
00359	TMG - 500 mg, 180 tablets	18.00	13.50		
	Buy 4 bottles, price each	15.50	11.63		
00781	TOCOTRIENOLS WITH SESAME LIGNANS - 60 softgels	38.00	28.50		
	Buy 4 bottles, price each	36.00	27.00		
01400	TOCOTRIENOLS (SUPER-ABSORBABLE) - 60 softgels	30.00	22.50		
	Buy 4 bottles, price each	28.00	21.00		
01278	TOOTHPASTE - 4 oz (Mint)	9.50	7.13		
	Buy 4 tubes, price each	8.67	6.50		
01274	TOTAL SUN PROTECTION CREAM W/BETA GLUCAN - 4 oz	28.00	21.00		
	Buy 4 tubes, price each	25.20	18.90		
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT W/RESVERATROL -60 veg. caps	32.00	24.00		
	Buy 4 bottles, price each	29.60	22.20		
01386	TRUFIBER® - 180 grams	29.95	22.46		
01389	TRUFLOA PROBIOTICS & ENZYMES - 32 veg. caps	39.95	29.96		
01616	TWO-PER-DAY - 60 veg. tablets	10.50	7.88		
	Buy 4 bottles, price each	9.50	7.13		
01615	TWO-PER-DAY - 120 veg. tablets	20.00	15.00		
	Buy 4 bottles, price each	18.00	13.50		
01614	TWO-PER-DAY - 120 caps	22.00	16.50		
	Buy 4 bottles, price each	20.00	15.00		
00326	L-TYROSINE - 500 mg, 100 tablets	12.98	9.74		
	Buy 4 bottles, price each	11.81	8.86		

SUB-TOTAL OF COLUMN 17

No.		Retail Each	Member Each	Qty	Total
U					
* 00310	UDO'S OIL 3-6-9 BLEND - 17 fl oz	\$27.79	\$22.23		
* 00311	UDO'S 3-6-9 OIL BLEND - 180 caps	34.79	27.83		
* 00322	UDO'S CHOICE® WHOLESOME FAST FOOD - 16 oz bottle	27.99	22.39		
01061	ULTIMATE FLORA ADVANCED IMMUNITY PROBIOTICS - 30 caps	29.99	22.49		
V					
00213	VANADYL SULFATE - 7.5 mg, 100 tablets	\$15.00	\$11.25		
	Buy 4 bottles, price each	12.50	9.38		
00252	VELVET DEER ANTLER - 250 mg, 30 caps	36.00	27.00		
	Buy 4 bottles, price each	34.00	25.50		
00408	VENOTONE - 60 caps	18.95	14.21		
	Buy 4 bottles, price each	16.00	12.00		
01327	VINPOCETINE - 10 mg, 100 tablets	18.00	13.50		
	Buy 4 bottles, price each	14.00	10.50		
01033	VISION OPTIMIZER - 90 caps	29.95	22.46		
01219	VITAMIN A NUTRISORB - 0.6 fl oz	27.00	20.25		
00091	VITAMIN B1 CAPS - 500 mg, 100 caps	18.73	14.05		
	Buy 4 bottles, price each	17.00	12.75		
00093	VITAMIN B2 CAPS - 100 mg, 100 caps	14.32	10.74		
	Buy 4 bottles, price each	13.00	9.75		
00096	VITAMIN B3 NIACIN - 1000 mg, 100 caps	12.75	9.56		
	Buy 4 bottles, price each	12.00	9.00		
00372	VITAMIN B3 NIACIN - 500 mg, 100 caps	7.65	5.74		
	Buy 4 bottles, price each	6.65	4.99		
00098	VITAMIN B5 - 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88		
	Buy 4 bottles, price each	9.38	7.04		
00556	VITAMIN B6 - 250 mg, 100 caps	12.50	9.38		
	Buy 4 bottles, price each	11.00	8.25		
00361	VITAMIN B12 - 500 mcg, 100 lozenges	8.75	6.56		
	Buy 4 bottles, price each	7.25	5.44		
01634	VITAMIN C w/ DIHYDROQUERCETIN - 1000 mg, 60 tablets	10.00	7.50		
	Buy 4 bottles, price each	9.00	6.75		
00927	VITAMIN C w/ DIHYDROQUERCETIN - 1000 mg, 250 tablets	25.50	19.13		
	Buy 4 bottles, price each	23.25	17.44		
00084	VITAMIN C (BUFFERED) POWDER - 454.6 grams	23.95	17.96		
	Buy 4 bottles, price each	22.00	16.50		
00864	VITAMIN D3 - 2000 IU, 1 fl oz	28.00	21.00		
	Buy 4 bottles, price each	25.00	18.75		
00251	VITAMIN D3 - 1000 IU, 250 caps	12.50	9.38		
	Buy 4 bottles, price each	11.25	8.44		
00713	VITAMIN D3 - 5000 IU, 60 caps	11.00	8.25		
	Buy 4 bottles, price each	9.90	7.43		
01418	VITAMIN D3 - 7000 IU, 60 caps	14.00	10.50		
	Buy 4 bottles, price each	12.60	9.45		
01372	VITAMIN D3 w/SEA-IODINE™ - 5000 IU, 60 veg. caps	14.00	10.50		
	Buy 4 bottles, price each	12.50	9.38		
01472	VITAMINS D AND K w/SEA-IODINE™ - 60 veg. caps	24.00	18.00		
	Buy 4 bottles, price each	22.00	16.50		
00063	VITAMIN E (PURE NATURAL) - 400 IU, 100 caps	18.75	14.06		
	Buy 4 bottles, price each	17.25	12.94		
	Buy 10 bottles, price each	15.00	11.25		
01225	VITAMIN K2 (LOW-DOSE) - 45 mcg, 90 softgels	18.00	13.50		
	Buy 4 bottles, price each	16.00	12.00		

SUB-TOTAL OF COLUMN 18

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No.		Retail Each	Member Each	Qty	Total
Z					
01685	ZEAXANTHIN W/LUTEIN & MESO-ZEAXANTHIN AND C3G (SUPER) - 60 softgels	\$22.00	\$16.50		
	Buy 4 bottles, price each	19.80	14.85		
01686	ZEAXANTHIN W/LUTEIN & MESO-ZEAXANTHIN PLUS ASTAXANTHIN AND C3G (SUPER) - 60 softgels	42.00	31.50		
	Buy 4 bottles, price each	38.00	28.50		
00061	ZINC LOZENGES - 75 lozenges	9.50	7.13		
	Buy 4 bottles, price each	6.75	5.06		
01051	ZYFLAMEND - 120 softgels	60.95	45.71		
01029	ZYFLAMEND EASYCAPS - 180 softgels	31.95	23.96		
SUB-TOTAL OF COLUMN 19					

* These products are not 25% off retail price.

**Not eligible for member discount or member renewal product credit.

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- CHECK HERE FOR UPS BLUE LABEL (2ND DAY)
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33812	LIFE OVER CANCER • by Keith Block, MD (hardcover)	2009	\$25.00	\$17.50		
33811	THE GREAT AMERICAN HEART HOAX • by Michael Ozner, MD, FACC, FAHA	2009	\$24.95	\$17.47		
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33599	YOUNGER YOU • by Eric Braverman, MD	—	\$24.95	\$15.75		
33600	DISEASE PREVENTION AND TREATMENT, EXPANDED FOURTH EDITION (hardcover)	2003	\$49.95	\$37.46		
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NEXT-GENERATION

COQ10

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 energy production in the **brain**, and in muscle there was a **144%** increase in energy production.²

The primary reason people take CoQ10 supplements is to help restore youthful energy levels.

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

Combining **ubiquinol CoQ10** with **shilajit** generates a powerful *synergy* that supports more youthful cellular energy production than CoQ10 alone.^{2,4,5}

Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™



Item # 01426

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



Item # 01425

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



Item # 01431

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

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

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



Ratings based on results of the 2012 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com.

References

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6. *Sci Total Environ*. 1987 Apr;62:347-54.
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9. *Environ Sci Technol*. 2009 Feb 1;43(3):878-83.

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.

WHAT'S INSIDE

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LifeExtension® Magazine



7 VICTORY AGAINST FDA CENSORSHIP!

A federal judge has ruled that the **FDA** cannot **ensor** health claims about the potential of **green tea** to prevent **prostate cancer**. This court ruling represents victory for consumers who need to learn about natural ways to slash disease risks.



24 OBESITY STUDY RECEIVES GLOBAL MEDIA ATTENTION

In a widely reported study funded by the **Life Extension Foundation®**, researchers found that nearly **39%** of Americans previously classified as “healthy” are medically **obese** and at greater risk for **premature death** unless corrective actions are taken.



28 SAFELY REDUCE CALORIE ABSORPTION

A recent placebo-controlled study found that **green coffee bean extract** produced weight loss in **100%** of those taking this extract, with **37%** reversing their pre-obese condition back to normal weight range and weight reduction averaging **17 pounds!**



40 STOP THE AUTO-IMMUNE ATTACK OF ARTHRITIS

Undenatured type II collagen's unique molecular structure inhibits immune overreactions to joint collagen. Studies show significant reductions in pain and inflammation scores when tested in those with rheumatoid and osteoarthritis.



52 BLUEBERRY EXTRACT BOOSTS LONGEVITY

Long known for their antioxidant benefits, blueberries have now been shown to extend life span in two different models of aging.



66 REPAIR SUN-DAMAGED SKIN

Years of sun exposure cause your skin to age and wrinkle prematurely. Topically applied broccoli sprout cream delivers **sulforaphane** and **glucoraphanin**, which stimulate the production of enzymes that protect against—and even **reverse**—the appearance of sun-damaged skin.