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March 2016

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Brain Aging**

**Reduce Excess
Uric Acid Levels**

**Theanine Preserves
Cognitive Function**

**Novel Probiotic
Improves Mood**



PLUS—

**FDA Approves Anti-Aging Study on Metformin
Testosterone Improves Insulin Sensitivity in Diabetics
Life Extension Funds New Pancreatic Cancer Study**



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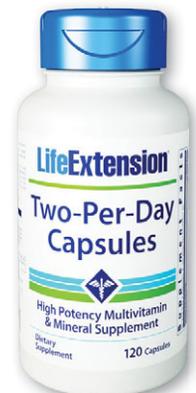
- 50 times more vitamin B1
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For the complete list of ingredients, trademarks, cautions, references, dosage and use, please visit www.LifeExtension.com. Two-Per-Day provides a small amount of gamma tocopherols as part of natural mixed tocopherols, which include natural vitamin E. NIAGEN® is a registered trademark of ChromaDex, Inc., Patents see: www.ChromaDexPatents.com.

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

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28 REDUCE DEPRESSION AND ANXIETY WITHOUT DRUGS

New findings reveal stress can shorten **telomeres** and accelerate **cellular aging**. Anti-anxiety drugs carry huge risks. Human trials demonstrate that a **probiotic** combo decreases **depression** scores by **50%** and improves **anxiety** scores by **55%**.



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72 LIFE EXTENSION[®] FUNDS NEW PANCREATIC CANCER STUDY

A human study of pancreatic cancer patients will soon begin at the prestigious **City of Hope** hospital. In addition to gemcitabine and Abraxane[®] standard therapies, an arsenal of drugs like metformin and natural compounds will be tested with the objective of prolonging survival.



74 LOOKING BEHIND THE HEALTH CARE COST CRISIS

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**7 EXPOSING THE
GENERIC DRUG PRICE SCANDAL**

The public is waking up to a price-gouging scandal that **Life Extension[®]** sought to prevent decades ago. Igniting media attention is a **New England Journal of Medicine** article exposing spiraling increases for off-patent **generic drugs**. What no one knows is that most generics cost virtually nothing to make. Readers of **Life Extension[®] magazine** will be the first to learn the **magnitude** by which our pocketbooks are being plundered and a solution that will slash generic drug prices by **90%**.



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In One Easy-To-Take Supplement

Scientists continue to find healthy benefits—including DNA protection—in cruciferous plants.

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Life Extension®'s **Triple Action Cruciferous Vegetable Extract** combines vital plant extracts into a comprehensive formula to provide optimal DNA protection. Each capsule also contains:¹⁻⁹

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- Bioactive **cruciferous** compounds like **glucosinolates** that have favorable effects on healthy cell division
- **Apigenin**, a powerful plant flavonoid, that boosts cell protection¹⁻⁹

Those who want the additional benefits of *trans*-resveratrol can order **Triple Action Cruciferous Vegetable Extract with Resveratrol**. Each vegetarian capsule contains **20 mg** of *trans*-resveratrol in addition to the vegetable extract.

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Triple Action Cruciferous Vegetable Extract

Item #01468 • 60 vegetarian capsules

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1 bottle	\$24	\$18
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LifeExtension[®]

Magazine

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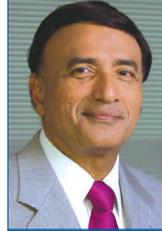
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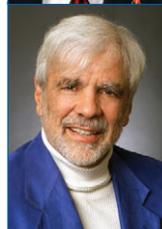
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Low Cost Biologically Active B-COMPLEX

Maintaining optimal **vitamin B** status becomes critical as we age.

B vitamins must be replenished *daily* because they are water soluble and easily depleted from the body. Stress,¹ alcoholic beverages,² and some medications³ can quickly deplete B vitamins.

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To order **BioActive Complete B-Complex**, call **1-800-544-4440** or visit www.LifeExtension.com

New England Journal of Medicine Exposes Generic Price Scandal



BY WILLIAM FALOON

No one has fought against **high drug prices** longer or harder than **Life Extension**[®].¹⁻²⁰

The penalty for exposing health care corruption is endless governmental investigations aimed at destroying our organization. The tide may be turning in our favor.

The New England Journal of Medicine published a report that uncovered a drug price scandal that we've sought to expose for the past four decades.²¹

CBS News turned this consumer swindle into a headline report that graphically depicted the devastating impact that skyrocketing **generic drug** prices are having.²²

The next day, I gave an impromptu speech at an Alzheimer's seminar where I asked the audience to join me in amending the law to prohibit the **FDA** from granting monopoly status to generic drug makers. Virtually everyone in the audience said they would personally take the time to protest high drug prices at local congressional offices.

Two months later, **60 Minutes** featured an in-depth report on today's broken sick care system. A quote from this **60 Minutes** broadcast relating to the **Affordable Care Act** stated that it is the product of an:

"...orgy of lobbying and backroom deals in which just about everyone with a stake in the \$3-trillion-a-year health industry came out ahead—except the taxpayers!"²³

The *60 Minutes* report went on to state there is **"no way in the world that we're gonna be able to pay for it."**

Investigative journalists have since corroborated how high drug prices are causing American consumers to become serfs of the pharmaceutical industry.

This month's issue of **Life Extension**[®] reveals shocking new details of a **price-gouging** disgrace that is contributing to the insolvency of our sick care system.



Today's medical system provides mediocre efficacy at prohibitive prices.

When you read news stories about municipal, corporate, or personal bankruptcies, the high cost of health care is a consistent underlying factor.

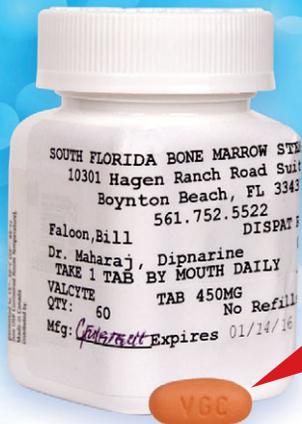
Misguided politicians believe that government subsidies, mandates, and giveaways can resolve high sick care costs.

Even a cursory glance at the extravagant prices of new medications exposes the falsity of this charade. When a single new drug can cost **\$100,000**, and protocols are being developed that combine several drugs priced in this range, how can any form of “*cost-sharing*” be expected to work?

It has become mathematically impossible for these outlandish sick care costs to become “affordable” via government edict.

For example, the bottle of the prescription drug **Valcyte®** you see pictured below with my name on it contains **60** tablets. The price for this bottle of **Valcyte®** is around **\$4,200**. This works out to approximately **\$70** per tablet.

My cost for a four-month course of this medication is over **\$16,000**. Some people are spending over **\$50,000** a year for this drug to stay alive—and this is often just one of many medications they need.



Generic Drug Price Gouging

GENERIC DRUG	Price Increase per Pill	Percent Price Increase
Doxycycline (antibiotic)	6.3 cents to \$3.36	5,300%
Captopril (antihypertensive)	1.4 cents to 39.9 cents	2,850%
Clomipramine (antidepressant)	22 cents to \$8.32	3,780%

Before I describe a simple solution to this epidemic problem, I want to enlighten you to a growing scam in the prescription **generic drug** arena that finally is generating mainstream media coverage.

Magnitude of the Fraud

Price gouging on a growing number of **generic** drugs has grown beyond verbal description.

In the box you see on this page are examples of price increases occurring in the **generic drug** marketplace reported on by *The New England Journal of Medicine*.²¹

These kinds of price increases are not unique. They reflect a growing swath of generic drugs that cost virtually nothing to manufacture, but they are spiking to stratospheric consumer price levels.

The New England Journal of Medicine gave an example of a generic drug (albendazole) that costs less than one dollar per daily dose overseas, but has risen to **\$119** per typical **daily** dose in the United States (**\$3,570** per month). This is a **2,010%** increase from what this same **generic** drug cost in **2010**.

Medicaid spending on this one drug alone (albendazole) spiked from **\$100,000** in **2008** to **\$7.5 million** in **2013**—a **75-fold** increase.¹²¹



We're All Being Defrauded

Whether or not you need a generic drug whose price has exponentially increased, you are paying through *higher* health insurance premiums, *higher* deductibles, and *higher* copays, as well as *limitations* on what physician you may use and what *services* that doctor may perform.

A *generic drug* that I use called **tretinoin** costs **\$1,100** per month. My health insurance covers **\$850** and I have to pick up the balance of **\$250** per month.

This drug (tretinoin) was approved in **1995** and long ago lost patent protection, yet it is costing me **\$13,200 per year**. I say me because I pay this extortionist price via my insurance premiums along with the many "*exclusions*" that cause me to pay out-of-pocket for what **health insurance used** to cover.

What may shock you most is what the **active ingredient** of this drug costs. Consumers are paying over **\$1,100** for this bottle of **tretinoin**. Yet the active ingredient for the entire **bottle** costs a mere **80 cents**. Even including encapsulation and quality control, that's a

markup of about **400 times** over the cost to make this **off-patent** drug.

As we reported in the **September 2014** edition of *Life Extension*[®] magazine, collusion amongst drug makers is causing generics to be priced beyond rational affordability.

The cover headline of the September 2014 issue was titled "**How to Turn 8 Pennies Into \$600.**" This was based on an article where I reveal that an antiviral cream (acyclovir) that long ago lost patent protection was being sold to pharmacies for **7,500%** over the **active ingredient** cost. The active ingredient (acyclovir) costs only **8 pennies**, yet pharmacies are paying a generic maker **\$600** for this drug and selling it to consumers for around **\$700**.

The media has just started reporting on the magnitude of generic drug price gouging. As a reader of *Life Extension*[®] magazine, you've been the first to learn about what generic drugs really cost to make.

These kinds of price markups are unsustainable. They are part of the reason why health care has become unaffordable whether or not you have so-called "insurance."

An increasing number of experts are coming to this realization, including editors of *The New England Journal of Medicine* and other publications. We are all being defrauded by this unconscionable price gouging made possible by **overregulation** of prescription drugs.

I Used to Own a Pharmacy

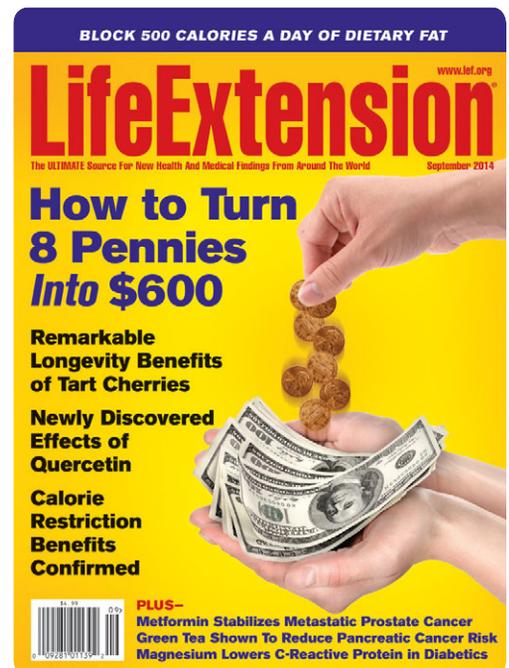
I established a retail pharmacy (Life Extension Pharmacy) in an attempt to slash the high cost of generic drugs. I was able to witness

some of the manipulation going on behind the scenes that results in consumer prices for generics spiraling upwards.

Our pharmacists never knew what the price of a generic drug would be from day to day. Some drug companies "**stop making**" certain generics altogether, which usually results in a massive price spike from the remaining maker(s). This happens because competition has all but disappeared.

One reason I set up the **Life Extension Pharmacy** in **2008** was to slash the prices of generic drugs to our members. Back then, pharmacies were selling generic drugs at out-of-pocket prices that were *higher* than what average people could afford.

My goal of slashing consumer prescription drug costs was short lived, as generic makers raised prices so high that even **copays** on certain drugs remained **unaffordable**, even though the cost to make most generics is virtually nothing.



Why This Concerns Life Extension®

New readers may wonder why an organization like **Life Extension®**, which is best known for pioneering lifesaving nutrients like **coenzyme Q10**, is making a big deal about **generic drug** price gouging.

One reason is that **Life Extension®** does far more than formulate advanced dietary supplements. Our **Disease Prevention and Treatment** protocols contain recommendations for people to ask their doctors about trying **off-label drugs** in order to achieve a better clinical outcome.

Our **track record** of recommending off-label drugs like **metformin** and **cimetidine** to better treat disease is unparalleled.²⁴ Insurance companies, however, often refuse to pay for the off-label prescribed drugs we recommend.

If this price gouging does not stop, it will render off-label use of these drugs meaningless as consumers will not be able to **afford** the generic drug's high cost.

So in addition to sparing this nation's sick care system from economic collapse, we at **Life Extension®** need to ensure that affordable generic medications are available when the need arises for them.

A Free-Market Solution

The solution to this problem of rip-off drug pricing is to amend the **Food, Drug, and Cosmetic Act** to allow more **competition** in the generic marketplace. If enacted, generic prices will plummet to levels so low you won't even worry about what percentage your insurance company pays.

The Politicians Are Clueless

There has been more criticism leveled against the **Affordable Care Act** than perhaps any other piece of enacted legislation.

Sound-bite-speaking political candidates constantly state that if elected they will "**abolish it**."

The problem is none has the faintest clue what to replace it with. The reason they can't even pretend to have a solution is that none understands what's behind the health care cost crisis.

Do you think any politician today knows that there are generic drugs being sold for over **\$1,000 a month** whose active ingredient costs only **80 cents**?

The politicians don't know this and it's hard to expect they would.

It is up to the citizenry to enlighten Congress and demand that the **Food, Drug, and Cosmetic Act** be amended so that **free-market** forces can quickly resolve this generic price-gouging scandal.

When generic drugs drop this much, it will push down many patented pharmaceutical prices because generic substitutes often work as well as newer branded drugs.

Against us are **pharmaceutical lobbyists** who will do virtually anything to protect their lucrative monopoly against **free-market** competition.

On our side are **330 million** American consumers, most of whom cannot afford to fall ill even if they have **health insurance**. That's because the deductibles, copays, and exclusions result in enormous out-of-pocket expenses that are today's leading cause of personal **bankruptcies**.

My question is how many of you want to take political action to stop this price gouging?

We've Fought the Drug Cartels since the 1980s

Life Extension® learned about the rip-off prices Americans were paying for their medications in the **1980s**.

We launched a relentless campaign to educate the public and Congress about the **high prices**

Americans were forced to pay compared to what identical medications cost in Europe and other countries.

When digging through a box of old papers, I ran across one of the many newspaper ads our supporters paid for to expose the corrupt prices and drug approval delays that were killing American citizens. We've reprinted one of those ads from year **1991** on the next page.

You can see the date on this newspaper ad is **October 11, 1991**. On **November 7, 1991**, we were in handcuffs standing before a federal judge with the **FDA** insisting that we be denied bond because we represented a danger to the public (for informing Americans that lower-priced medications could be obtained almost anywhere else in the world).

Fortunately, an avalanche of letters from our supporters to the judge helped persuade him to grant us bond (\$1 million). The multiple charges the FDA tried to use to indict us were eventually dismissed by the **Department of Justice** in **1995-1996**.

If it were not for our supporters standing up to the FDA's attempts to incarcerate us, there would be no **Life Extension®** organization

today, and supplements like **coenzyme Q10** would likely be available only via expensive prescription.

Americans today routinely obtain lower-priced medications from Canada because they can access offshore pharmacies via the Internet. This was not the case in the **1980s-1990s**. Back then, the **FDA** viciously fought anyone who dared to inform Americans where they could purchase less expensive medications.

Legislation Urgently Needed!

Fighting the FDA's ban on personal use importations of medications was only one battle we spearheaded. The other dealt with FDA's attempts to turn many **dietary supplements** into **prescription drugs**.

When we initiated action to combat **FDA's** attempts to ban **dietary supplements**, a huge per-

centage of our supporters rallied to stop this from happening.

The result was passage of a bill (**Dietary Supplement Health and Education Act-1994**) that protected supplements and substantially lowered consumer prices.

For those who think it's not worth the effort to let your voice be heard, consider the consequences of failing to take action. Seniors may have to return to the work force to afford their medications.

(Newspaper ad our supporters paid for 25 years ago)

FRIDAY, OCTOBER 11, 1991, THE MIAMI HERALD **5BR**

WHY DO PRESCRIPTION DRUGS COST SO MUCH?

In the 1980's prescription drug prices went up to **three times faster** than inflation!

Medical costs are rising so fast now, that pharmaceutical companies schedule **four new price increases every year!**

If you pay for your medical insurance, then you know your premiums skyrocket every year. Employees are now being asked to subsidize their medical insurance plans because the costs have exceeded the employer's ability to pay.

If you cannot afford medical insurance and get sick, you may not be able to get any medical care.

THE FDA IS THE REASON MEDICATIONS ARE SO COSTLY

Because of bureaucratic "red tape", it now costs pharmaceutical companies an average of **231 million dollars** to develop one new patent medicine and get it "approved".

This **FDA** mandated high-cost of "approval" forces pharmaceutical companies to charge the outrageous prices you pay for prescription drugs.

In Europe, where approval requirements are more reasonable, the **exact same medicine** costs far less money.

The Parkinson's Disease medication **Eldepryl** can be purchased in Europe for as little as **25 cents a tablet**. In the United States, the cost is over \$2.00 a tablet.

Not only do Americans pay as much as **eight-times more** for their medication, but they often have to wait **10 to 20 years** longer than Europeans to gain access to new drugs. **Eldepryl** was available in Europe in the 1970's, but it was not "approved" by the **FDA** until **1989**. That meant millions of Parkinsons' patients had to suffer and die even though an effective treatment was already available.

THIS IS A NATIONAL EMERGENCY!

Americans are suffering and dying from diseases that already have effective treatments. The **FDA** is **illegally** blocking your access to these safe and effective medical drugs.

When and if the **FDA** finally "approved" new therapies, they cost so much that there is now a **health-care cost emergency** in the United States.

SPEAK UP...BEFORE AN ILLNESS BANKRUPTS YOU

Only **The Life Extension Foundation** dares to challenge the **FDA's incompetent** and **corrupt** prescription drug approval process.

The Life Extension Foundation will send you **free information** about highly effective medicines **not approved by the FDA**, but legally available to Americans. There are now thousands of useful medical therapies available in Europe and other parts of the world that the **FDA** is keeping from you.

We will also send you postcards to send to members of Congress which call for an investigation into the illegal and unconstitutional activities the **FDA** routinely commits against the American people. Call us at:

1-800-841-LIFE

or write:

**THE LIFE EXTENSION FOUNDATION
PO Box 229120
Hollywood, FL 33022**

(This ad is paid for by contributions from Americans who cherish their constitutional right to freedom of choice in healthcare matters)

Those working full time may have to find additional part-time work to pay the high premiums and many out-of-pocket expenses no longer covered by medical insurance.

This problem can be partially resolved if **free-market** competition is allowed in the generic drug market place. If we can persuade **Congress** to amend the Food, Drug, and Cosmetic Act, the price of many generic drugs will plummet more than **90%**.

We at **Life Extension**[®] are organizing a grass roots campaign to overwhelm the lobbyists that currently dominate Congress and the federal agencies that are adversely impacting our health and longevity. A website has been set up for those who want to enlist as **activists** to combat the atrocities perpetrated against the citizenry by our politicians and unselected/unaccountable bureaucrats.

To enroll in this campaign to tear down high drug prices, log on to: LifeExtension.com/consumer

We Are More Than a Supplement Supplier...

I know many of you view us as a trusted maker of innovative **dietary supplements**. The reality is that your support helps fund a variety of programs that challenge conventional dogma relating to human longevity and consumer justice.

To reiterate what I said at the beginning of this editorial, no one has fought longer or harder against extortionist drug prices than **Life Extension**[®]. We have battled pharmaceutical interests for decades and won concessions in Congress and the courts that no one would have ever believed possible.

You're finally seeing news media revelations about the **price gouging**

Feeble Suggestions from the American Medical Association

In recognition of the generic drug pricing scandal, the **Journal of the American Medical Association** (*JAMA*) published an editorial on **November 24, 2015**, titled:

"Options to Promote Competitive Generics Markets in the United States"

Of interest was the citing of a statistic showing that **86%** of all prescriptions written are for **generic** drugs. The editorial goes on to describe the problem of generic drug **shortages** as one reason why prices have seen such colossal increases.

Some of the solutions proposed in this *JAMA* editorial resemble Soviet-era attempts to regulate their economy that all proved disastrous. The *JAMA* authors make it appear impossible to predict competitive pressures in the generic drug arena. Their solution is for the federal government to enact new laws to protect generic manufacturers against the uncertainties of the marketplace, such as limiting the number of makers who could produce the same generic drug.

When I read this I thought, are educated people really this stupid? Every day in the private sector, projections are made for future inventory needs, often for products that have razor-thin margins. Yet when you walk into a grocery store, the shelves are consistently well stocked and shortages almost never occur. How do all these private sector companies manage this without federal protection against overly optimistic projections?

Completely overlooked by the *JAMA* authors is the fact that when a **free market** is allowed to determine supply and demand, there are no shortages and consumer prices usually go down over time (inflation adjusted).

There is no secret to making ample quantities of quality generic drugs. Yet consumers are being blatantly lied as to why their costs for generic drugs are surging.

we predicted would inevitably happen back in the **1980s**. The sad fact is that none of our politicians have the basic knowledge needed to rein in today's runaway health care costs.

We at **Life Extension**[®], on the other hand, have a **36-year** track record of involvement in all ends of the pharmaceutical arena. We know the only impediment to slashing generic drug costs is citizen **apathy** that allows the **FDA** to continue enforcing a de facto monopoly that benefits the entrenched pharmaceutical establishment.

To enlist as an activist to combat **high drug prices** log on to: LifeExtension.com/consumer

For longer life,



William Faloon





Prescription drug spending is expected to rise to \$1.3 trillion by the year 2018, up from only \$326 billion in 2013.*

Who is going to pay for this?

* Am J Health Syst Pharm. 2014 Mar 15;71(6):482-99.

* Available at: <http://www.imshealth.com/en/thought-leadership/ims-institute/reports/global-outlook-for-medicines-through-2018>. Accessed December 9, 2015.

Bloomberg-September 21, 2015

Price of 62-Year-Old Drug Jacked up by \$736 a Pill

- Martin Shkreli is under criticism after raising the price of the anti-parasite medication Daraprim® from **\$13.50** to **\$750** per pill.
- Turing Pharmaceutical was founded in February 2015, bought the US marketing rights to the drug in August 2015, and hiked the price **55-fold** in September 2015.
- Some people will now pay over **\$100,000** per year to stay alive.



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Unsustainable

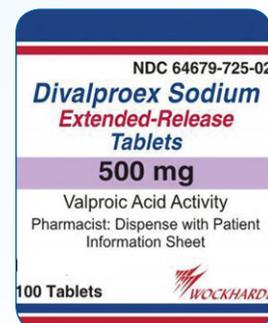
- Albuterol sold at an average market price of **\$11** for a bottle of **100 2 mg** tablets in **October 2013**.
- By **April 2014** the average price for albuterol sulfate jumped to **\$434**.
- A price increase of over **4,000%***

* Available at: <http://www.pbs.org/newshour/making-sense/price-increases-generic-drugs/>. Accessed December 11, 2015.

Price Gouging

- **Divalproex Sodium ER** is used to treat seizures and prevent migraines. This drug had an average market price in October **2013** of around **\$31** for a bottle of 80 tablets.
- By April of **2014**, the price for the same drug rose to **\$234...** a price increase of **736%***

* Available at: <http://www.pbs.org/newshour/making-sense/price-increases-generic-drugs/>. Accessed December 11, 2015.





We're All Being Defrauded

- A **generic drug** called **tretinoin** costs **\$1,100** per month.
- The **active ingredient** in this generic drug costs **80 cents**.
- Consumers pay **\$1,100** for a bottle of 40, **10 mg** tretinoin capsules.

Impact on Economy

- **Pravastatin** saw a price increase of **573%** from October of **2013** to April of **2014**.
- The **increased cost** to Americans is an additional **\$5.9 billion** per year.*

* Available at: <http://www.pbs.org/newshour/making-sense/price-increases-generic-drugs/>. Accessed December 11, 2015.



DON'T BE SILENCED—LET YOUR VOICE BE HEARD!

To enlist as an activist against high drug prices, log on to: LifeExtension.com/consumer

(When you enlist as an activist, you can easily email the letter on the next page to your representative and two senators.)

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Dear _____, (Name of your representative and two senators)

According to a report published in *The New England Journal of Medicine*, prices for certain **generic drugs** are skyrocketing beyond rational affordability.

In many cases, prices charged to consumers for **off-patent** drugs are **hundreds of times higher** than what they cost to manufacture, yet generic companies are mysteriously failing to compete against one another.

This outlandish situation has been featured on **national news** stories, and there have been **Senate hearings** to investigate why this price gouging is occurring, but Congress has done nothing to stop it.

The solution to this problem is to amend the **Food, Drug, and Cosmetic Act** to allow a **free market** option for consumers to purchase generic drugs sold by reputable companies that are clearly labeled "**Not approved by the FDA.**"

This would give consumers the choice of purchasing medications that in some cases will be more than **90% less expensive** than the current rip-off prices being charged by certain generic drug companies.

I urge you to introduce legislation that reforms the Food, Drug, and Cosmetic Act to enable GMP-certified (Good Manufacturing Practice) facilities to produce **generic prescription drugs** that do not have to undergo the excessive regulatory hurdles that force consumers to pay egregiously inflated prices for generic drugs.

The inevitable concern raised by this free-market solution is **safety**. Who will protect consumers from poorly made generic drugs?

First of all, there would be the same regulation of these drugs as there are with GMP-certified supplement makers. FDA inspectors would visit facilities, take sample products, and assay to ensure potency of active ingredient, dissolution, etc. Laboratories that fail to make products that meet label claims would face civil and criminal penalties from the government.

Secondly, there is no incentive to not provide the full-potency active ingredients in these less regulated generic drugs. The price of the active ingredients makes up such a small percentage of the overall cost that a manufacturer would be idiotic to scrimp on potency.

Those companies who foolishly made inferior generics would be viciously exposed by the media, along with the FDA, consumer protection groups, and even prescribing physicians who would be suspicious if a drug were not working as it was supposed to.

Companies producing inferior products will be quickly driven from the marketplace as consumers who choose to purchase lower-cost generics will seek out laboratories that have reputations for making flawless products.

Companies that produce inferior products would not only be castigated in the public eye, but would face civil litigation from customers who bought the defective generics. When one considers that GMP-certified manufacturing plants can cost hundreds of millions to set up, a company would be committing suicide if it failed to consistently produce generic drugs that at least met minimum standards.

I understand that no matter how many facts I list showing that these free-market drugs will be **safe**, there are some who believe that even if one person suffers a serious adverse event because of a defective generic drug, then the law should not be amended to allow the sale of these less regulated products.

(Continued on next page) —————>

What few understand is that enabling lower-cost drugs to be sold might reduce the number of poorly made drugs. The reason is that prescription drug **counterfeiting** is a major issue today. Drugs are counterfeited because they are so expensive. When a month's supply of a common generic drug plummets to under **\$10**, it is difficult to imagine anyone profiting by counterfeiting it. So amending the law to enable these super-low-cost drugs to be sold might alleviate the counterfeiting that exists right now.

Another reason these less regulated generics will do far more good than harm is that people who need them to live will be able to afford them. The media has reported on heart-wrenching stories of destitute people who cannot afford generic prescription drugs. They either do without, or take a less-than-optimal dose. The availability of these free-market generics will enable virtually anyone to be able to afford their medications.

To alert consumers when they are getting a generic whose manufacturing is not as heavily regulated as it is currently, the law should mandate that the label of these less regulated generic drugs clearly state:

“This is not an FDA-approved manufactured generic drug and may be ineffective and potentially dangerous. This drug is NOT manufactured under the same standards required for an FDA-approved generic drug. Purchase this drug at your own risk.”

The cost of prescription drugs is a significant contributing factor to today's health care cost crisis, a problem that threatens to bankrupt consumers and this nation's medical system. Passage of this common-sense legislation would quickly slash the cost of generic drugs so low that consumers could obtain them for less than what their copays currently are. This would save governmental and private health insurance programs, and ultimately consumers, enormous amounts of money.

Please don't be influenced by pessimistic alarmists who claim that less regulation automatically means more dangerous drugs. These kinds of scare tactics have been used for decades to force Americans to pay outlandish prices for their medications. And please don't be influenced by pharmaceutical lobbyists, who will do and say anything to protect their virtual monopoly over generic drug manufacturing.

The bottom line is that we as a nation can no longer afford to be bound by today's inefficient regulatory system that artificially inflates the cost of our prescription medications. The money is no longer there to support this bureaucratic morass, and you know that as well as anyone.

Kindly let me know how you plan to implement this legislation that will help save this country from horrifically overpriced prescription drugs.

Sincerely,

Name:

Address:

OPTIMIZE DIGESTION

— and —

INTESTINAL BALANCE

Digestive enzymes are essential to the body's **absorption** and optimal utilization of food and all its nutrients.^{1,2}

Normal aging and related health issues can decrease production of digestive enzymes,^{3,4} resulting in a **bloated** feeling and other discomforts after eating a large meal.

Enhanced Super Digestive Enzymes provides specific **enzymes** required to support the natural reactions that break down food—demonstrated to optimize digestion and nutrient absorption.⁵⁻⁸ Here is the broad array of **enzymes** contained in this formula:

- **Protease** to help break down proteins,
- **Amylase** to break down starch and short sugar chains called oligosaccharides,
- **Lipase** to break down fats,
- **Cellulase** to break down the indigestible polysaccharide in dietary cellulose, and
- **Lactase** to break down lactose.

Enhanced Super Digestive Enzymes with Probiotics provides the same enzymes that are in **Enhanced Super Digestive Enzymes**—but with the added benefits of the probiotic *B. coagulans*.

This **probiotic** creates a natural protective shield that resists digestion in the stomach allowing it to fully colonize in the intestines.⁹ Probiotics such as *B. coagulans* support digestive health and suppress less beneficial bacteria to improve digestive comfort.⁹⁻¹⁰

To order **Enhanced Super Digestive Enzymes** or **Enhanced Super Digestive Enzymes with Probiotics**, call 1-800-544-4440 or visit www.LifeExtension.com



Enhanced Super Digestive Enzymes

Item #02021 • 60 vegetarian capsules

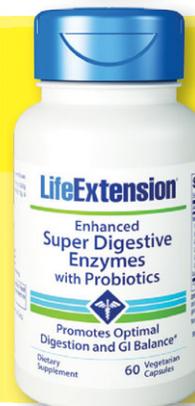
	Retail Price	Your Price
1 bottle	\$22	\$16.50
4 bottles		\$15 each



Enhanced Super Digestive Enzymes with Probiotics

Item #02022 • 60 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$28	\$21
4 bottles		\$18 each



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TAURINE

BOOSTS BRAIN CELL REGENERATION
& SUPPORTS WHOLE-BODY HEALTH

Taurine, a free amino acid, has been described by scientists as **“one of the most essential substances in the body.”**¹ But as we age, taurine levels decline.

Cognitive Function and Brain Cell Regeneration

The benefits of taurine on brain cell growth are especially evident in those with a taurine deficiency, which includes *aging individuals*.

Promising research has found that taurine can promote **new brain cell formation** in the area of the brain associated with **learning** and **memory**. It does so by activating hibernating **stem cells** that are capable of growing into several different kinds of cells.²

Taurine also enhances **neurites**, the tiny projections that help brain cells communicate with each other.

Whole-Body Health

Past research has also shown the ability of taurine to maintain and support:³⁻⁹

- Cardiovascular health,
- Insulin sensitivity,
- Modulation of the immune system,
- Regulation of the central nervous system,
- Liver function,
- Eye health, and
- Hearing function.

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Taurine

Item #01827 • 90 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$13	\$9.75
4 bottles		\$9 each

Non-GMO

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BORON

Promotes *Healthy Prostate Function*

Boron is a critical nutrient—but it is not abundant in most diets.¹

Prostate Function

Research has shown that **boron** promotes healthy prostate function.^{2,3}

Bone, Joint, and Brain Support

Boron supports the functions of calcium, magnesium, and vitamin D for promoting dense, healthy bone tissue.⁴ By regulating pro-inflammatory factors, boron may support joint health.⁵ Additional evidence suggests boron may help maintain normal brain function.⁶

Bioavailable Formulation

Life Extension® Boron contains a unique synergistic combination of three highly utilizable, **100%** natural chelated sources: boron citrate, boron aspartate, and boron glycinate.

You May Already Be Obtaining Enough Boron

Life Extension® has long recognized the health benefits of obtaining sufficient daily boron. That's why there are **3 milligrams** of boron in the daily dose of each of the following formulas:

- **Two-Per-Day**
- **Bone Restore**
- **Ultra Natural Prostate**
- **Life Extension Mix™**

The suggested daily dose for most adults is **6-9 mg** of boron.⁷ If you are already obtaining this potency in your multi-nutrient formulas, you may not need additional boron. Certain individuals may want to supplement with up to **12 mg** of boron each day.

Boron

Item #01661 • 100 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$5.95	\$4.46
4 bottles		\$3.94 each



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Testosterone Improves Insulin Sensitivity in Diabetic Men

Diabetes Care reported the outcome of a trial that revealed a beneficial role for testosterone treatment in male diabetics.*

The trial included 94 type II diabetic men, 44 of whom had low testosterone levels and reduced insulin signaling genes indicative of decreased insulin sensitivity. Participants with low testosterone received a weekly testosterone injection or a placebo for 24 weeks. Body weight, body fat, markers of inflammation, insulin sensitivity, and other factors were assessed before and after treatment.

At the end of the trial, men who received testosterone experienced an average loss of body fat of over **six pounds** and an equal increase in muscle mass. They also had lower levels of the inflammatory markers C-reactive protein (CRP), interleukin-1b, and TNF- α . “Most importantly, we saw a dramatic increase in insulin sensitivity, demonstrated by a **32%** increase in the uptake of glucose by tissues in response to insulin,” lead researcher Paresh Dandona reported.

Editor’s Note: “Testosterone treatment for men, where indicated, will improve sexual function and increase skeletal muscle strength and bone density,” Dr. Dandona noted. “This is the first definitive evidence that testosterone is an insulin sensitizer and hence a metabolic hormone.” This study corroborates what **Life Extension** has published for decades about the ability of testosterone replacement in male diabetics to improve insulin sensitivity and reduce inflammatory markers.

**Diabetes Care*. 2015 Nov 30.

Aspirin Anticancer Mechanism Uncovered

Findings obtained from a trial reported in *Cancer Epidemiology, Biomarkers, and Prevention* reveal a previously unknown mechanism for aspirin in cancer prevention.*

Subjects received **325 mg** aspirin or a placebo for 60 days. Using a technique known as metabolic profiling, levels of 363 metabolites involved in most human biochemical pathways were measured in all participants.

Cornelia Ulrich, PhD, and associates found that aspirin decreased levels of both forms of the onco-metabolite *2-hydroxyglutarate* by **12%** among the trial subjects and by up to **34%** in colorectal cancer cell lines. (Increased levels of 2-hydroxyglutarate have been found in blood and brain cancers.) The researchers also determined that salicylate, the primary aspirin metabolite, inhibits an enzyme involved in 2-hydroxyglutarate production.

“It is really exciting that aspirin, which can work in colorectal cancer prevention, is now linked to a new pathway that has shown to be relevant for cancer formation,” commented Dr. Ulrich.

Editor’s Note: It has been hypothesized that aspirin’s anti-inflammatory and antithrombotic effects are behind its apparent ability to protect against some cancers. “This new study suggests that aspirin is playing a key role in interrupting multiple pathways that are linked to cancer development,” Dr. Ulrich stated. “Here we show both in the clinic and laboratory that a reduction in 2-hydroxyglutarate may identify a new mechanism for aspirin in cancer prevention.”

**Cancer Epidemiol Biomarkers Prev*. 2015 Nov 19.

Omega-3 Fatty Acids Decrease Risk of Rheumatoid Arthritis

According to a study published in *Rheumatology*, those at risk of rheumatoid arthritis who consume more **omega-3 fatty acids** can decrease their likelihood of developing the disease.*

Rheumatoid arthritis is a systemic inflammatory disease affecting multiple joints in the body. It usually manifests in the lining of the joints (synovial membrane) but can impact other organs. Patients with rheumatoid arthritis have a higher prevalence of cardiovascular disease than those without.

Researchers analyzed self-reported data about omega-3 consumption from 30 people who had autoantibodies for rheumatoid arthritis and 47 control patients who did not. Just **6.7%** of the patients who had the autoantibodies reported taking an omega-3 supplement, compared with **34.4%** in the control group. Blood tests also showed that those with the autoantibodies were “significantly more likely” to have lower levels of three essential omega-3 fatty acids than the control patients. Two of the crucial omega-3 fatty acids, DHA and EPA, may suppress a protein that regulates the intensity and duration of the immune response.

“There was a very substantial difference in the blood levels of omega-3 fatty acids between the people who took omega-3 supplements and those who did not,” said lead researcher Professor Jill Norris, PhD, of the Colorado School of Public Health.

Editor’s Note: This is the first study to find an association between omega-3 and the autoantibodies that lead to rheumatoid arthritis among patients who are at risk but have not yet developed the disease. Around 1.5 million Americans have rheumatoid arthritis. Women are **3 times** more likely to develop it than men and prevalence appears to be increasing.

* *Rheumatology*. 2015, Sept 13.

Reduced Percentage of Deaths from Leading Causes over Several Decades

The October 27, 2015, issue of the *Journal of the American Medical Association* featured an article titled “Temporal Trends in Mortality in the United States, 1969-2013,” that documents a decline in the age-standardized death rate from five out of six leading causes of death, including heart disease, cancer, stroke, unintentional injuries, and diabetes.*

A temporal trend refers to the long-term—in this case, a 44-year period—trend regarding death rates. A systematic and comprehensive evaluation of long-term trends in mortality is important for health planning and priority setting and for identifying modifiable factors that may contribute to the trends.

A team from the American Cancer Society in Atlanta analyzed data from the US National Vital Statistics System (NVSS) of the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention for the years 1969 through 2013. During this time period, the age-standardized death rate per 100,000 individuals declined from 1,278.8 to 729.8 for all causes, which is a **42.9%** reduction. Deaths from stroke declined by **77%**, from heart disease by **67.5%**, for unintentional injuries by **39.8%**, from cancer by **17.9%**, and from diabetes by **16.5%**.

Editor’s Note: Despite these gains, deaths from chronic obstructive pulmonary disease (COPD) increased by **100%**, although they began to decline during the last time point analyzed.

**JAMA*. 2015 Oct 27;314(16):1731-39.

Vitamin E Delays Progression of Cellular Senescence

An article appearing in *BioMed Research International* reveals new findings concerning the antiaging properties of **vitamin E**. In an experiment involving two types of human cells, treatment with vitamin E resulted in a delay in cellular senescence in comparison with untreated cells.*

Senescent cells are those that have reached a state of irreversible growth arrest by attaining a limited number of divisions. According to authors Giorgio La Fata and colleagues, cellular senescence in vitro is related to the aging of organisms in vivo.

The team tested the effects of vitamin E in cultured human umbilical vein endothelial cells and human fibroblast cells. The researchers found an increase in the number of senescent cells over time in both types of cells. However, short-term vitamin E supplementation was associated with a reduction in the percentage of senescent cells in comparison with untreated control cells.

Editor’s Note: “An important contributor to the development of the senescence process is oxidative stress,” Dr. La Fata and co-authors note. “Oxidative stress usually occurs when the production or the exposure to reactive oxygen species (ROS) overwhelms the antioxidant systems of the cells. Vitamins E and C are important natural antioxidants capable of neutralizing the deleterious effects of reactive oxygen species.”

**BioMed Res Int*. 2015.



Ashwagandha Associated with Improved Sexual Function in Females

An article in *BioMed Research International* reveals the outcome of a study that found improvements in sexual function among women who received a highly concentrated **ashwagandha** (*Withania somnifera*) root extract.*

The study included 50 women diagnosed with female sexual dysfunction, which included hypoactive sexual desire disorder, female sexual arousal disorder, female orgasmic disorder, or combined genital and subjective arousal disorder. Twenty-five women received **300 mg** ashwagandha twice per day with food and the remainder received a placebo for eight weeks. Sexual function (including desire, arousal, lubrication, orgasm, satisfaction, and pain), sexual distress, sexual activity, response to therapy, and tolerability of therapy were evaluated before treatment, and at four and eight weeks.

Women who received ashwagandha reported improved sexual function scores in the areas of arousal, lubrication, orgasm, and satisfaction. They also noted improvement in sexual distress and an increased number of successful sexual encounters by the end of the treatment period compared with the placebo.

Editor's Note: As possible mechanisms, authors Swati Dongre and colleagues note that ashwagandha may reduce the effects of chronic stress (which interferes with sexual response) by lowering serum cortisol. Another possible mechanism is by "offsetting androgen deficiency syndrome, which is seen as contributing to a lack of sexual desire in some women" as suggested by the authors. In men, the herb has been shown to increase serum testosterone, which plays a role in sexual function in both genders.

**Biomed Res Int.* 2015;2015:284154.

Magnesium Helps Prevent Amyloid Beta Aggregation in Experimental Research

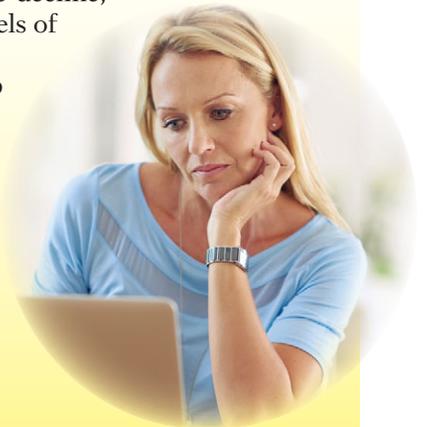
The December 2015 issue of *The FASEB Journal* reports the ability of ionic magnesium (Mg²⁺) to help reduce the deposition of amyloid beta in an Alzheimer's disease mouse model.*

Pu Wang, PhD, of Northeastern University in Shenyang, China, and colleagues tested the effect of magnesium threonate, which is believed to penetrate the blood/brain barrier, on normal mice and mice that overexpressed a gene that increased amyloid beta production while decreasing the influx of magnesium into the brain. Among those that received magnesium, the researchers observed a reduction in amyloid beta aggregation and associated cognitive decline, accompanied by an elevation in brain levels of ionic magnesium.

"We hope that our findings will help improve clinical practice pertinent to the optimal administration of Mg²⁺ for delaying or even preventing the onset of Alzheimer's disease," commented Dr. Wang.

Editor's Note: Dr. Wang and colleagues "also hope to extend our experimental models to other disorders such as severe craniocerebral injury, bronchial asthma, chronic pulmonary heart disease, arrhythmia, and myocardial necrosis, etc. and identify more targets of Mg²⁺ and strategies for treating these disorders."

**FASEB J.* 2015 Dec;29(12):5044-58.



Reduced Body Temperature Following Cardiac Arrest Associated with Survival

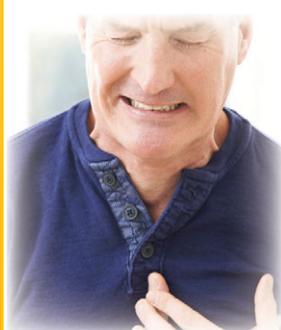
An article published in *Circulation* reports better survival and neurologic outcome among cardiac arrest patients who underwent therapeutic hypothermia compared to standard treatment. Cardiac arrest occurs when the heart stops pumping, and can be caused by heart attack or other conditions.*

Researchers at the University of Colorado utilized data from 519 men and women enrolled in the Penn Alliance for Therapeutic Hypothermia (PATH) Registry who survived cardiac arrest with nonshockable initial rhythms. Patients had experienced the return of spontaneous circulation and were comatose upon hospital admission. Subjects in the current study were treated with standard care or hypothermia, and were subsequently assessed for neurologic outcome.

The researchers, led by Sarah Perman, MD, uncovered a **2.8 times** greater likelihood of survival to hospital discharge and a **3.5 times** greater likelihood of better neurologic outcome among those treated with hypothermia in comparison with standard treatment. Life Extension Foundation funds a large hypothermia research project.

Editor's Note: Nonshockable rhythms are defined as pulseless electrical activity and asystole, which are not treatable by defibrillation.

**Circulation.* 2015 Nov 16.



New Research on Resveratrol

Sirtuin1 or simply SIRT1 is a gene involved in the regulation of cellular energy metabolism and functions as a cellular supervisor by preventing DNA damage and regulating gene transcription.^{1,2} It has been observed that calorie restriction, a validated method of extending mean and maximum life span, increases the activity of SIRT1.³

Due to its ability to enhance SIRT1,⁴⁻⁶ which is called the longevity enzyme, resveratrol has been extensively studied for its wide array of benefits. Through the activation of SIRT1, resveratrol favorably regulates many other genes.

In studies involving diabetic mice, resveratrol has been shown to improve insulin sensitivity by inhibiting the protein tyrosine phosphatase 1B (PTP1B) gene.⁷ This particular gene has been shown to be activated in diabetics and it wreaks havoc on insulin signaling pathways.⁸⁻¹¹

Cells have a limited functional life span. Once a cell wears out, the ideal mechanism of removal is through a healthy process of programmed cell death called apoptosis. If the dysfunctional cell does **not** undergo apoptosis, it lingers and emits pro-inflammatory signals that lead to degenerative illnesses.¹²

Resveratrol can increase beneficial apoptosis to facilitate the healthy removal of decrepit cells.¹³ Resveratrol was shown to induce a critical cellular process called autophagy that removes waste (damaged proteins and organelles) from inside the cell.

In a recent study, rats were given the toxic chemotherapy drug doxorubicin (Adriamycin®). Resveratrol, along with calorie restriction, was shown to inhibit the damage done to the hearts of these rats by inducing autophagy resulting in improved cellular waste removal. There is growing evidence that compounds like resveratrol can shield against chemotherapy-induced cellular damage.^{14,15}

Researchers have discovered a link between deactivation of SIRT1 and progeria, a condition that results in premature accelerated aging and markedly shortened life span.^{16,17} One study showed that mice with progeria given resveratrol had a **30%** increase in median life span. The study also showed an increase in bone mineral density and a decline in potentially lethal atrophy.¹⁶

Scientists speculate that it would be interesting to test resveratrol on human progeria patients to see if it could slow the progression of this genetic disorder. Currently, there is no known cure and progeria patients typically die at about age 13.¹⁸

Neuronal function is dependent on the continuous removal of dysfunctional proteins and mitochondria. Increase activation of SIRT1 by resveratrol contributes to a process called autophagy (removal of cellular debris such as misfolded proteins and dysfunctional mitochondria).^{19,20}

The accumulation of these cellular waste products has been shown to be involved in neurodegenerative diseases such as Alzheimer's and Parkinson's.^{21,22} Evidence also shows resveratrol decreases damage caused by cerebral ischemia, thus reducing the adverse effects caused by diminished blood flow to the brain that occurs with aging.²³

In recent studies, resveratrol was shown to strengthen bone mass and inhibit bone demineralization. It does this by activating genes that signal our stem cells to turn into bone-forming cells called osteoblasts. In addition, resveratrol was shown in early studies to induce apoptosis (programmed cell death) of cells that break down bone, called osteoclasts, helping to preserve existing bone mass.²⁴⁻²⁶

Over **10.2 million** older adults have been estimated to suffer from osteoporosis,²⁷ and these recent findings suggest resveratrol can be used as a therapy to resist age-related **bone loss**.

—Chancellor Faloon

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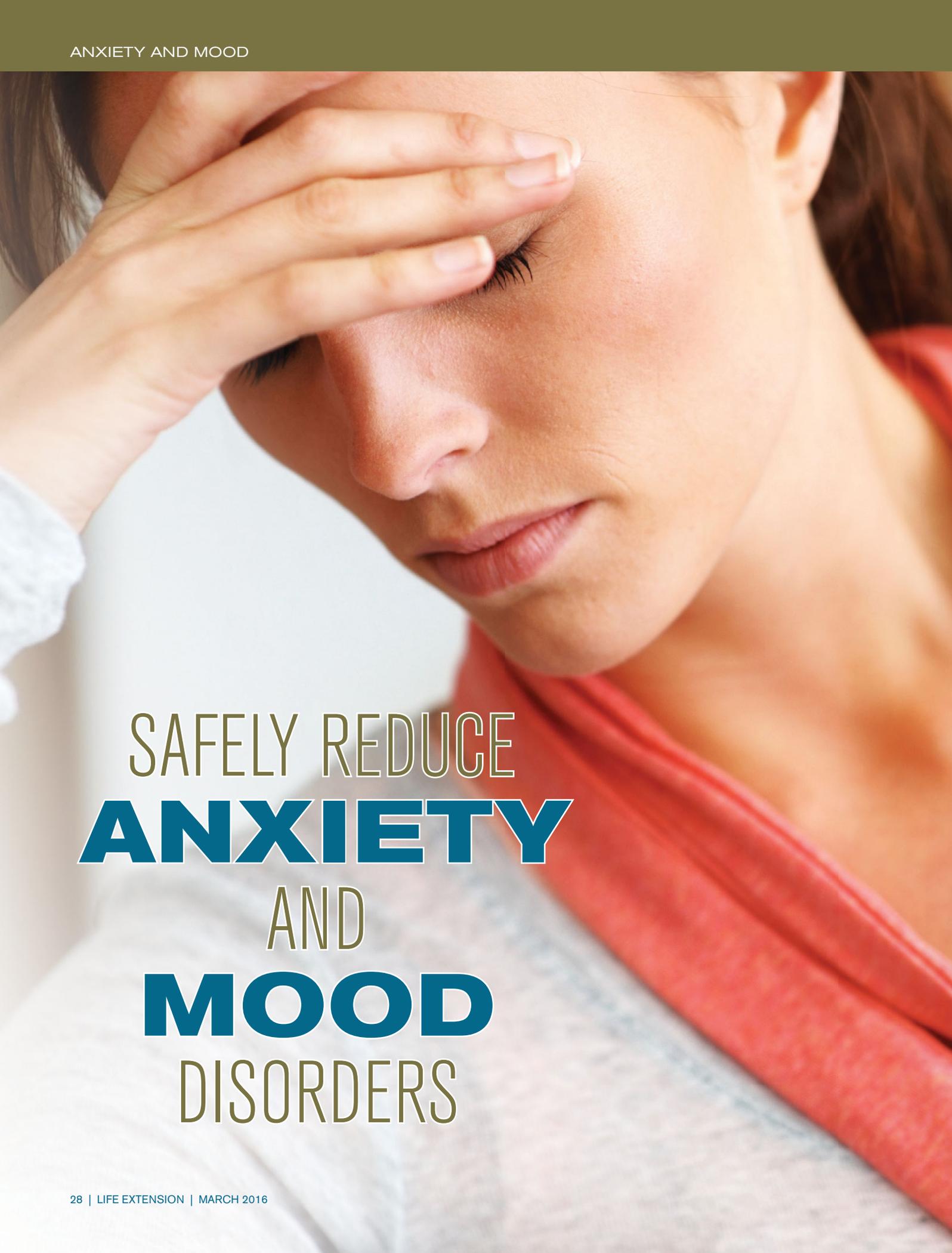
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SAFELY REDUCE
ANXIETY
AND
MOOD
DISORDERS

A microscopic view of various rod-shaped bacteria. Some are green and others are red, set against a blue background. The bacteria are arranged in chains and clusters, with some showing binary fission.

Anxiety and mood disorders are now being recognized as major medical and societal issues.

In the United States alone, close to 48 million prescriptions were written in 2011 for the anti-anxiety drug Xanax®. One in 10 Americans takes an antidepressant medication.^{1,2}

In an alarming recent study, scientists found **anxiety shortens** telomere length and accelerates cellular aging. Put another way, uncontrolled anxiety may reduce one's life span.^{3,4}

With millions of people medicated for mood disorders that include anxiety and mild depression, researchers have sought a safer way to reduce their impact.

In a unique discovery, two specific **probiotic** organisms have been identified that show impressive reductions in the manifestation of stress, anxiety, and depression.

Human studies on these two unique probiotics show notable results. For example, one study showed a **50% decrease** in **depression** scores while another showed a **55% improvement** in **anxiety** scores.^{5,6}

While it may seem remarkable that a probiotic can have effects outside of the gastrointestinal tract, a massive accumulation of data suggests that the gut is, in fact, practically a "second brain," with a powerful and lasting impact on mood.⁷

“Gut-Brain Axis”

Depression and anxiety are highly prevalent in the US (and around the world), affecting approximately **6.7%** and **18.1%** of Americans respectively.^{8,9}

Until quite recently, these mental health disorders were viewed as primarily related to brain function, since it has long been believed that the brain is solely responsible for thoughts, feelings, and behavior.

There is an increasing awareness among scientists of the role played by the microorganisms that live in the gastrointestinal tract in affecting other body systems, including the brain.¹⁰ At nearly 100 trillion individual organisms, these cells outnumber the body's own cells by 10 to 1, possessing nearly **100 times** as many genes.¹¹ That gives them a lot of leverage.

In fact, the close relationship between the microbes in the gastrointestinal tract and the biochemical functioning of brain cells and structures has given rise to the term **gut-brain axis**, indicating that what happens in the gut can affect the brain, and vice versa.^{12,13}

Animal studies show that the makeup of organisms in the gastrointestinal tract (intestinal flora) can affect brain development in young animals, influencing specific behaviors such as anxiety.^{14,15} Conversely, early life stresses can change the makeup of the gastrointestinal flora, accompanied by increases in stress hormones such as cortisol, in immune system responses, and in intestinal pain sensations.¹⁶

Therefore, deliberately introducing changes to the gastrointestinal flora through supplementation with **probiotics** is an exciting new way to introduce changes in how the brain functions, including how people experience emotions.^{10,17-19}

Animal Data

Studies show that mice with sterile gastrointestinal tracts that lack microbes have exaggerated responses to stress, with greater elevations in stress hormones like **cortisol** and its releasing hormone, adrenocorticotropic hormone (ACTH), compared with mice having intestinal microbes.



But when germ-free mice were inoculated with beneficial intestinal organisms, such as *Bifidobacterium* species, their stress responses were restored to normal levels. And when mice were inoculated with disease-causing *E. coli* organisms, their responses to stress worsened.¹⁴

A similar experiment showed that germ-free mice could be made to display increased anxiety-like behavior when their intestinal tracts were colonized with microbes from a strain of mice with high-anxiety behaviors. Conversely, administering organisms from normal mice to the high-anxiety animals reduced manifestations of anxiety, demonstrating the power of the microbial community to govern behavior.²⁰

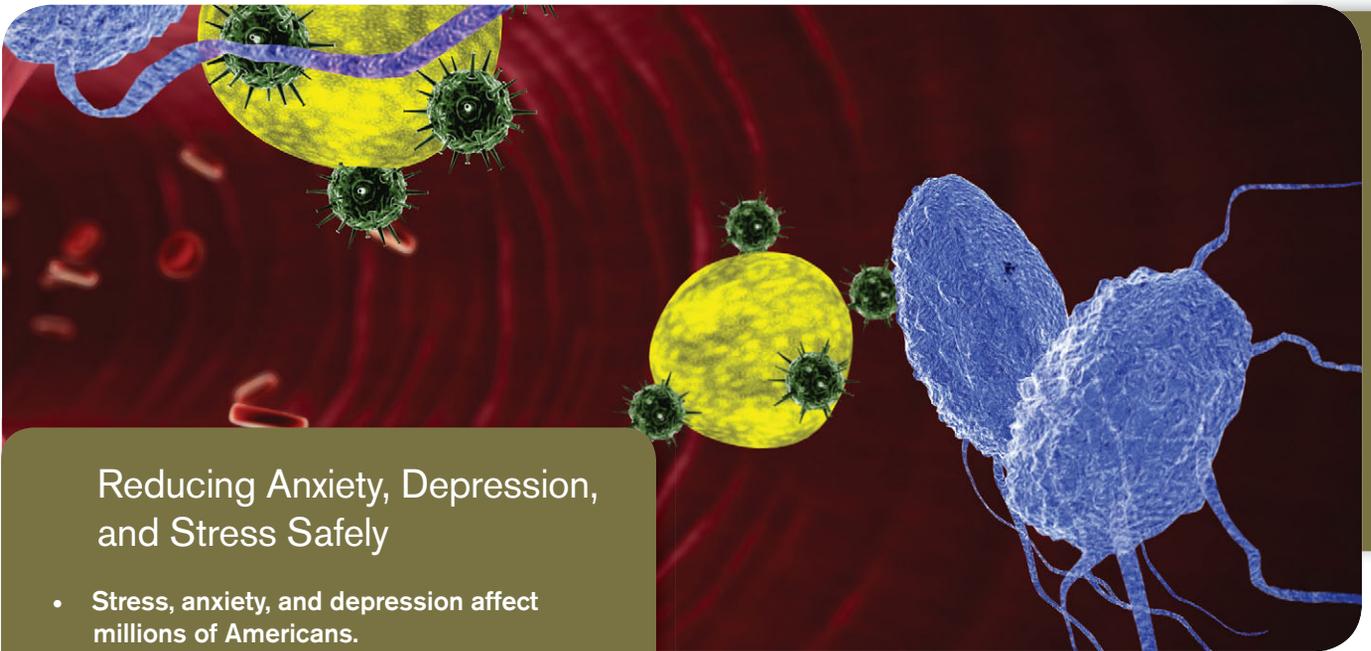
Physiological changes occur during stress, which can affect the gastrointestinal tract and impact the entire body through microbiological and hormonal influences.

In normal rats exposed to stress, for example, the intestinal lining became permeable or “**leaky**,” allowing bacteria and their toxic products to leak out of the gut, while levels of beneficial *Lactobacillus* organisms fell, indicating physiological effects of stress.

Probiotic supplementation with strains of *Lactobacillus* normalized those functional abnormalities of the gut and reduced high corticosterone levels, a hormonal indicator of systemic stress in rodents.²¹

Here are other mechanisms by which probiotics improve brain function:

- **Reduction in inflammatory cytokines** (signaling molecules) has been detected in animals supplemented with *Bifidobacterium* species.²² These cytokines are elevated in people with depression, so these reductions in inflammatory cytokines are indirect evidence of a depression-fighting effect.²³⁻²⁵
- **Balancing of hormones** and other signaling molecules in regions of the brain involved in maintaining the body's physiological response to stress and behavior. This is suggested by the reductions of corticosterone and adrenocorticotropic hormone, as well as changes in intestinal permeability (ability to hold intestinal contents in place and not have them leak into the bloodstream).^{5,21}
- **“Competitive exclusion”** of organisms that may produce toxic products influencing the brain has been proposed, based on the observation that some substances, such as lactic and propionic acid, produced to excess by “unfriendly” intestinal microorganisms, can induce increased anxiety and aggression.^{5,26,27} Thus, probiotic organisms that outcompete such toxin-producers might alleviate symptoms by lowering levels of intestinal toxins.



Reducing Anxiety, Depression, and Stress Safely

- Stress, anxiety, and depression affect millions of Americans.
- Mainstream medicine relies on costly medications, with only partial effectiveness and substantial side effects, in an attempt to manage these conditions.
- The recognition of the enormous role played by the intestinal flora, the community of microorganisms living in our intestines, has shifted attention to these organisms as potential partners in managing human mental illnesses.
- Changing the composition of the intestinal flora has been shown in animal studies to significantly affect behaviors and biochemical markers of stress, anxiety, and depression.
- The combination of *Lactobacillus helveticus* R0052 and *Bifidobacterium longum* R0175 was specifically developed with mental health in mind.
- This probiotic combination, in oral form, has been proven in human and animal studies to relieve symptoms of anxiety and depression, while demonstrating reductions in stress and anxiety-promoting hormones.
- For anyone currently using medication to manage symptoms of depression and/or anxiety, the new probiotic combination deserves a hard look, both for its effectiveness and for its safety.

These and other mechanisms contribute to the remarkable success of two specially selected strains of probiotic organisms in addressing mood issues, *Lactobacillus helveticus* strain R0052 and *Bifidobacterium longum* strain R0175. Both bacteria are derived from those commonly found in the human gastrointestinal tract, and which have known beneficial features. The combination of these organisms, each a unique strain developed for its effect on brain chemistry, is now proving effective, not only at changing markers of stress, but also at improving signs and symptoms of anxiety and depression, two of the most pressing mental health conundrums people face today.

Mechanisms of Probiotic Impact on Stress

High-quality, reliable animal models of stress, anxiety, and depression have been developed in the pursuit of chemical drugs to treat these conditions.²⁸⁻³¹

In addition, various biochemical markers have been identified that can help indicate an animal's state of stress and its responses, which are useful in determining the effects of an intervention such as a drug or a supplement. These markers include hormones such as cortisol and the closely related corticosterone, both of which correlate with chronic stress, as well as epinephrine (adrenaline) and norepinephrine (noradrenaline), which indicate immediate stress and anxiety.

Such animal models have now been used to study the impact of the probiotic combination of *Lactobacillus helveticus* R0052 and *Bifidobacterium longum* R0175.

In a study of mice under chronic psychological stress, this unique probiotic combination showed anti-anxiety activity and reduced cell death in the emotion-processing parts of the brains of animals in a model of depression.³²

For the study, mice were divided into two groups, one of which was exposed to a stressful situation and the other not. Blood levels of corticosterone and catecholamine neurotransmitters (such as epinephrine and norepinephrine) were elevated in the stressed group, and intestinal permeability (“leakiness”) was increased. This latter finding is suspected to play an important role in the brain changes associated with anxiety, depression, and a host of other diseases.³³⁻³⁵

Compared to placebo, pretreatment with the probiotic formulation attenuated those pathological responses, and reduced markers of stress, as follows:

- **Epinephrine and norepinephrine** levels fell beneficially by **28%** and **51%**, respectively, while corticosterone levels fell by **68%**, all significant differences.
- Intestinal permeability dropped by **57%** and levels of **occludin**, a protein found in intestinal “tight junctions,” was increased **2.1-fold**, demonstrating a tightening of the “leaky gut” induced by stress.
- Levels of the **protein c-Fos**, a marker of stress at the cellular level in the brain, were reduced by **64%** to **73%** in brain areas critical to the stress response.
- There was a significant increase in **doublecortin**, a protein marker of new brain cell formation, in the hippocampus, the memory-processing region of the brain.
- There was a significant increase in **brain-derived neurotrophic factor (BDNF)**, a neuroprotective protein that encourages new synapse growth and differentiation.

In another study, a group of 36 mice were subjected to electric shocks to induce anxiety. The animals were divided into three subgroups, receiving either saline solution, the probiotic combination for two weeks, or a dose of valium an hour before administration of electric shocks.⁵ The animals were monitored for “defensive burying,” or attempts to bury the shocking electrode, a marker of anxiety.

Both the valium-treated and the probiotic-supplemented animals showed significantly decreased anxiety and stress compared with the saline-only group, demonstrating that this simple probiotic combination has similar anxiety-reducing properties to those of a well-established anti-anxiety drug.⁵

Human Studies Show Dramatic Reductions in Anxiety and Depression

Even high-quality animal models are limited in what they can tell us about any drug or supplement’s impact on human mood and behaviors. That’s why human randomized, placebo-controlled trials are so important. Such studies have now been carried out using the probiotic *Lactobacillus helveticus* R0052 and *Bifidobacterium longum* R0175 combination.

Depression and Anxiety: The Facts

Depression is defined as a state of persistently low mood, with diminished self-esteem, loss of interest and pleasure in normally enjoyable activities, and often a feeling of helplessness and hopelessness.³⁷ Nearly **6.7%** of Americans suffer from depression,⁸ with higher rates in women at all ages.³⁸ Rates of depression are higher in middle-age and younger old-age women, exceeding **10%** of the population at those ages.³⁸ **Dysthymia**, a chronic form of depression less severe than major depressive disorder, but lasting for two or more years, is also prevalent in the US population at a rate of about **1.5%**.³⁹

Anxiety is defined as having intense, excessive, and persistent worry and fear about everyday situations that may involve panic attacks in which sudden feelings of intense anxiety, fear, or terror peak within a few minutes, and can frequently incapacitate the sufferer.⁴⁰ Anxiety disorders are the most common psychiatric disorders among adults, affecting more than **18%** of the US population in any year, and nearly **29%** of all people at some point in their lives.⁹





A human study of 55 participants with mild depression or anxiety, ages 30 to 60, was conducted to determine the effects of the probiotic combination on anxiety, depression, stress, and coping strategies.⁵ Subjects were given **3 billion** colony-forming-units (CFUs, a measure of the number of individual organisms) of the probiotic, or a placebo, for 30 days.

The probiotic-supplemented subjects had a significantly larger drop in measures of anxiety and depression than did placebo recipients as follows:

- **49%** drop in the *global severity index*, a measure of overall psychological distress
- **50%** decrease in depression scores
- **60%** decrease in anger-hostility scores
- **36%** decrease in the hospital anxiety and depression score (HADS)
- **13%** decrease in urinary free cortisol, a hormonal measure of chronic stress, which was not seen in placebo patients

Supplemented patients also displayed reductions in self-blame and higher problem-solving skills after the study.⁵

Even people who don't consider themselves "high-stress" may attain a serenity boost from this novel probiotic combination. When the same research team analyzed data on 25 original study participants whose baseline cortisol was below the median, indicating generally lower stress, they found that these individuals also experienced marked improvements in mood scores.⁶

Another human study evaluated the impact of the probiotic combination on stress-induced digestive symptoms, a common manifestation of stress even in basically healthy people. Subjects ages 18 to 60, with at least two self-reported symptoms of stress (nervousness, irritability, anxiety, sleeping problems, gastrointestinal disturbances), were randomly assigned to receive either placebo or the probiotic combination at the same dosage as in the other studies.

Compared with placebo, supplemented subjects had a significant **7.6-fold** greater reduction in stress-induced abdominal pain, and a significant **2.1-fold** greater reduction in stress-induced nausea and vomiting. For many of us, these effects alone would make the supplement worthwhile!³⁶

Summary

Depression and anxiety are serious medical conditions that can be disabling, and in the case of depression and suicide, fatal.

Mainstream medicine relies on costly medications that attempt to correct the problems by creating new chemical imbalances. A safer and more natural approach is to identify ways to restore normal neurochemical and hormonal balances that will obviate the symptoms.

Supplementation with the probiotic combination of *Lactobacillus helveticus* R0052 and *Bifidobacterium longum* R0175 is an evidence-based, biologically plausible approach to addressing symptoms of depression, anxiety, and stress. Studies show favorable biochemical and behavioral changes in animals treated with the probiotic, and sharp and significant decreases in symptoms of depression and anxiety in human trials.

For anyone experiencing anxiety and/or depression, regular supplementation with this probiotic combination seems a natural and worthwhile practice. It is conceivable that such supplementation could reduce reliance on prescription medications and deliver freedom from the burdens of these common mental illnesses. ●

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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- Support smooth firm skin⁷
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Suggested dose is one capsule one to four times daily, for most individuals.

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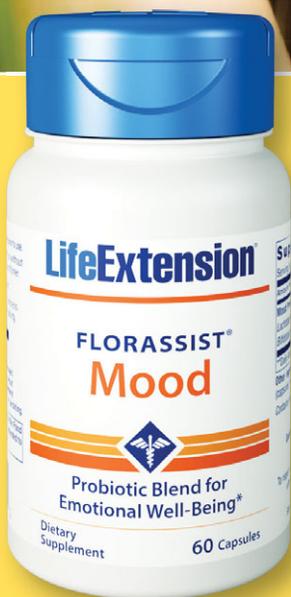
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CURCUMIN: Aging Brains and Cancer



Newly published data about **curcumin** continues to astonish scientists, physicians, and the lay public.

We've long known about curcumin's many benefits, yet the news about this low-cost nutrient keeps growing stronger.

Curcumin, the active component of the spice turmeric, has a long history in Chinese and Indian medicine. Modern science has discovered that this ancient compound can drastically impact **neurodegenerative diseases** and **cancer**.¹⁻⁵

While neurodegeneration and cancer may seem unrelated, they have multiple mechanisms in common. These include dysfunctional chemical **signaling** in the cells and abnormal **gene regulation**, as well as a vulnerability to chemical stresses and **inflammation**.

In a remarkable finding, researchers have discovered that when mice were supplemented with **curcumin**, they experienced a significant

increase in formation of **new neurons**, particularly in the memory-critical hippocampal area of the brain.^{6,7}

Numerous studies have demonstrated curcumin's ability to prevent underlying processes involved in Alzheimer's disease.⁸ Perhaps even more exciting are studies showing that it may significantly modify many of the processes involved in the development of Alzheimer's.⁹⁻¹¹

In addition, there is a growing body of literature documenting curcumin's ability to treat and prevent cancer.¹²⁻¹⁴

These studies show not only the cancer prevention potential of curcumin, but also its ability to slow tumor growth when it occurs, and sensitize cancer cells to existing chemotherapy drugs.^{8,15-17}

The importance of curcumin as a broad-spectrum shield against the impact of aging continues to be confirmed by the scientific community.

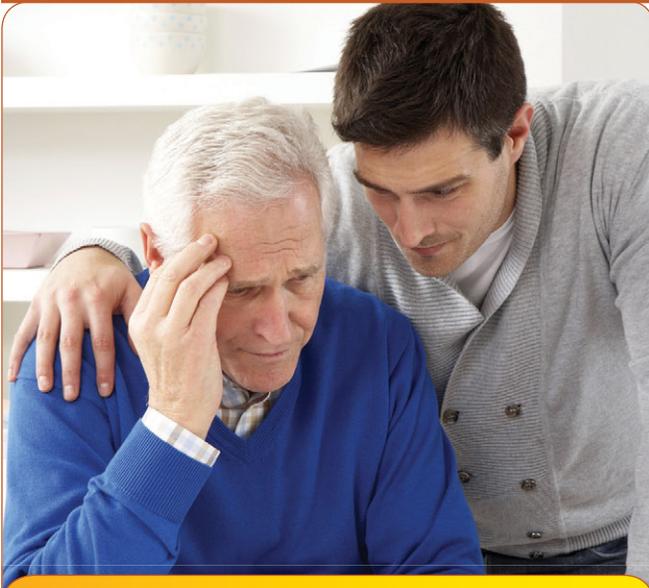


Table 1: Curcumin's Anti-Alzheimer's Mechanisms

Curcumin powerfully fights against the underlying causes of Alzheimer's disease. Studies show that it directly binds to toxic beta amyloid proteins and prevents the formation of dangerous, inflammation-causing plaques. In addition, curcumin has been shown to have at least seven other mechanisms that minimize the formation of beta amyloid:

- It binds to metal ions that induce oxidative stress in brain cells and promote beta amyloid development.^{43,44}
- It directly protects against oxidative damage, exceeding that of vitamin E, removing a major stimulus for beta amyloid formation.^{44,45}
- It lowers cholesterol, which has been shown to limit beta amyloid plaque formation.^{46,47}
- It reduces levels of pro-inflammatory signaling molecules (cytokines) that promote beta amyloid.^{25,48}
- It limits oxidation of crucial fats and proteins that trigger the main enzyme involved in beta amyloid formation.^{10,25,26}
- It promotes cleanup of existing beta amyloid deposits by brain macrophage cells.¹⁰
- It induces stress-responsive heat-shock proteins that protect brain cells from beta amyloid toxicity.⁴⁹

Curcumin and the Aging Brain

There are numerous factors that cause brains to age. These include the cumulative effects of oxidative stress, environmental toxins, inflammation, the buildup of toxic proteins, the loss of energy-generating power, and gradual damage to vital genes in individual cells.^{9,18,19}

Animal experiments show that **curcumin** can help protect against these factors in the aging brain. For example, studies demonstrate curcumin's ability to improve the management of cellular energy and to enhance cellular free radical protection systems. The result is reduced fat oxidation and decreased accumulation of toxic molecules that contribute to premature brain cell death.²⁰

In addition, much of curcumin's value in the aging brain may relate to its ability to turn on genes that trigger the emergence of **new brain cells**.¹⁰ This exciting discovery was demonstrated in a study of adult mice. When supplemented with curcumin, the mice experienced a significant increase in new neuron formation, particularly in the memory-critical hippocampal area of the brain.⁶

Evidence is also rapidly accumulating that curcumin plays a major role in protecting *existing* brain cells from the slow degradation that occurs in disorders such as Alzheimer's and Parkinson's diseases.¹⁰

As an added benefit, curcumin appears capable of minimizing the impact of acute catastrophes such as stroke and head trauma and chronic toxicity from alcohol.¹⁰

Let's look more in depth at each of these brain-protective benefits.

Alzheimer's Disease

In the search for a treatment or cure for Alzheimer's disease, **curcumin** has emerged as a leading *adjuvant* contender. What this means is that curcumin may be one critical part of lifestyle changes, hormone modulation, and a nutrient cocktail that may reverse what the mainstream today considers incurable. More about how to reverse memory loss associated with Alzheimer's disease will appear in the **April 2016** edition of *Life Extension*® magazine.

Numerous studies have demonstrated curcumin's ability to prevent the underlying processes involved in the disease. Perhaps even more exciting are studies showing that it may help modify some of these processes.⁹⁻¹¹

These discoveries couldn't have come at a better time. Alzheimer's disease is currently the leading cause of dementia in older people, and the risk for developing it doubles with every five years we live past age 65.^{21,22}

Over 5 million Americans aged 65 and older have Alzheimer's disease and it is expected to affect a staggering **13.8 million** people by 2050.²³

If there is any good news in all these statistics, it is the tremendous potential impact of **prevention**. Studies suggest that by simply delaying the onset of Alzheimer's by an average of two years, we could prevent at least 2 million new cases in people over the age of 50.²¹

That's where curcumin comes in.

The reason curcumin is considered a critical component in the battle against Alzheimer's is because it interferes with one of the root causes of Alzheimer's itself: the formation and toxicity of the misfolded, abnormal protein called *beta amyloid*.¹⁰ When these protein pieces clump together, they form dangerous **plaques** that promote inflammation and contribute directly to **brain cell death**. This results in the loss of function, memory, and, eventually, one's self.

Basic laboratory studies show that curcumin has tremendous potential to **prevent the formation** of amyloid plaques. In a remarkable study, scientists found that even at minute concentrations, curcumin has the ability to bind to beta amyloid, preventing it from accumulating into plaques.¹⁰

Studies show that curcumin easily enters the brains of living animals and inhibits formation of toxic beta amyloid plaques.²⁴

Animal models of Alzheimer's disease have confirmed these results. Several studies have demonstrated that curcumin reduces the accumulation of beta amyloid and the dangerous inflammatory plaques that it forms.^{25,26} In addition, curcumin has been found to sharply reduce markers of **oxidative damage** and **inflammation** in the brain. And more importantly, when rats with Alzheimer's disease are supplemented with curcumin, they have shown improvement in cognitive losses (such as memory and learning).²⁶

This next study is especially encouraging for those already suffering from Alzheimer's disease. Published in the *Journal of Biological Chemistry*, the study found that curcumin suppressed beta amyloid and plaque formation in the brain, *even when treatment was started after accumulations had reached levels similar to those of human patients*.²⁴ This makes curcumin a key nutrient with ability to **reduce** beta amyloid deposits.¹⁰

In addition to directly binding to toxic beta amyloid and preventing plaque formation, curcumin has been shown to have at least seven other mechanisms that minimize the formation of beta amyloid. (These are outlined in **Table 1.**) All eight of these mechanisms are likely to be at work in an experiment in which specialized microscopy was used to study beta amyloid



What You Need to Know

Curcumin Battles Neurodegeneration and Cancer

- Chemical stresses and disrupted biological signaling pathways are common to most symptoms of aging. These disruptions are especially prominent in the development of age-related brain degeneration, stroke, and other threats to our cognitive health, and also in the development of cancer.
- Curcumin, the primary constituent of turmeric, is an age-old spice used to combat many chronic disorders, which today are recognized as related to these disrupted pathways.
- Studies now reveal at least eight mechanisms by which curcumin can prevent or slow neurodegenerative diseases, stroke risk, and even damage induced by head trauma and alcohol abuse.
- Similarly, curcumin acts to oppose at least seven basic pathways leading to cancer development.
- Studies in the lab and on live animals demonstrate that curcumin leads to sharp reductions in the occurrence and severity of neurodegenerative disorders and of malignant growths.
- Those interested in opposing fundamental aging processes should take special notice of curcumin's remarkable, multitargeted mechanisms capable of slowing and perhaps reversing cognitive decline and cancer risk.

plaques in a mouse model of Alzheimer's. This study demonstrated that curcumin enters the brain and then binds specifically to plaques, reducing their size by up to **30%**.⁹

Unfortunately, most of us have already reached an age at which some beta amyloid has already formed in the brain, raising the risk for Alzheimer's long before symptoms appear. This makes curcumin supplementation especially valuable, since it not only prevents plaque formation, but also *reduces the toxicity of existing plaques*. It does this by suppressing the pro-oxidant, pro-inflammatory, and gene-altering toxicity of beta amyloid in the brain.¹⁰

Parkinson's Disease

Parkinson's disease is another common neurodegenerative condition. It is sometimes referred to as a "movement disorder." As the disease progresses, cells in the brain regions involved in control of motor muscles begin to die off, leaving victims slow moving and off balance.²⁷

Eventually, these symptoms can progress to include a nearly frozen state of hesitation in walking and a so-called "mask-like" expression. In many cases, Parkinson's symptoms progress to include dementia, producing cognitive losses similar to those in Alzheimer's.²⁸

Currently, it is estimated that at least 1 million Americans suffer from Parkinson's disease, with about 60,000 new diagnoses annually. Men are **1.5 times** as likely to develop Parkinson's.²⁷

Curcumin fights many of the underlying processes involved in the development of Parkinson's disease.

Parkinson's disease occurs when dopamine-producing cells die in the region of the brain that controls movement (the **substantia nigra**). Oxidative damage contributes to the death of neurons in the substantia nigra.^{10,29} Curcumin's powerful radical-scavenging properties and natural inhibition of inflammation make it a natural candidate for slowing these reactions. Indeed, it has been shown to provide significant neuroprotection and prevent chemical-induced changes in animal models.³⁰⁻³²

Curcumin also protects and supports the function of **mitochondria**, the intracellular "power plants" that release energy. When a potent mitochondrial toxin was applied to brain cells in culture, curcumin treatment protected the cells and prevented their death.³⁰

Finally, as with Alzheimer's disease, Parkinson's is associated with accumulations of a toxic protein. Known as *alpha-synuclein*, this protein damages mitochondrial function and adds to neuronal oxidative stress levels. Alpha-synuclein also triggers inflammatory

changes that contribute to cell death, which produces Parkinson's symptoms.³³

Curcumin's anti-inflammatory properties are thought to be involved in protecting brain cells from premature death.¹⁰ Lab studies show that when curcumin is applied to brain cells in culture, it prevents *alpha-synuclein* from binding together, resulting in formation of fewer toxic plaques.^{33,34}

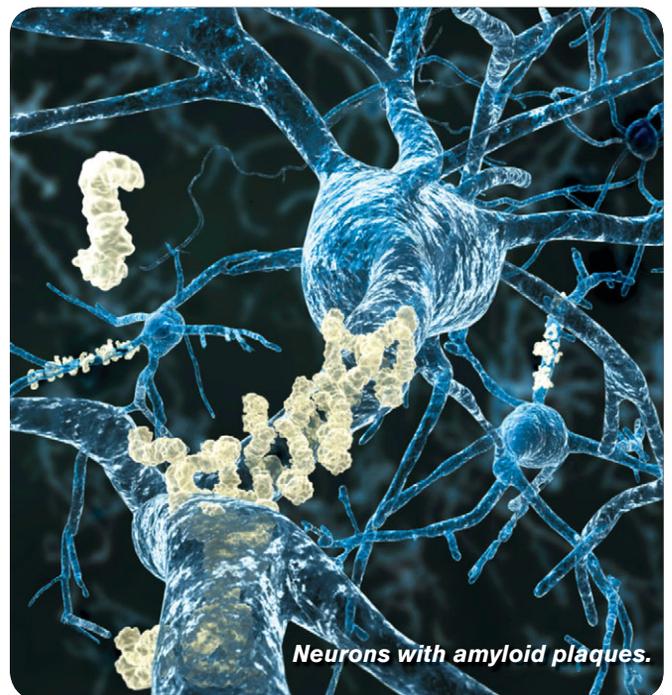
Strokes and Cerebrovascular Diseases

Strokes and cerebrovascular diseases are major causes of death and disability. Fortunately, curcumin has multiple mechanisms of action that are beneficial against strokes such as suppressing inflammation while minimizing oxidative damage.

One study showed that curcumin treatment in rodents before and even up to 24 hours after induction of brain ischemia (loss of blood flow) reduced damage to vulnerable portions of the brain, preserved brain free radical defense systems, and mitigated behavioral changes induced by the stroke.³⁵

Additional Neuroprotective Effects

Curcumin has been shown to protect brain tissue against the effects of **acute head injury**. Head trauma produces a sudden rush of oxidative stress and early inflammatory changes in the brain, and has also been shown to be a risk factor for Alzheimer's disease.^{10,36} Curcumin can combat these damaging effects.



Neurons with amyloid plaques.



One study found that when rats were supplemented with curcumin prior to an injury, they had sharply lower levels of oxidative stress damage and other markers of brain injury. Importantly, this resulted in less cognitive impairment as a result of the trauma.³⁷

Curcumin can also help protect against the long-term brain damage associated with **chronic alcohol abuse**. This type of damage occurs as a result of oxidative stress, peroxidation of fats in brain cell membranes, inflammation, and other mechanisms common to neurodegenerative diseases, strokes, and head injury.¹⁰ Curcumin is well known to oppose those effects in the liver. Studies also show protective properties of curcumin against alcohol-induced brain degeneration in live animal models.^{10,38}

Curcumin and Cancer

Curcumin has at least seven mechanisms by which it fights cancer from its earliest stages of development. These are outlined in **Table 2** on the next page.

This type of multilayered protection is essential in fighting cancer because cancer is a highly multifactorial process. As shown in **Table 2**, curcumin has been found to attenuate all stages of tumor progression. This makes it one of the most powerful natural compounds in the fight to prevent cancer, to slow its growth when it occurs, and even to sensitize cancer cells to existing chemotherapy drugs.^{8,15-17}

A growing body of literature is documenting curcumin's ability to treat and prevent cancer, especially in advanced animal models of malignancy. Here are some of the highlights.

Curcumin Combats Tumors

Studies have shown curcumin's ability to battle three of the most common and deadly tumors: lung, colon, and prostate cancers.

In the first study, curcumin supplementation was supplied to strains of mice injected with cells from human non-small cell lung cancer, the leading cause of cancer-related death. Compared with mice fed a control diet, supplemented mice demonstrated a significant **36%** reduction in the size of the lung tumors. In addition, their chances of survival increased nearly **3-fold**.¹³

In the second study, curcumin supplementation significantly reduced by **40%** the number of colon tumors in mice fed a high-protein diet, a known risk factor for colon cancer. The decrease in tumors was accompanied by significant drops in markers of inflammation (a known promoter of cancer growth) and by slowed proliferation rates of colon cells. These actions are likely the reason for the reduction in tumors.¹²

In a mouse model of colon cancer, curcumin supplementation completely eliminated tumors, increased survival, and demonstrated microscopic improvements in the animals' colons.⁸

Finally, in mice bearing human prostate cancers, 30 days of curcumin supplementation significantly reduced the tumor volume and weight by inhibiting cancer cell growth. The mechanisms appeared related to curcumin's up-regulation of genes that inhibit tumors, and down-regulation of genes that promote tumors.¹⁴

Curcumin Slows Progression of Fast-Growing Cancers

A rapidly growing and poorly differentiated (higher grade) cancer can be distinguished by its high rate of new blood vessel formation (angiogenesis). Curcumin has been shown to significantly slow the growth of these dangerous tumors by reducing the numbers of new blood vessels they form.³⁹

Curcumin has also been found to slow the growth of prostate cancer. In mice bearing human prostate cancers injected under their skin, curcumin supplementation significantly inhibited initial tumor growth by **27%**, compared with unsupplemented controls.

There were two reasons for this. First, the animals treated with curcumin had significant reductions in their expression of androgen receptors. Those receptors, when stimulated by testosterone and other male hormones, promote tumor growth. Second, supplemented animals had a **2-fold** increase in the time it took for their levels of prostate-specific antigen (PSA, a marker of tumor progression) to double. This is a further indication of the deceleration of cancer development.⁴⁰



Curcumin Reduces Cancer-Promoting Conditions

Gastritis is inflammation of the stomach lining that has been linked to stomach and esophageal cancers. A common cause is infection by the *Helicobacter pylori* bacteria.⁴¹

One study found that when mice infected with *Helicobacter pylori* were treated with curcumin, it resulted in a complete absence of inflammation. This is critical because preventing *H. Pylori*-induced inflammation is an important step in preventing these types of cancers.⁴²

As an added benefit, curcumin supplementation enhances bacterial richness and diversity in the colon, a key to maintaining good digestive health. Studies in mice show that curcumin supplementation shifts the abnormal profile of organisms in colon cancer-bearing mice back towards that of healthy mice.⁸

Table 2: Curcumin and Cancer-Prevention Mechanisms

Cancer-Inducing or Cancer-Promoting Mechanism	Curcumin's Preventive Properties
DNA damage to genes regulating cell replication ⁵⁰	<ul style="list-style-type: none"> Prevents DNA damage by toxins, radiation, and other environmental factors⁵¹⁻⁵³
Loss of normal growth control leads to out-of-control reproduction of malignant cells ^{54,55}	<ul style="list-style-type: none"> Restores normal growth controls, reducing viability and replication rate of malignant cells^{15,56-59} Blocks cancer cells' access to growth factors needed for continued replication^{57,60,61} Switches off genes promoting cancer development, switches on those that prevent rampant growth⁶² Restores ability to die by apoptosis (programmed cell death)⁵⁸ Restores cell cycle checkpoints, trapping malignant cells at one phase in replicative cycle and preventing further growth⁵⁹
Evasion of normal immune system surveillance to find and destroy malignant cells ¹⁷	<ul style="list-style-type: none"> Reveals cancer cells to immune surveillance, improving detection and destruction of malignant cells¹⁷
Induction of new aberrant blood vessels to fuel tumor growth ⁶³	<ul style="list-style-type: none"> Inhibits new blood vessel growth by blocking vascular growth factors³⁹
Overproduction of "protein-melting" enzymes allows cancer cells to penetrate tissue to invade local sites ⁶⁴	<ul style="list-style-type: none"> Inhibits local invasion by blocking protein-melting enzyme actions,⁶⁵ and by interfering with cancer-associated fibroblasts, the cells that assist malignant growth⁶⁶
Persistence of cancer stem cells resistant to chemotherapy and radiation, allowing treated tumors to regrow ^{16,59,67}	<ul style="list-style-type: none"> Reduces cancer stem cell survival and sensitizes them to chemotherapy, making tumors more vulnerable to existing treatments^{16,59,67}
Seeding of new distant tumors (metastases) from original mass promoted by specialized adhesion molecules allows malignant tissue to stick to vessel walls and set up new tumor ⁶⁸	<ul style="list-style-type: none"> Reduces production of adhesion molecules used to stick to vessel walls⁶⁹ Speeds up cancer cells that roll along vessel walls, reducing ability to settle and form mature metastases⁶⁹

Summary

Neurodegenerative diseases and cancer may seem unrelated. In reality, they are deeply connected at the cellular and molecular levels. Both processes involve inappropriate or abnormal responses to normal biochemical signaling pathways, resulting in loss of cellular function.

In neurodegenerative diseases, strokes, and other problems in the aging brain, such loss of control leads to **cell death** and results in **cognitive decline**. In cancer, that loss of control leads to just the opposite: unregulated **cell growth** and replication.

Curcumin, derived from the spice turmeric, has a long history as a powerful protectant against disorders we now recognize as being driven by this kind of loss of cellular regulation.

Modern studies reveal that curcumin can directly oppose at least eight of the fundamental causes of age-related brain degeneration. This has led to promising progress in the fight against Alzheimer's and Parkinson's diseases, stroke, head trauma, and even alcohol abuse.

At the same time, studies show curcumin can reverse at least seven known cancer-promoting processes, leading to remarkable cancer-preventive properties.

All of this evidence suggests that curcumin is a versatile anti-aging compound. ●

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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Caution: If you are taking anticoagulant or antiplatelet medications, or have a bleeding disorder, consult your health care provider before taking this product.



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Super Bio-Curcumin® features **BCM-95®**, a patented curcumin that absorbs up to **7 times better** than standard curcumin,¹ making this product ideal for those seeking to:

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- Inhibit the pro-inflammatory activities of cyclooxygenase, lipoxygenase, and cytokines,³
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- Support natural defenses against estrogen-mimicking chemicals,⁸ and
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Prevent Gout Attacks by Lowering Uric Acid Levels

Gout is a kind of arthritis that can cause an attack of sudden burning pain, stiffness, and swelling in a joint. This often occurs in the big toe. Gout attacks can happen over and over unless properly treated. Over time, this disorder causes harm to joints, tendons, and other tissues.

Gout is caused by high concentrations of uric acid in the body.¹ This condition leads to the creation of crystals in joints and tissues. Aside from pain so excruciating that some of the 8.3 million US sufferers² often cringe at the thought of putting a sheet over their foot at night, gout is associated with higher risks of cardiovascular disease and mortality.^{3,4}

Drugs such as *allopurinol* and *probenecid* are typically used to help reduce uric acid levels, but the side effects can include breathing difficulties, unusual bleeding, vomiting, nausea, and severe rash.⁵⁻⁷ These drugs may also interfere with other medications.^{6,7}

Fortunately for gout sufferers and those with uric acid buildup, scientists have demonstrated the effectiveness of a natural alternative with a strong history of traditional Ayurvedic use and no reported side effects. Derived from the edible fruit of the ***Terminalia bellerica*** tree, this tannin-rich extract is believed to inhibit **xanthine oxidase**, an enzyme involved in the synthesis of uric acid.⁸

A randomized, double blind, and placebo-controlled human clinical trial has recently confirmed the dose-dependent action of *Terminalia bellerica* extract in decreasing blood levels of **uric acid**.

In volunteers with elevated levels, one capsule of **500 mg** of *Terminalia bellerica* extract, taken twice daily, decreased uric acid by a mean of **27.59%**.

This decrease in uric acid levels enabled **88.8%** of the people in the study arm taking the extract to achieve targeted uric acid serum levels...with no side effects.⁸

Source of Excess Uric Acid and Gout

Uric acid is made from purines, which are organic compounds serving functions in DNA, RNA, and neurotransmission. Most purines are made naturally in the body, and the rest come from purines in the diet. Some people either produce too much uric acid or their kidneys have trouble getting rid of it, resulting in hyperuricemia.

Affecting millions of Americans, hyperuricemia leads to the inflammation behind painful attacks of gout and other diseases related to high uric acid.^{2,9-11}

For example, multiple studies have linked hyperuricemia with a greater risk of hypertension, metabolic syndrome, coronary artery disease, cerebrovascular disease, preeclampsia, and kidney disease.¹²

Increasing prevalence of obesity, diuretic use, adverse lifestyle habits, and an aging population may all be contributing to recent increases in the prevalence of hyperuricemia.⁸

When the extreme pain of a serious gout attack has finally passed, some people want to forget about it as soon as possible instead of seizing the opportunity to cut their uric acid levels. But very few people, only 7%, have just one gout attack. And over time, attacks can become more severe, more frequent, last longer, and inflame multiple joints.¹³

Gout is best known for causing unbearable pain focused in the big toe. However, gout can attack multiple joints at the same time. A survey showed that attacks also occur in the ankle or foot (50% of cases), the knee (32%), a finger (25%), an elbow (10%), or a wrist (10%).¹⁴

About 5% to 8% of adult males have asymptomatic hyperuricemia.^{8,15,16} Uric acid levels above 8.6 mg/dL in men or 7.1 mg/dL in women are classified as hyperuricemia (although some laboratories and research groups use different limits).^{17,18} When the serum uric acid level is greater than 9.0 mg/dL, the probability of developing clinical gout is 6 times higher.^{8,15,16} A gout attack can be triggered at any time by a range of factors, including alcohol, certain medicines, other illnesses, or stress.^{2,19,20}

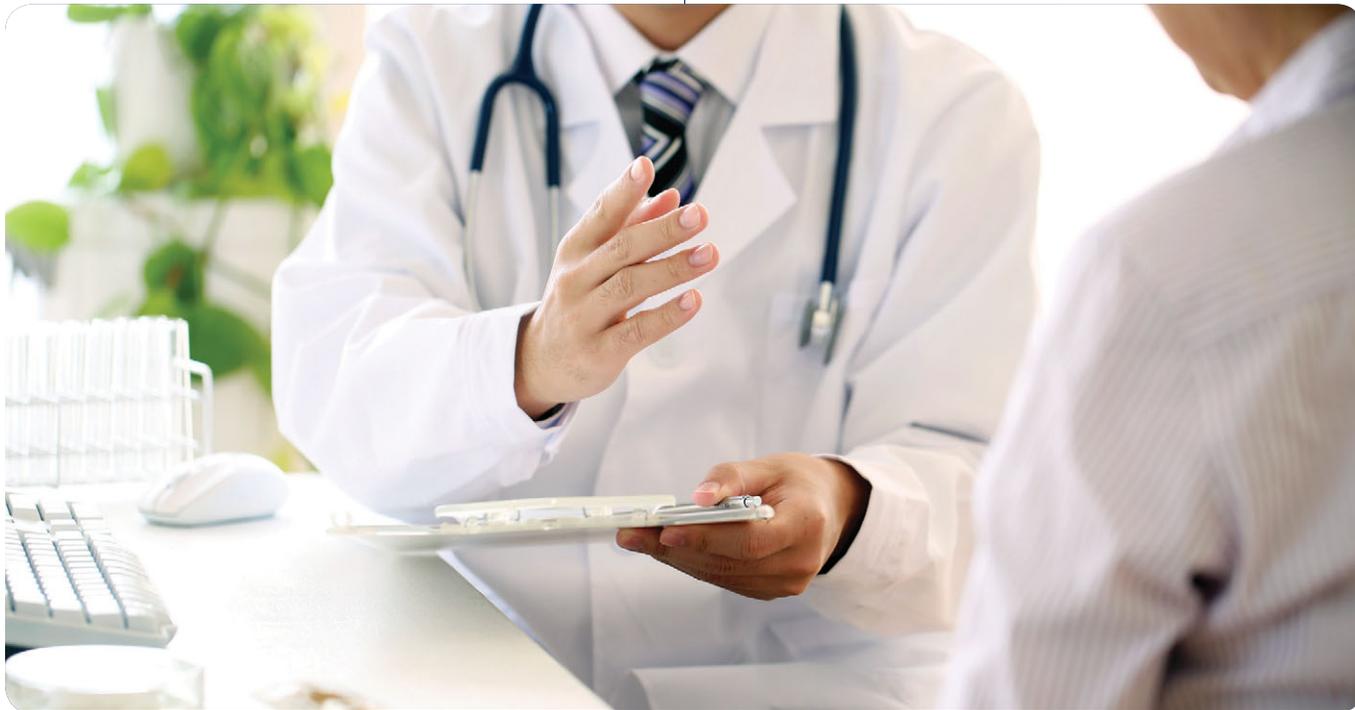
Those whose uric acid is increasing due to age and other factors need to take action to reduce these levels before they suffer a gout attack or even develop cardiovascular/kidney disease.¹²

Targeting Xanthine Oxidase Enzyme

Until now, people with hyperuricemia haven't had many options. The drugs available to reduce uric acid buildup come with extensive and potentially deadly side effects.

One of the most common side effects of the gout medication *febuxostat* is liver problems, but according to this drug's own manufacturer, "A small number of heart attacks, strokes, and heart-related deaths were seen in clinical studies." Other common adverse effects include diarrhea, nausea, headache, rash, and ironically, joint pain and gout flares!²¹

Another drug option is *allopurinol*. However, it was recently found that this prescription does not always decrease serum uric acid.²² And both allopurinol and the uric acid-lowering drug *probenecid* are associated



with side effects ranging from breathing difficulties to unusual bleeding.⁵⁻⁷

Scientists seeking a natural way to lower uric acid conducted research on the fruit of the *Terminalia bellerica* tree, which has been used in Ayurveda medicine for many years, mainly for removal of kidney stones and inflammation. Researchers studied an extract that was derived from this edible tree fruit that contains **15%** tannins. This extract and its potent tannins appears to inhibit an *enzyme* involved in the synthesis of uric acid, **xanthine oxidase**.⁸ Excess xanthine oxidase generates high levels of **uric acid** and can create crystals in joints and tissues, leading to gout.

In addition to inhibiting the manufacture of uric acid and therefore, the inflammation of gout, the bioactive compounds in *Terminalia bellerica* are believed to provide anti-inflammatory effects, possibly due to inhibition of *inducible nitric oxide synthase* (iNOS). Researchers reported *Terminalia bellerica* to be effective against problems involving painful or burning urination, urine discharge, bleeding in the kidney, and inflammation. It is also helpful with the removal of blocked urine and kidney stones.^{8,23}

A placebo-controlled, human clinical investigation was needed to determine the therapeutic ability of *Terminalia bellerica* in patients with hyperuricemia or gout, and most critically, to specifically assess the extract's side effects relative to the very serious side effects of drug therapy.

Uric Acid Reduction in a Landmark Clinical Trial

Scientists conducted a well-designed, long-term human study to compare the effectiveness of extracts from the fruits of two different species of the *Terminalia* tree with each other and with a drug commonly used to treat hyperuricemia.⁸

In this randomized, double-blinded, placebo-controlled, parallel-group study, 110 volunteers with hyperuricemia were divided into five separate groups and evaluated over 24 weeks. Their uric acid levels, other health indicators, and side effects were assessed before treatment and at follow-up visits at four weeks, eight weeks, 12 weeks, 16 weeks, 20 weeks, and 24 weeks of therapy. In other words, at each visit, they were evaluated for both efficacy and safety.

Safety, a key element of the study due to the potentially deadly side effects of all the drug options for hyperuricemia, was assessed both by patient questioning at each of the six visits and by a thorough lab analysis of hematological, hepatic, and renal biochemical parameters at the outset and at 24 weeks. Each participant was given a contact number for reporting



What You Need to Know

Lowering Uric Acid Levels

- High uric acid concentrations can deposit crystals in joints and tissues, triggering the excruciating pain of gout, which is linked to greater risks of cardiovascular disease and mortality.
- Drug treatment for gout may cause serious side effects such as breathing difficulties, unusual bleeding, and vomiting, and these drugs may interfere with other medications.
- In a landmark human trial, scientists demonstrated the effectiveness of *Terminalia bellerica*, which reduces serum uric acid buildup without reported side effects. This extract appears to inhibit xanthine oxidase, an enzyme involved in the synthesis of uric acid.
- Twice-daily capsules of 500 mg of *T. bellerica* extract decreased uric acid levels by a mean of **27.59%**, without adverse side effects.

and accessing medical help with regard to any potentially adverse event.

The hyperuricemic patients were randomized into five groups, which included:⁸

- Group 1: *Terminalia chebula*—one capsule of **500 mg** taken orally twice daily after food,
- Group 2: *Terminalia bellerica*—one capsule of **500 mg** taken orally twice daily after food,
- Group 3: *Terminalia bellerica*—one capsule of **250 mg** taken orally twice daily after food,
- Group 4: *Febuxostat* (Uloric)—one tablet of **40 mg** taken orally in the morning after food plus an identical placebo capsule taken in the evening after food, and
- Group 5: Placebo capsules—one capsule taken orally twice daily after food.

After 24 weeks, the researchers analyzed the data to measure the effectiveness of the two *Terminalia* extracts relative to each other, to the drug, and to placebo—and to directly relate that effectiveness to the degree of safety of each. They paid particular attention to the percentage of patients in each group whose uric acid levels were reduced to the healthy target of **6.0 mg/dL**.



A Side Effect-Free Option for Hyperuricemia

The research team recorded an average reduction in uric acid levels at each of the six follow-up visits for all treatment groups except the placebo group, which showed an erratic but overall *increase* in uric acid over the 24 weeks.

The average absolute **uric acid** readings decreased over the course of the study by:⁸

- **1.34 mg/dL** in the **500 mg** *Terminalia chebula* group,
- **2.29 mg/dL** in the **500 mg** *Terminalia bellerica* group,
- **1.17 mg/dL** in the **250 mg** *Terminalia bellerica* group, and
- **4.25 mg/dL** in the **40 mg** febuxostat drug group.

Expressed as mean percentage decreases in uric acid over 24 weeks, levels decreased by:⁸

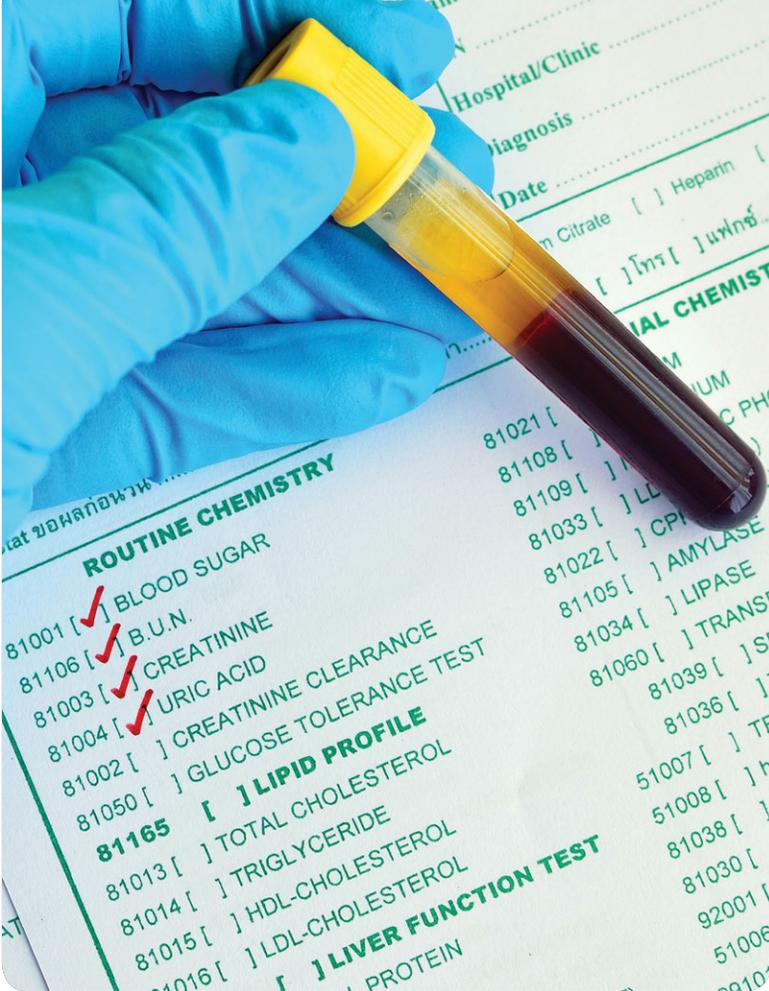
- **16.02%** in the **500 mg** *Terminalia chebula* group,
- **27.59%** in the **500 mg** *Terminalia bellerica* group,
- **14.05%** in the **250 mg** *Terminalia bellerica* group, and
- **48.79%** in the **40 mg** febuxostat drug group.

The percentage of patients who achieved the target serum uric acid level of **6 mg/dL** or less at the end of 24 weeks was:⁸

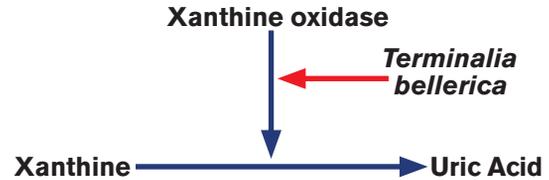
- **22.2%** in the **500 mg** *Terminalia chebula* group,
- **88.8%** in the **500 mg** *Terminalia bellerica* group,
- **11.76%** in the **250 mg** *Terminalia bellerica* group, and
- **100%** in the **40 mg** febuxostat drug group.

Clearly, almost nine out of 10 volunteers who took **500 mg** of *T. bellerica* twice daily achieved the target uric acid level of **6 mg/dL**, while just over two out of 10 patients who took an equal dose of *T. chebula* reached this goal. A full 10 out of 10 subjects who took the drug febuxostat realized the target of **6 mg/dL**, but the drug option has known serious and potentially lethal adverse effects that are difficult to identify in a 24-week trial.

However, early adverse effects from this drug were observed even within the period of the study.⁸



Terminalia Bellerica Inhibits the Formation of Uric Acid



Terminalia bellerica is believed to inhibit xanthine oxidase, an enzyme involved in the synthesis of uric acid from xanthine, and in a dose-dependent manner. Its mechanism is similar to that of the gout drug *allopurinol*.

Summary

Affecting 8.3 million Americans, gout is caused by high concentrations of uric acid in the body that lead to the creation of crystals in joints and tissue and excruciating pain. Gout is associated with higher risks of cardiovascular disease and mortality.

Drugs available to reduce uric acid levels come with side effects that include breathing difficulties, unusual bleeding, vomiting, nausea, and severe rash. They may also interfere with other medications.

In a fascinating human trial, scientists recently demonstrated the effectiveness of *Terminalia bellerica*, a natural Ayurvedic alternative with no reported side effects, to reduce serum **uric acid**. This tannin-rich extract appears to inhibit *xanthine oxidase*, an enzyme involved in uric acid synthesis.

In volunteers with elevated uric acid levels, twice-daily capsules of **500 mg** of *T. bellerica* extract decreased uric acid levels by a mean of **27.59%**, with absolutely no adverse side effects.

This decrease in uric acid levels enabled **88.8%** of the people in the study arm taking the extract to achieve targeted uric acid serum levels.

Comprehensive **blood test** panels that most Life Extension® supporters have performed annually reveal **uric acid** levels. An ideal uric acid range is slightly less than **6 mg/dL**. ●

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

At the beginning of this clinical study, all volunteers' hematological and biochemical parameters were within normal limits for all treatment groups. But of the 18 patients in the febuxostat group, two completed the study with elevated total bilirubin and one patient complained of nausea and vomiting. (Bilirubin is the yellow byproduct of heme breakdown, and elevated levels may indicate certain diseases.) One patient in the *T. chebula* group had mild gastrointestinal intolerance. Notably, not one of the patients in the *T. bellerica* groups had any adverse effect at all.⁸

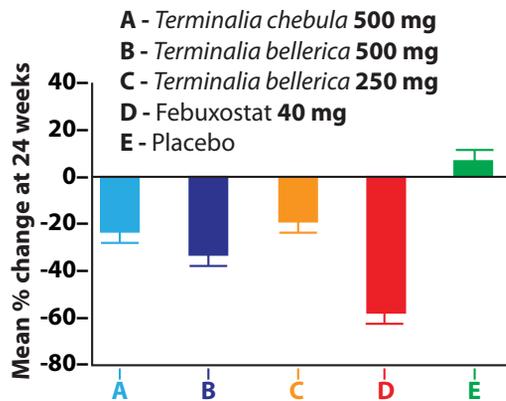
These safety findings are in line with earlier research that found no signs of toxicity in male and female rats given massive doses of *T. bellerica* ranging from **300** to **5,000 mg** per kilogram of body weight.^{24,25}

This human trial demonstrates that **500 mg** of *Terminalia bellerica* twice daily significantly reduces uric acid levels, without the attendant long-term risks of febuxostat drug therapy.

Additionally, *Terminalia bellerica* is a safe alternative that is available without prescription to anyone experiencing elevated uric acid levels—that is anyone wishing to block gout before it develops.

By contrast, the manufacturer of **febuxostat** stipulates that this potentially risky drug is "...used to lower blood uric acid levels in adults with gout" and that "...it is not for the treatment of high uric acid without a history of gout."²⁶

Mean Percentage Change in Serum Uric Acid Levels by Treatment Agent



In group B, **500 mg** of *T. bellerica* reduced serum uric acid levels by a mean of **27.59%** without any of the side effects observed in group D, which took febuxostat, or in gout patients within the general population who take febuxostat. The manufacturer of febuxostat does not endorse its use in hyperuricemia patients who have not yet progressed to having gout.

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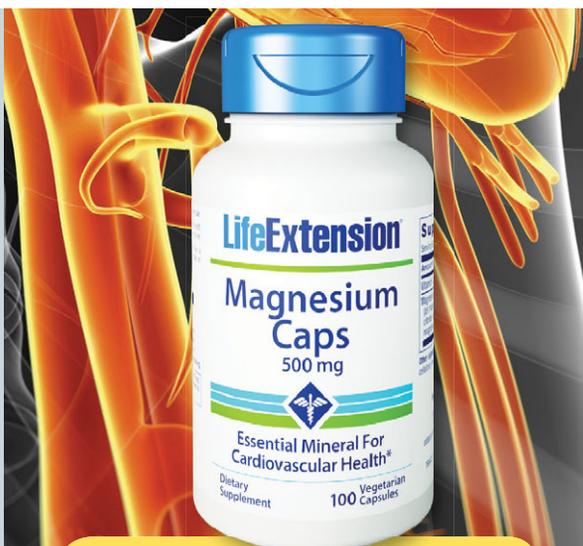
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Caution: If taken in high doses, magnesium may have a laxative effect. If this occurs, divide dosing, reduce intake, or discontinue use.

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A tannin-rich extract derived from the edible fruit of the *Terminalia bellerica* tree helps keep uric acid levels within healthy range.*

This patent-pending, standardized extract from *Terminalia bellerica* supports healthy expression of two critical enzymes involved in uric acid metabolism:

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The name of this standardized *Terminalia bellerica* extract is **Ayuric™**. The suggested dose is one capsule twice a day.

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* Rani U, Kishan P, Chandrasekhar N. Publication pending.
Ayuric™ is a trademark of Natreon, Inc. with patents pending.

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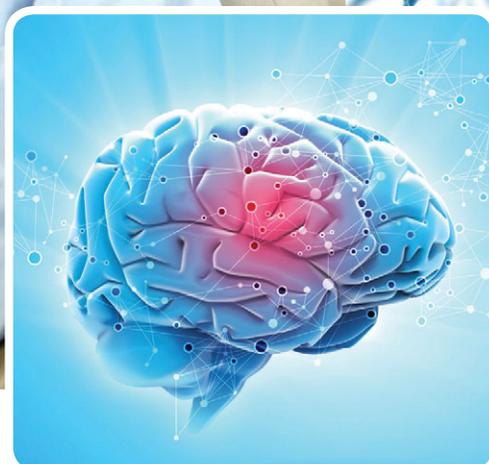
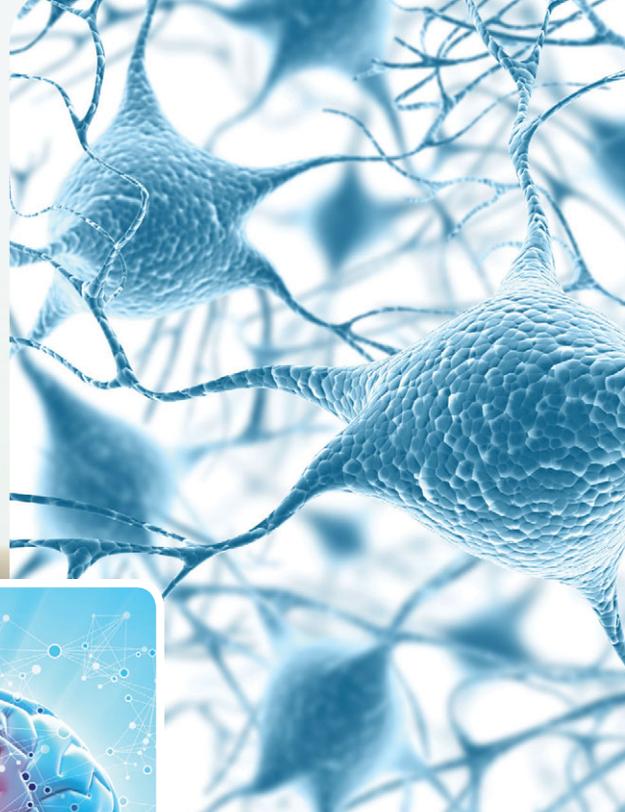
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BY ANGELA SANFORD

Brain Benefits of **L-THEANINE**

There's been a resurgence of interest in the anxiety-relieving powers of **L-theanine**, an amino acid found in green tea.¹

Discoveries over the past two years have uncovered exciting additional properties of this nutrient best known for inducing calming, tranquilizing effects while simultaneously improving alertness.

In this Research Update, we examine how L-theanine acts in the brain, and review compelling new studies on its actions that include potentially reduced risk of stroke and less brain damage if an ischemic stroke were to occur.

How L-Theanine Works in the Brain to Block Anxiety and Stress

L-theanine relieves anxiety in large part because it bears a close resemblance to the brain-signaling chemical glutamate. L-theanine produces the opposite effect in the brain.

While glutamate is the brain's most important *excitatory* neurotransmitter, L-theanine binds to the same brain cell receptors and blocks them to glutamate's effects. This action produces *inhibitory* effects.^{1,2} That inhibition to brain overactivity has a calming, relaxing effect in which anxiety fades.³

In addition to blocking excitatory stimuli at glutamate receptors in the brain, L-theanine also stimulates production of the inhibitory, relaxing neurotransmitter GABA, adding to its calming, anti-anxiety effects.²

Unlike prescription anti-anxiety drugs, however, some of which mimic GABA's effects, L-theanine produces its anti-anxiety effects without producing sleepiness or impairing motor behavior.⁴ In fact, L-theanine has been shown in human studies to moderately improve alertness and attention while exerting its anxiety-reducing effects.⁵

Of particular interest are studies showing that **L-theanine** supplementation prevents the *abrupt* rise in **blood pressure** that some people experience under stress.¹ The reason this is so critical is that many people have normal blood pressure readings at rest that spike up to dangerously high levels when subjected to stressful situations.

These periods of surging blood pressure inflict massive arterial damage and are the main reason why at-home and at-office blood pressure testing are so important.

New Directions for L-Theanine

Scientists are now increasingly interested in applications for L-theanine far beyond its anti-anxiety properties. Excessive glutamate stimulation of brain cells (*excitotoxicity*) is a factor in development of long-term neurodegenerative disorders, stroke, and schizophrenia.^{6,7} Therefore, L-theanine's glutamate-blocking capabilities make it promising for neuroprotection and prevention in these areas.

And while its deeper mechanisms are still under investigation, there is tantalizing evidence that L-theanine influences expression of genes in brain areas responsible for fear and aggression (amygdala) and memory (hippocampus), helping to balance the behavioral responses to stress, and potentially improve conditions such as mood disorders, post-traumatic stress disorder (PTSD), and substance dependence.⁸

L-Theanine Protects Brain Cells and Promotes Cognitive Function

There's a link between anxiety, reaction to stress, and the brain's most fundamental function, maintaining cognition. Studies over the past two years suggest a potential role for L-theanine in supporting cognitive function and preventing its loss.

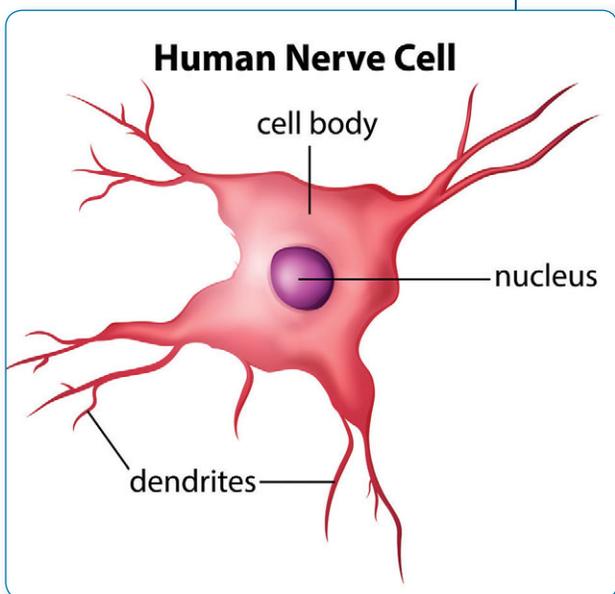
Stress has powerful negative effects on one's ability to think clearly and make smart decisions. This is demonstrated physiologically by animal experiments showing that stress significantly reduces animals' performance on standard tests of learning and memory, as well as by increased oxidative stress in the brain and elevated blood levels of stress-response hormones such as catecholamine and adrenaline. Treating animals with L-theanine before the stress is applied, however, results in reversal not only of cognitive impairment, but also of the elevation of stress hormones and oxidative damage.⁹

Studies such as these demonstrate that L-theanine can specifically reduce the molecular impacts of acute stress, and the resulting excitotoxicity, on brain cells.^{10,11} The issue with chronic glutamate-driven excitotoxicity is profound and long-lasting cognitive dysfunction, including neurodegenerative disorders such as Alzheimer's, Parkinson's, Huntington's diseases, and amyotrophic lateral sclerosis (ALS).¹²

The protective effects of L-theanine have been shown in animal models for at least the first three of these disorders, suggesting that regular L-theanine supplementation might be important in fending off these tragic conditions by opposing the destructive effects of long-term glutamate excitotoxicity.¹³⁻¹⁶

In a rat model study for Huntington's disease, researchers investigated the protective effects of L-theanine against *3-nitropropionic acid* (3-NP). Rats exposed to 3-nitropropionic acid experienced significant reductions in body weight, oxidative defenses, and locomotor activity, as well as impaired mitochondrial enzyme activity. But when exposed to L-theanine, the behavioral, biochemical, and mitochondrial enzyme activities were significantly attenuated, leading authors to conclude that "**L-theanine has neuroprotective activity against 3-nitropropionic acid induced neurotoxicity.**"¹⁷

Exposure to toxic chemicals is another known risk factor for many of the neurodegenerative disorders, with the metal aluminum being a major culprit.^{18,19} Recent studies show that L-theanine is capable of preventing both the biochemical and structural damage to brain cells induced by aluminum, offering yet another means by which this nutrient can prevent or slow cognitive decline.²⁰



Taste the Relaxation

The molecular similarity of L-theanine with glutamic acid can be experienced simply by tasting it. L-theanine provides the *umami* flavor that gives green tea its richness.³¹ One of the more common molecules that delivers umami taste is glutamic acid, and studies show that glutamate and L-theanine both stimulate the same receptors on our tongues, in a vivid demonstration of molecular mimicry.^{32,33}

In the brain, of course, the similarity is only close enough for L-theanine to bind to brain glutamate receptors but without stimulating them, which is why L-theanine produces relaxing, as opposed to stimulating, effects.



L-Theanine Reduces Stroke Impact

A stroke is the result of a sudden blockage of blood (*ischemia*) to a part of the brain, resulting in massive chemical stresses, extreme excitotoxicity, and eventual death of brain cells.²¹ The latest studies show that L-theanine has properties that may both help to prevent strokes and to mitigate the damage caused when they do occur.

Lab studies show that L-theanine is capable of significantly improving *nitric oxide* production in endothelial (artery-lining) cells.²² This has the potential to lower stroke risk because nitric oxide is a signaling molecule that endothelial cells use to communicate information about blood flow and pressure to muscles in the artery walls, telling them to constrict or relax appropriately in response and distributing blood flow appropriately.

In another stroke-preventing mechanism, L-theanine has recently been shown to significantly reduce the expression of adhesion molecules to the endothelial wall by inhibiting *tumor necrosis factor alpha* (TNF- α), thereby reducing the risk of an artery-blocking clot or obstruction that produces a stroke.²³

L-theanine protects the body from the damage of blood reperfusion, or refilling that occurs after the abrupt loss of circulation during the stroke.²⁴

This *ischemia-reperfusion* injury results in massive release of glutamate and produces deadly excitotoxicity.²⁵

Animal studies show that administration of L-theanine up to 12 hours after a stroke is induced protects brain cells and reduces the size of the damaged brain areas. Even treatment as late as 24 hours after the stroke improves neurological status.²⁴

L-Theanine May Play a Role in Ameliorating Schizophrenia

Schizophrenia, literally a “split mind” in which sufferers experience a cut-off from reality, is one of the most tragic and misunderstood disorders known. People with schizophrenia may experience *positive symptoms* such as hallucinations, delusions, and paranoid thinking, as well as *negative symptoms* including loss of ability to experience pleasure, blunted emotions, and diminished speech capacity.²⁶

Perhaps because schizophrenia may involve excitotoxic damage to brain cells, L-theanine has recently been the focus of human studies in patients with this disease.²⁷

In one study of 40 patients with schizophrenia, subjects were given placebo or **400 mg** L-theanine along with their regular medications for an eight-week trial. The supplemented patients demonstrated significant reductions in their anxiety and general symptoms of psychopathology.²⁸

A **250 mg** per day dose of L-theanine significantly improved, in a different study scores on positive symptoms, as well as in sleep quality.²⁹ And the combination of L-theanine (**400 mg** per day) with the hormone pregnenolone (**50 mg** per day) was capable of reversing not only anxiety, but also negative symptoms.³⁰

Summary

L-theanine, an amino acid found in green tea, reduces anxiety by blocking excitatory stimuli at glutamate receptors in the brain while stimulating production of the inhibitory, relaxing neurotransmitter GABA. But unlike prescription

anti-anxiety drugs, L-theanine relieves stress without causing drowsiness or impairing motor behavior. In fact, studies show it improves alertness and attention. Researchers are now examining L-theanine's applications beyond its anti-anxiety effects. Studies suggest a role for L-theanine in supporting cognitive function and preventing cognitive loss by protecting brain cells and preventing strokes and reducing the damaging effects if a stroke has occurred. Lastly, L-theanine is the subject of human studies in patients with schizophrenia. ●

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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Support Cardiovascular Health

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Advanced Olive Leaf Vascular Support with Celery Seed Extract is a unique, *dual-action* formulation containing two *bioactive compounds* that support optimal cardiovascular health.

1. Olive leaf extract contains *oleuropein*, a natural compound that supports healthy blood pressure already within the normal range.

Researchers using **1,000 mg** per day of **olive leaf extract** in a controlled clinical trial documented an average **11 mm Hg** decline in systolic readings and a **4.8 mm Hg** drop in diastolic readings within eight weeks!¹

2. Celery seed extract contains *3-n-butylphthalide (3nB)*, which supports a healthy inflammatory response that is critical to maintaining a healthy circulatory system.² **Celery seed** also helps minimize the flow of calcium into the muscle cells lining blood vessels, promoting healthy blood pressure already within the normal range.^{3,4}

In a controlled clinical trial, researchers using an equivalent amount of active compounds as found in this **celery seed extract** documented an average **8.2 mm Hg** decline in systolic readings and **8.5 mm Hg** drop in diastolic readings— in just six weeks!⁵

While **olive leaf** and **celery seed extracts** show impressive support individually, **Advanced Olive Leaf Vascular Support with Celery Seed Extract** combines two bioactive compounds to provide **dual-action** vascular support.

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

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Anti-Aging Human Study on Metformin Wins FDA Approval

News Reports around World Describe Multiple Benefits

The media has caught up to the **potential health benefits of metformin**, something our long-term supporters discovered long ago.

What caught the media's attention was the **FDA's** approval of the first **human** study to see if **metformin** can protect against the multiple diseases of **aging**.

Prominent headlines around the world proclaimed:

"New Anti-Aging Drug Could Extend Human Life Span to 120 Years"

Metformin of course is not a new drug. It was approved in England in **1957** and made available to **type II diabetics** around the world shortly thereafter. It took the **FDA** a staggering **37 years** to approve it in the United States.

Here are some accurate quotes from worldwide news sources:

"Although it might seem like science fiction, researchers have already proven that the diabetes drug metformin extends the life of animals, and the Food and Drug Administration in the US has now given the go-ahead for a trial to see if the same effects can be replicated in humans."

"I have been doing research into aging for 25 years and the idea that we would be talking about a clinical trial in humans for an anti-aging drug would have been thought inconceivable...20 years ago aging was a biological mystery. Now we are starting to understand what is going on."

"Scientists think the best candidate for an anti-aging drug is metformin, the world's most widely used diabetes drug, which costs just 10p [15 cents] a day. Metformin increases the number of oxygen molecules released into a cell, which appears to boost robustness and longevity."

"If we can slow aging in humans, even by just a little bit, it would be monumental. People could be older, and feel young."

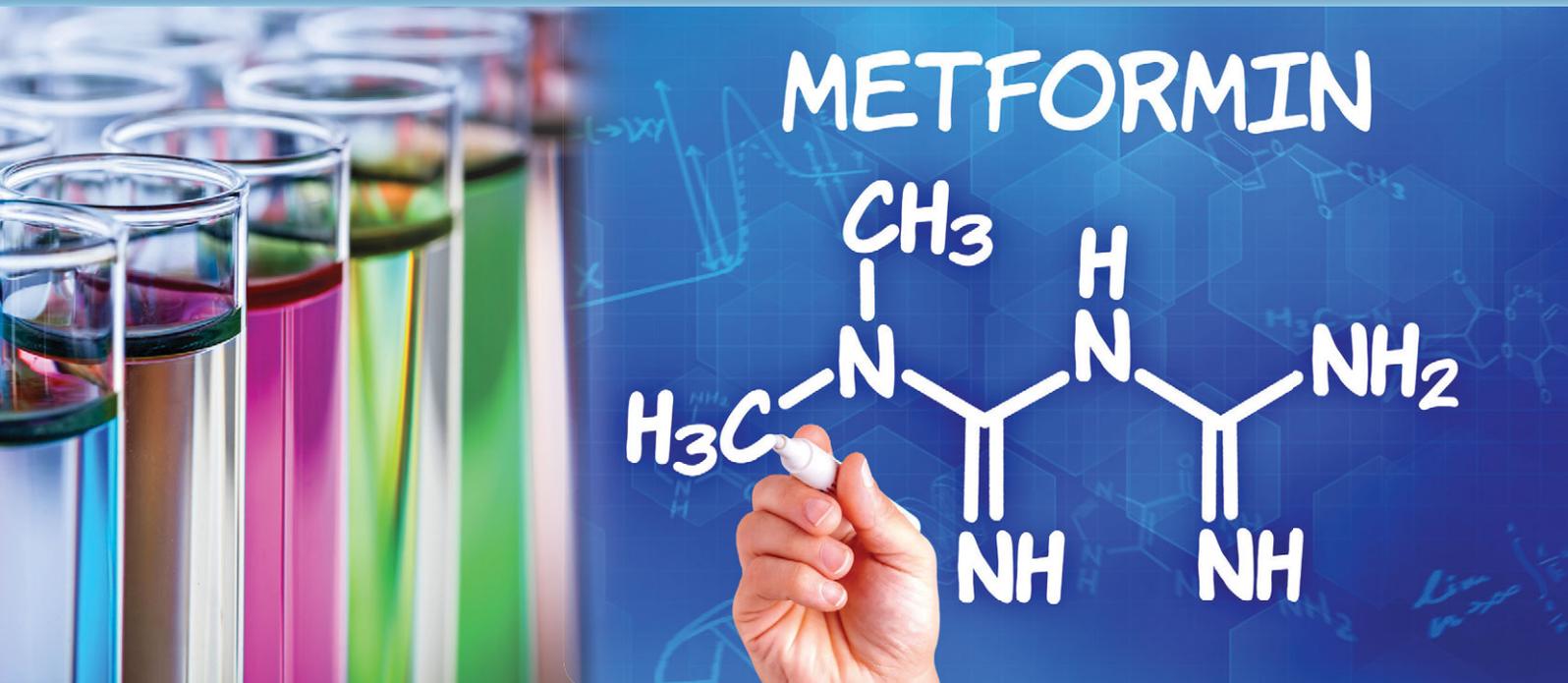
"This would be the most important medical intervention in the modern era, an ability to slow aging."

Even the venerable **Dr. Robert Temple**, deputy director at the **FDA**, chimed in by stating:

"Their hope is that a wide variety of age-related problems, loss of muscle tone, dizziness, falls, dementia, loss of eyesight, all of those things [sic]. That would be something never done before. If you really are doing something to alter aging, the population of interest is everybody. It surely would be revolutionary if they can bring it off."

Dr. Simon Melov of the **Buck Institute for Research on Aging** added:

"You're talking about developing a therapy for a biological phenomenon which is universal and gives rise to all of these diseases. And if you've got a therapy for this thing, these diseases just go away."



Life Extension® Has Championed Metformin for 20 Years

Life Extension® magazine listed **metformin** as one of many important offshore medications back in **1995**. And now, 20 years later, even the FDA concurs that metformin has potential to delay the onset of degenerative diseases.

But contrary to news headlines, metformin will not enable humans to live to **120 years of age** all by itself. What it may do is allow humans to age better *today*—thereby staving off degenerative diseases long enough for **age-reversal** breakthroughs to become clinically available.

Metformin's Primary Anti-Aging Mechanism

Metformin enhances the activity of an **enzyme** found within our cells called *adenosine monophosphate-activated protein kinase*—or **AMPK** for short. **AMPK activation** helps mimic the beneficial effects of **calorie restriction**, the best documented method of slowing and reversing biomarkers of human aging.

We at *Life Extension*® have long endorsed **AMPK activation** as a method of slowing biological aging. We advocate that our supporters utilize *some* proven method to increase their cellular **AMPK** activity, which could add substantial healthy years to the average life span.

How to Boost Your AMPK Today!

We do not want you to age prematurely, waiting years for the results of the new FDA-approved human study. That's why we recommend you initiate steps now to boost healthy **AMPK** activity today.

One of the benefits of practicing consistent **calorie restriction** is a substantial increase in **AMPK** activity as cells go into a semi-starvation mode and increase their survival efficiency.

People under age 60 who regularly/vigorously exercise boost their AMPK levels. This may be the mechanism by which exercise markedly lowers cancer risk. As people age past 60, exercise may not adequately boost AMPK enzyme activity.

If you're presently taking **1,000 to 2,550 mg** of metformin daily, you don't have to do anything, simply enjoy this drug's anti-aging benefits. But if you cannot acquire a prescription for metformin, or cannot tolerate it due to digestive issues, there *are* nutrient formulas that have been shown to significantly boost AMPK activity.

On the next page is a reprint of one of many articles appearing around the world that report on the first clinical trial to see if a drug can slow aging and enable people to live longer.

While the headline of this (and many other articles) is exaggerated, the quotes from mainstream researchers accurately reflect what metformin might demonstrate in this first clinical study.

We at *Life Extension*® will stay abreast of this study to ascertain how close its design and implementation come to our long-standing recommendations on the use of this **AMPK-activating** medication.

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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The Telegraph

November 29, 2015

World's First Anti-Ageing Drug Could See Humans Live to 120

BY SARAH KNAPTON

The world's first anti-ageing drug will be tested on humans next year in trials which could see diseases like Alzheimer's and Parkinson's consigned to distant memory.

Scientists now believe that it is possible to actually stop people growing old as quickly and help them live in good health well into their 110s and 120s.

Although it might seem like science fiction, researchers have already proven that the diabetes drug metformin extends the life of animals, and the Food and Drug Administration in the US has now given the go ahead for a trial to see if the same effects can be replicated in humans.

If successful it will mean that a person in their 70s would be as biologically healthy as a 50 year old. It could usher in a new era of 'geroscience' where doctors would no longer fight individual conditions like cancer, diabetes and dementia, but instead treat the underlying mechanism – ageing.



Scottish ageing expert Professor Gordon Lithgow of the Buck Institute for Research on Ageing in California, is one of the study advisors.

“If you target an ageing process and you slow down ageing then you slow down all the diseases and pathology of ageing as well,” he said “That’s revolutionary. That’s never happened before.

“I have been doing research into ageing for 25 years and the idea that we would be talking about a clinical trial in humans for an anti-ageing drug would have been though inconceivable.

“But there is every reason to believe it’s possible. The future is taking the biology that we’ve now developed and applying it to humans. 20 years ago ageing was a

biological mystery. Now we are starting to understand what is going on.”

Ageing is not an inevitable part of life because all cells contain a DNA blueprint which could keep a body functioning correctly forever. Some marine creatures do not age at all.

However over our lifetime billions of cell divisions must occur to keep our bodies functioning

correctly and the more times cells divide the more errors creep into the process. As cell problems grow, the body can no longer repair damage. In the case of cancer, cells no longer have the ability to get rid of mutations, and tumours grow. In Alzheimer's the brain stops clearing out sticky plaques, and dementia develops.

Scientists think the best candidate for an anti-ageing drug is metformin, the world's most widely used diabetes drug which costs just 10p a day. Metformin increases the number of oxygen molecules released into a cell, which appears to boost robustness and longevity.

When Belgian researchers tested metformin on the tiny roundworm *C. elegans* the worms not only aged slower, but they also stayed healthier longer. They did not slow down or develop wrinkles. Mice treated with metformin increased their lifespan by nearly 40 per cent and their bones were also stronger. Last year Cardiff University found that when patients with dia-

betes were given the drug metformin they in fact lived longer than others without the condition, even though they should have died eight years earlier on average.

The new clinical trial called Targeting Aging with Metformin, or TAME, is scheduled to begin in the US next winter. Scientists from a range of institutions are currently raising funds and recruiting 3,000 70 to 80 year olds who have, or are at risk of, cancer, heart disease and dementia. They are hoping to show that drug slows the ageing process and stops disease.

Outlining the new study on the National Geographic documentary Breakthrough: The Age of Ageing, Dr Jay Olshansky, of the University of Illinois Chicago, said: "If we can slow ageing in humans, even by just a little bit it would be monumental. People could be older, and feel young.

"Enough advancements in ageing science have been made to lead us to believe it's plausible, it's possible, it's been done for other species and there is every reason

to believe it could be done in us.

"This would be the most important medical intervention in the modern era, an ability to slow ageing."

A baby girl born today is now expected to live to an average age of 82.8 years and a boy to 78.8 years, according to the Office for National Statistics. But if the results seen in animals are reproduced in humans, lifespan could increase by nearly 50 per cent.

Professor Lithgow believes that, in the future, young people may be given a type of ageing 'vaccine' to slow down ageing. He believes it could have a far bigger impact on extending population lifespan than finding a cure for cancer.

"If we were to cure all cancers it would only raise life expectancy by around three years, because something else is coming behind the cancer, but if we could slow down the ageing process you could dramatically improve how long people can live," he said.

"We know that it is possible for handfuls of people to live to very old age and still be physically and socially active, so clearly they carry some kind of protection in their bodies. They are essentially not ageing as quickly. If we can harness that, then everyone can achieve those lifespans."

Yet scientists have faced an uphill battle to get trial approval because there are so many spurious claims of

'anti-ageing' technologies and therapies on the market.

Stephanie Lederman, executive director of the American Federation for Aging Research in New York, who is also involved in the trial added: "The perception is that we are all looking for a fountain of youth.

"We want to avoid that; what we're trying to do is increase health span, not look for eternal life."

However if their trial performs as promised, experts say slowing ageing would be a 'public health revolution.'

Dr Robert Temple, deputy director of the FDA said: "Their hope is that a wide variety of age related problems, loss of muscle tone, dizziness, falls, dementia, loss of eyesight, all of those things.

"That would be something never done before. If you really are doing something to alter ageing the population of interest is everybody. It surely would be revolutionary if they can bring it off."

Dr Simon Melov of the Buck Institute for Ageing Research added: "You're talking about developing a therapy for a biological phenomenon which is universal and gives rise to all of these diseases. And if you've got a therapy for this thing, these diseases just go away."

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Pancreatic Cancer Clinical Trial

Official Announcement of New Study

Life Extension® has entered into a clinical trial agreement with City of Hope to conduct a complementary medicine clinical study to evaluate the use of natural compounds and **metformin** along with a current standard in chemotherapy drugs in patients with metastatic pancreatic cancer.

While patients frequently take supplements during their cancer treatment, there are limited data available on both efficacy and tolerability. This study will combine a carefully selected number of natural compounds including curcumin and green tea extract (epigallocatechin-3-gallate) to be combined with metformin and standard first-line chemotherapy.

The median survival time for a metastatic pancreatic cancer patient treated with chemotherapy alone is only about 8.5 months, and five-year survival is approximately **1%**. Pancreatic cancer is the fourth-leading cause of cancer deaths, with over 40,000 Americans expected to die this year from this disease. More effective treatments and new approaches are desperately needed for a highly complex disease such as pancreatic cancer, and testing a selected complex regimen of natural compounds and pharmaceuticals is one such new approach whose evaluation in a clinical trial is long overdue.

The clinical study conducted at City of Hope is expected to enroll 21 patients with metastatic pancreatic cancer. Primary objectives of the study include evaluating for compliance and toxicity, although survival will be evaluated in the hope of observing a meaningful improvement over the currently observed outcomes. The program is classified as an investigator-initiated study under the direction of Vincent Chung, MD, associate clinical professor, Department of Medical Oncology & Therapeutics Research with funding from Life Extension. For details of the clinical trial, log on to **www.ClinicalTrials.gov**. You can then enter on this Home Page under "Search for Studies" the identifier code: **NCT02336087**

About City of Hope

City of Hope is a leading research and treatment center for cancer, diabetes, and other life-threatening diseases. Designated as a comprehensive cancer center, the highest recognition bestowed by the National Cancer Institute, City of Hope is also a founding member of the National Comprehensive Cancer Network, with research and treatment protocols that advance care throughout the nation. City of Hope's main hospital is located in Duarte, California, just northeast of Los Angeles. It is ranked as one of "America's Best Hospitals" in cancer by U.S. News & World Report. Founded in 1913, City of Hope is a pioneer in the fields of bone marrow transplantation and genetics.

About Life Extension

Headquartered in Fort Lauderdale, Florida, **Life Extension Foundation**, established in 1977, is the world's largest anti-aging medicine organization and currently funds laboratory and human studies aimed at improving long-term survival in difficult-to-treat cancers and other age-related disorders. The mission of Life Extension is to help humans live a healthier and longer life. Life Extension is dedicated to uncovering therapies and technologies that could lead to improved outcomes for the diseases of aging. Life Extension communicates with their client base with monthly issues of the *Life Extension Magazine*. For more information, visit **www.lifeextensionfoundation.org** or call **1-800-544-4440** or email **info@lifeextension.com**. Follow Life Extension on Facebook and Twitter.



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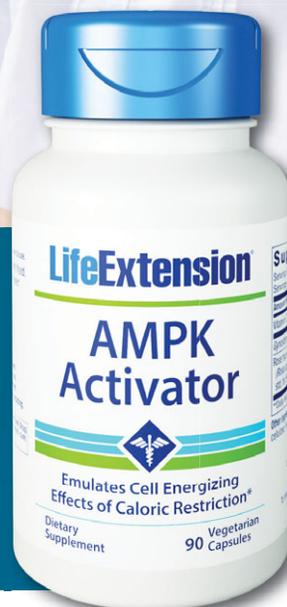
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What's Behind the HEALTH CARE CRISIS?

There was a time when **medical insurance** was an automatic benefit for most employees having a job in the public or private sector.

The majority of employees would be given employer-paid insurance not just for themselves, but for their families as well. During this era of American history (1950s-1980s), having comprehensive insurance typically meant that you were insured for virtually **100%** of your medical needs.

Back in those days, the practice of forcing employees to pay significant portions of their health insurance premiums, requiring high deductibles, and exacting other “out-of-pocket” expenses was not common. The reason was that the cost of health care was not that expensive.¹⁻³

Today, fewer than **50%** of companies offer medical insurance for their employees.⁴ Most employees now pay for part or all of their costs to participate in a group insurance plan. Premiums have escalated to difficult-to-afford levels.

Medical insurance premiums have risen at a pace that is above the inflation rate and there is no indication that this trend will be changing in the near future.²

With medical premium prices skyrocketing, copay charges soaring, and deductibles reach-

ing unaffordable levels, it's no wonder Americans are fed up. For some plans, the insurance coverage is so meager that the plans function more like subsidies than comprehensive insurance.

Premiums for even bottom-of-the-barrel health insurance coverage are prohibitively expensive for middle income families. And when a serious illness develops, insurance companies often balk at paying for expensive drugs and diagnostics that represent valid medical needs.^{5,6}

Although such practices leave many insured Americans in financial disarray, the situation is far worse for the **36 million Americans** who live without health insurance, and a great many more who can only afford low-coverage insurance plans.⁷ The majority of these people's livelihoods are put at stake every day in a great gamble, as they may be just one major medical issue away from financial insolvency.

But why are insurance companies subjecting Americans to what seems like extortionist prices and coverage denials?

The answer is simple, but often overlooked. Read on to find out why most medical insurance plans cannot come close to covering today's inflated health care costs.

Insurance Prices Reflect the Price of Medicine

Just as medical insurance now costs a fortune, the price of **medical care** does as well. Nowhere is this more apparent than the outlandish prices of prescription drugs.

Consumers and health insurance companies alike are subjected to markups that are beyond rational comprehension. Retail prices for prescription drug costs have risen so high that many “insured” individuals cannot afford their copays.⁸

In fact, drug prices in the United States are rising so fast that total spending on prescriptions is expected to explode to **\$1.3 trillion** by the year **2018**, up from only **\$326 billion** in 2013, an almost **4-fold** increase in prescription drug spending!^{9,10}

It is commonplace for name-brand pharmaceutical giants to charge immense prices for the patented drugs they sell. Excuses given to justify these prices are the costs of the company’s research and development, as well as the expense and arduous time constraint involved in complying with FDA-imposed drug approval requirements.¹¹⁻¹⁵

The prices of **patented brand-name drugs**, however, have now gone far beyond the research and development costs and the realms of reasonable profit. The hepatitis C drug Sovaldi® is an egregious example. A bottle containing 84 pills costs \$84,000.¹⁶⁻¹⁸ The cost to manufacture Solvaldi® is estimated to be around \$130.¹⁹ The company making Sovaldi® will earn back all the development costs in less than two years, while hepatitis C victims are bankrupted paying this extortionist price for another 14 years or so.^{20,21}

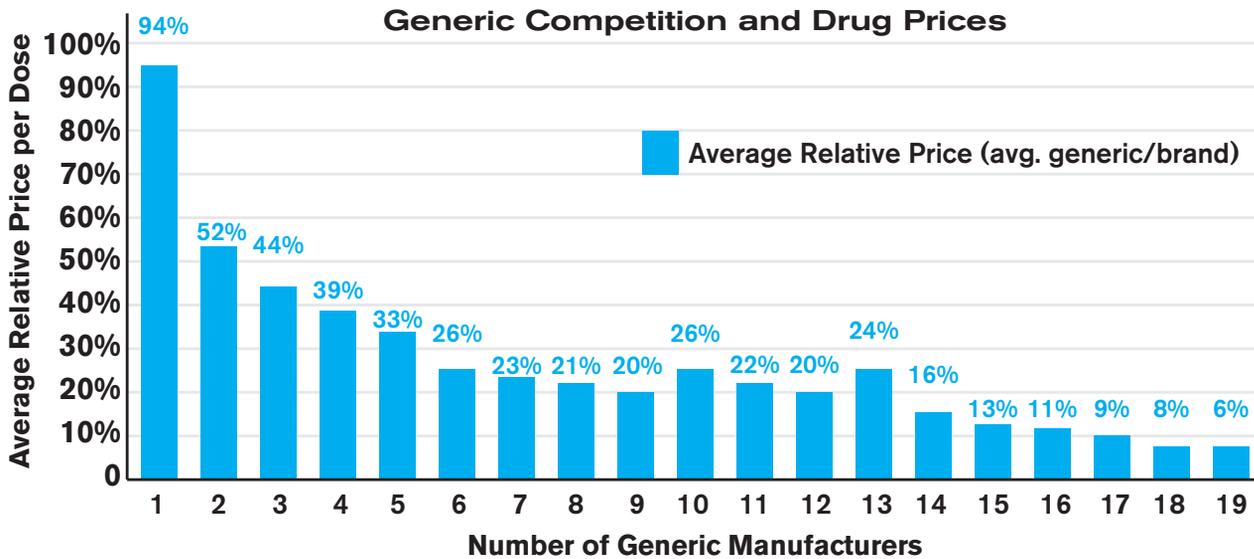
You would think a similar manner of price gouging would not exist in the **generic** drug industry. After all, the generic prescription drug industry was revolutionized in 1984 via the **Drug Price Competition and Patent Term Restoration Act**.²² As the name implies, generics were created for the purpose of introducing the fundamental concept of competition into the health care market with the effect of substantially lowering the cost of medicine for many Americans.²³

Unfortunately, certain generic drug manufacturers operate as quasi-monopolies that act in the antithesis of competition. An artificial scarcity of drug manufacturers is one of the causes that has led to skyrocketing prices for certain generics.²⁴

In 2011, a congressional investigation was opened seeking to find the source of the so-called prescription drug “shortages” that had seen **99.5%** of hospitals around the US experience at least one shortage of a

Competition Is the Single Greatest Market Force Capable of Lowering the Cost of Medicine

As the chart below shows, increasing competition is a proven approach that works to keep generic drugs inexpensive. There is a distinct connection between the number of manufacturers producing a generic drug and what the price of that drug will be. When seeking strategies to bring down the price of any good or service, how to increase competition should be the first thought in mind.



Source: FDA analysis of retail sales data from IMS Health, IMS National Sales Perspective™, 1999-2004, extracted February 2005.



What You Need to Know

The High Cost of Health Care

- Today, fewer than **50%** of companies offer medical insurance to their employees and most employees must pay for part or all of their costs to participate in a group insurance plan. Meanwhile, premiums have risen to an outlandish level.
- The situation is even worse for the 36 million Americans who live without any health insurance or those who can only afford low-coverage plans.
- Drug prices, both brand name and generic, are soaring. By the year 2018, total spending on prescription drug prices will cost \$1.3 trillion, up 4-fold from \$326 billion in 2013. And despite the Drug Price Competition and Patent Term Restoration Act of 1984, the cost of many generic drugs also continues to skyrocket.
- For example, doxycycline hyclate, a generic prescription antibiotic, costs about \$20 for a bottle of 500 tablets. By 2014, the price for the same quantity of the same drug rose to \$1,849—a price increase of over 8,200%.
- Congressional investigations into price gouging by Big Pharma have gone nowhere.
- If the generic drug market is to avoid the current stranglehold, a free-market environment must be implemented. This would allow the price of most generic drugs to fall and Americans could once afford the medicines they need.

prescription drug within a six-month period. Some **44%** of hospitals stated that they had encountered 21 or more shortages of prescription drugs during the same time period.²⁵

A congressional investigation exposed some of the sordid facts behind these supposed prescription drug “shortages.” According to a detailed congressional report released on July 25, 2012, shortages of prescription drugs were intentionally created to artificially jack up prices for consumers through “gray market” tactics.²⁶ The scarcity of medicine resulted in systemwide explosions in the prices of many drugs.²⁷ The findings of this investigation exposed a despicable method in which pharmaceutical companies defraud the American people.²⁸

For example, the drug **cytarabine** could be bought via its manufacturer through contract for about **\$12** a vial on average. By the time the drug was run through an elaborate network comprised of crony wholesalers, “shortages” mystically developed. The average price of **cytarabine** then shot up to over **\$990 per vial**.²⁹

This trend of exorbitant price increases occurring in response to artificial “shortages” has intensified in recent years, causing some insurance companies to question the need for virtually every drug your physician may prescribe.

Generic Makers Get Away with Collusive Practices

An example of violations of antitrust laws was brought to light in **2015** in response to a lawsuit the **Federal Trade Commission** had filed alleging such behavior regarding sales of the drug Provigil®.

In a **1.2 billion dollar** settlement, **Teva Pharmaceuticals** admitted that Cephalon, a pharmaceutical company later absorbed into the Teva conglomerate, **paid** several generic drug manufacturers to **delay** the introduction of their generic equivalents so that they would not compete with the higher-priced drug (Provigil®) even after its patent had expired.³⁰⁻³³

The Sherman Antitrust Act makes it **illegal** for businesses to intentionally collude to raise prices. The Sherman Act calls for penalties that usually go far beyond mere fines. Case law demonstrates that the criminal prosecution of everyone involved in making collusive actions is typical.^{34,35} Not all are convicted, but criminal investigation commonly follows the uncovering of these behaviors.³⁶

It may not surprise you that there hasn’t been, and likely never will be, a criminal investigation against the executives of **Teva** who, according to their civil settlement, admitted collusive behavior. Despite an immense fine, the company is walking away in the green.



But just how far in the green is **Teva**? According to an article in *Forbes*, in the first quarter after Cephalon was absorbed into Teva, “Provigil® generated **\$350 million** in sales.”³⁷ That’s \$350 million dollars over just a three-month period.

Now, according to Teva’s filings with the Securities and Exchange Commission, Cephalon/Teva Pharmaceuticals effectively stalled the introduction of a generic counterpart of Provigil for several years.³² Even assuming **\$350 million** in three months was a peak for Provigil sales, due to the sheer enormity of the price fixing, it’s still a fairly safe bet that Teva is walking out with both pockets full and then some by paying a **\$1.2 billion** fine on sales of a drug that generated many more billions in profits.

The profits Teva managed to bank came from the pockets of the American consumer and of taxpayer-funded programs like Medicare. This is not an isolated case, but more of a business-as-usual practice in the pharmaceutical industry as can be seen on the chart below.

Outlandish Generic Drug Price Spikes

The chart below shows the magnitude of generic price increases over a **six-month** period:

Drug	Use	Average Market Price October 2013	Average Market Price April 2014	Percentage Price Increase
Albuterol Sulfate (bottle of 100, 2 mg tablets)	Used for asthma and lung conditions	\$11	\$434	4,014%
Glycopyrrolate (box of 10 0.2 mg/mL, 20 mL vials)	Used during surgery to prevent irregular heartbeats	\$65	\$1,277	2,728%
Divalproex Sodium ER (bottle of 80, 500 mg tablets ER 24H)	Used to treat seizures and prevent migraines	\$31	\$234	736%
Pravastatin Sodium (bottle of 500, 10 mg tablets)	Used to prevent heart disease and treat high cholesterol	\$27	\$196	573%
Benazepril/Hydrochlorothiazide (bottle of 100, 20-25 mg tablets)	Used to treat hypertension	\$34	\$149	420%

Here is an excerpt from a Senate investigation about these generic drug price spikes:

“According to Medicare and Medicaid data, between July 2013 and July 2014, half of all generic drugs went up in price. During this same time period, over 1,200 generic drugs, nearly **10%** of all generic drugs, more than doubled in price. In fact, these drugs went up in price by an average of **448%**; dozens of drugs went up by **500%, 600%, 1,000%**. So to say that we’re just looking at 10 drugs is not accurate; there appears now to be a trend in the industry where a number of drugs are going up at extraordinary rates.”³⁸

Skyrocketing Prices Sparks Senate Investigation

After years of rising generic drug prices, the high cost of health care again caught the attention of lawmakers in Congress. In an attempt to seek out the underlying cause of the exponential increases, a joint committee hearing was held to investigate the source of the price hikes.³⁸⁻⁴⁰

A Senate investigation commenced with a request to 14 different generic drug manufacturers for specific information regarding the drugs they sell.⁴⁰ This information requested included: total gross revenues, dates, quantities, purchasers, prices paid for all drugs, contracts, prices of identical drugs in foreign markets, and the identity of company officials responsible for increasing the drug prices.

Not surprisingly, none of the 14 generic drug manufacturers elected to testify before the hearing or provided the data the committee had requested.^{38,41} It was pointed out that at least two of the manufacturers that Congress had requested data from were under current investigation by the **Department of Justice** under allegations of **antitrust** law violations.^{42,43}

The data the Senate committee was able to acquire from consumer advocacy and group purchasing organizations was compelling. These consumer organizations measured and tracked the price increases of various generic drugs.

The final report was presented in front of the Senate Subcommittee on Health. It showed that many of the drugs they tracked had unexplainable and astronomical rises in price in a time frame that spanned well under a year.^{44,45}

One, for instance, is **doxycycline hyclate**, a generic prescription antibiotic used to treat many types of infections. This drug had an average market price in **2013** that hovered at about **\$20** for a bottle of **500, 100 mg** tablets.⁴⁵ This would be about double the price of a large over-the-counter bottle of **aspirin**.

By **2014**, the price for the same quantity of the same drug had risen to **\$1,849**. The magnitude of this represented a price increase of over **8,200%**.

No other industry can increase the price of a non-patented product by **8,200%**. Take for example, the typical bottle of aspirin that was alluded to previously. If the market for **aspirin** were given the same barriers to entry and regulatory restrictions that the FDA puts on the common antibiotic **doxycycline**, would consumers just sit idly by as their cost jumped to a proportional **\$828** for a bottle of aspirin tablets?

More Price Gouging

Albuterol was also cited by the Senate committee as having a price increase of over **4,000%**.^{38,45}

Albuterol is a generic drug prescribed by doctors to treat patients with conditions such as **asthma, bronchitis**, or similar breathing problems.⁴⁶ Albuterol was sold at an average market price of **\$11** for a bottle of **100, 2 mg** tablets, in **October 2013**. After recent unexplained price increases by various pharmaceutical companies, the average price for **albuterol** sulfate jumped to **\$434** by **April 2014**.

Albuterol is frequently one of the top 10 best-selling drugs. In the year **2013**, 63.6 million prescriptions were written exclusively for patients who needed the drug.⁴⁷



At the average market price for albuterol in October 2013, the drug would have cost Americans **\$699.6 million** to acquire over the fiscal year 2013. When the new extortionist price is multiplied by the same number of scripts that were written in 2013, the albuterol that once cost Americans **\$699.6 million** per year now costs **\$27.6 billion**. This represents a net change of **26.9 billion dollars more** per year for the same generic drug that our health care system must now bear.

Apply that same math to **pravastatin**, a popular generic drug used to lower cholesterol, which saw a price increase of **573%** from October of **2013** to April of **2014** with the cost to the American health care system being an additional **\$5.9 billion dollars** per year.^{45,48}

During the investigation, the ranking committee member pointed out just what kind of an effect this egregious price gouging is having on the individual American:

“According to the most recent reports, more than one in four Americans do not fill their prescriptions because they cannot afford the cost. Think about that for a second; people walk into their doctor’s office because they are sick. They or their insurance company pays for that visit. Their doctor spends time with them. Their doctor diagnoses the illness. The doctor writes out a prescription, and one out of four people is unable to afford to fill that prescription. What happens to those people? They go home, their illness continues, and maybe they end up in the hospital. Totally absurd situation.”³⁸

Prices on medical care as a whole have skyrocketed over the past few decades and the numbers leave no room for ambiguity. According to a Harvard study, **62.1%** of all bankruptcies in the United States emanate from individuals who bear insurmountable medical-related debts.⁴⁹

Congress Overwhelmed with Pharmaceutical Lobbyists

The effects of this price gouging are devastating for Americans who rely on certain drugs every day just to survive.

In response to news reports of these price spikes, Congress launched investigations and spawned legislation with the intent of combatting spiraling health care costs.^{27,42,50}

The Senate committee looking into high-priced generic drugs concluded with an announcement that legislation—later named **The Medicaid Generic Drug Price Fairness Act of 2014** (S. 2948; H.R. 5748)—would be brought before Congress in an effort to mend the cost crisis.^{51,52}



The problem with this legislation is that it made no attempt to alleviate the burden of high generic drug prices on consumers. Instead it would force pharmaceutical companies, which billed Medicaid at prices that rose faster than the inflation rate, to pay a rebate of some kind.⁵³ Like putting a bandage on a mortal wound if enacted into law, such modest provisions would hardly put a damper on the rising cost of medicine in America. Despite being an ineffective attempt at curbing high drug prices, it would at least be a step in the right direction, and if passed it might slow the rate at which pharmaceutical companies are bankrupting programs like Medicare and Medicaid. Yet this drop-in-the-bucket solution never made it out of committee, and it subsequently died in Congress.

After decades of rising generic drug prices, and with no feasible end in sight, many Americans have been left asking, who is to blame and what lies behind the curtains? This would lead many to think, “Why hasn’t Congress done anything about this?”

The answer is that the United States Congress is so heavily **lobbied** by the pharmaceutical industry that it has been effectively incapacitated from enacting any legislation that would in any way hinder the profit margins of Big Pharma.⁵⁴

Democracy Going Once, Going Twice, Sold!

The pharmaceutical industry learned long ago that spending money lobbying lawmakers to pass favorable legislation is a lot more profitable than being more competitive or innovative.⁵⁵

This pervasive system of institutionalized corruption is a regular practice on Capitol Hill, where lobbying seldom benefits the American consumer.

Pharmaceutical companies spend hundreds of millions each year to shape and influence politics, putting profit margins as a priority above everything else.

In 2003, the Medicare Modernization Act passed the House by a margin of just one vote.⁵⁶ It was pushed through Congress with great vigor from pharmaceutical lobbyists.⁵⁷ The bill expanded federal spending in the health care industry while simultaneously eliminating the government's power to negotiate prices for the prescription drugs it purchases.⁵⁸ A study on the effects of the Medicare Part D provision of the **Medicare Modernization Act** precisely cited the real-world benefits pharmaceutical companies received from lobbying for the bill's passage.

“Because of the passage of Medicare Part D, pharmaceutical companies generated millions of new customers who previously lacked prescription drug coverage. Moreover, the pharmaceutical industry defeated the reform measures they feared most: legalized importation of lower-cost medicines, governmental price controls, and easier market access for less expensive generic drugs.”⁵⁷

Big Pharma's ultimate objective in lobbying is the engineering of legislation and regulation that both opens up the floodgates of federal spending on pharmaceuticals and limits competition in the drug market.^{57,59}

In the year **2014**, drug companies spent approximately **\$230 million** lobbying the government in one way or another.⁶⁰

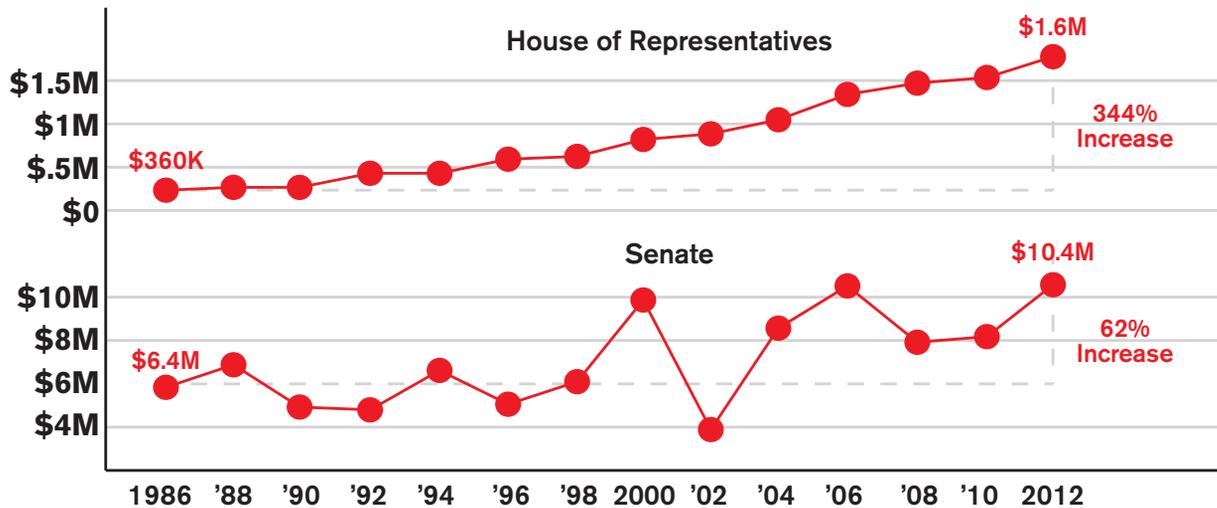
Since 1999, no other industry has spent more money lobbying the government for the promotion of special interest than the pharmaceutical industry.⁶¹ A study on the profitability of lobbying administered by **Strategas Research Partners** revealed that for every 1 dollar a business spends lobbying the federal government, that business makes **220 more dollars** as a result of influencing public policy in their favor.⁵⁵

The objectives and the means in which Big Pharma achieves its objectives are not tied to any set of political ideals. Big Pharma seeks to buy the influence of every member of Congress in the form of campaign, PAC, and Super PAC contributions, as well as promises of lucrative executive positions and lobbying jobs after their retirement from office.⁶²⁻⁶⁴

One might think that there would be some members of Congress whose ideals, virtues, and moral standards would enable them to refuse such blatant bribery. What most of the public does not realize is that Big Pharma, like other special interests, not only offers elected officials incentive for selling out their constituents, but these elected officials are also subjected to implicit

The Cost of Winning Congressional Elections

Here is the average cost of winning elections in the House and Senate since 1986 in 2012 dollars.



According to the Campaign Finance Institute the amount of money spent directly by an incumbent member of Congress to win congressional elections has risen **344%** from an inflation-adjusted **\$360,000** in **1986** to a whopping **\$1.6 million** in **2012**.^{67,68} This is vindicated by a research report from Cornell Law, which now proves that on average, **30% to 70%** of a sitting member's time is spent raising campaign funds instead of tending to constituents, official duties, or legislative affairs.^{69,70}

Jon Corzine spent **\$63,209,506** to win the US Senate seat in New Jersey. Hillary Clinton spent **\$29,941,194** on her Senate win in New York. The remaining Senate winners spent an average of **\$4,737,365**. Inflation adjustment based on average 2012 Consumer Price Index. Source: Campaign Finance Institute



coercion if they refuse to cooperate with pharmaceutical financial interests in certain circumstances.

Coercion against elected officials typically manifests as the prospect of campaign, PAC, and Super PAC contributions given not to the member of Congress who chose not to succumb to the whims of special interest, but to his or her opponent in the next election cycle.^{65,66} This system has worked to simultaneously purge the honest and the honorable from power while normalizing crooked and unethical practices in Washington.

The methods in which these tactics are employed, the intentions behind them, and the end goals mirror outright bribery and intimidation, yet they are instead acknowledged, justified, encouraged, and perpetuated under a very thin veil of free speech.

The pharmaceutical lobby's eyes are not so narrow as to only focus on Congress as a means of acquiring favorable policy and maintaining their anticompetitive edge.

Big Pharma is quick to exploit the "Revolving Door," or the movement of personnel between lawmaking positions, regulatory positions, and the private industries affected by these regulations.⁷¹ Of the registered lobbyists Big Pharma utilized to buy power and influence in and amongst government lawmakers and regulators in 2014, **880** out of **1,421** have been identified as revolvers, meaning 880 had previous government jobs in relevant agencies or positions before working for pharmaceutical companies or vice-versa.⁶⁰

As a result of the gargantuan sum of money Big Pharma pours into Washington, registered pharmaceutical lobbyists now outnumber US congressman nearly **3 to 1**. This influence has allowed private enterprise to gain tight control over public policy.

Lobbying the FDA

Agencies like the Food and Drug Administration (FDA) are heavily lobbied by pharmaceutical companies, and this is a major source of the high drug cost problem, as it is the FDA that determines which generic and brand-name drugs obtain "approval." This plays into the hands of the pharmaceutical industry and creates monopolistic practices that devastate the pocketbooks of American consumers.

Beyond just exorbitant drug prices, the FDA has a drawn-out drug approval process that spans many years.⁷² In 2012, Congress sought to address the FDA's unconscionable delays that were keeping generic drugs from being able to compete and reduce the costs of medicine for Americans.

In an attempt to alleviate the delays, the **Food and Drug Administration Safety and Innovation Act** was passed.⁷³ The bill extended the provision of "user-fee agreements" from brand-name drugs to generics as well. The concept of "user fees" was implemented to create an incentive for the FDA to approve the sale of generics on at least an acceptable timescale.⁷⁴

Businesses now seeking the FDA's approval to sell generics have to pay to ensure that the agency does its job reasonably.⁷⁵⁻⁷⁷ Although the FDA is fully staffed and is tasked with approving generic medications already, a handsome payment to the FDA in the form of a "user fee" is still required to get one's drug approved expeditiously. Pharmaceutical companies cherish this "user-fee" system because it locks smaller competitors out of the regulatory labyrinth. Established companies gain the most as they can afford to expend all kinds of "user fees" to ensure their drug(s) get priority approval over the competition.⁷⁸

Despite pharmaceutical companies paying high user fees, they do not always get the timely service they think they paid for.⁷⁹⁻⁸¹ During a Senate committee hearing, one senator revealed the true extent of failure this program has had on the ability of generic drugs to be approved by the FDA:

"Since 2012, the Food and Drug Administration has been implementing the first generic drug user-fee agreement. Since this agreement was intended to accelerate the delivery of high-quality, low-cost generic drugs, we have to ask ourselves, 'is it working?' and 'has it accomplished that goal?' In 2011, the median time for generic approvals was about 31 months. Two years and hundreds of millions of dollars later in generic user fees, it's taking longer for generic drugs to be approved by the FDA, 36 months and counting... Thousands of generic drug products await review by the agency. In fact, there are more generic drug applications waiting review at the FDA today than before the generic drug user-fee agreement was put in place."³⁸

The implications of policies like this are ominous. Such overbearing requirements for generic drug approval make it increasingly difficult for new companies to bring competition into markets. As the drug approval lag widens, and competition is diminished, prices will rise to intolerable levels.

This has created a deadly wait for many Americans who live with life-threatening illnesses and need reliable access to inexpensive medicine because for many, this is a matter of life and death.

Real-World Solutions to High Drug Prices

As long as the regulations and restrictions imposed by the FDA and Congress on the generic drug market continue to exist, these trends of shortages and price abuses will continue and worsen.

If the generic drug market were to be liberated from its current regulatory stranglehold, prices of just about every generic drug would fall and countless Americans would be able to afford all the medicine they need.

The regulations that are the most responsible for these abuses are the provisions that force generic drug manufacturers to gain approval from the FDA in order to begin selling a drug.⁸² This is the first of many muddled and self-defeating regulations that should be overturned.

While there are some generics that may require regulatory oversight to ensure bio-equivalency (such

as drugs that require recombinant DNA technology), most could readily achieve measurably identical safety/efficacy as the name brand. Companies seeking to prove the equivalence or superiority of their product could obtain certification of safety and potency from private organizations akin to Underwriters Laboratories, which among other safety missions, is tasked with ensuring that consumers aren't electrocuted when plugging electronic devices into outlets.⁸³

In any other market, after a patent expires on a product, anyone is allowed to manufacture and sell that product. At this point, the supply increases and the price drops.^{84,85}

Under the guise of protecting consumers, pharmaceutical drug lobbyists attempt to make the case that without stringent regulation, generics won't be safe, potent, and effective. These intimidating claims don't hold up to scrutiny.⁸⁶

Assuming a **free-market environment** opens up in the generic industry, what would be the incentive to sell defective products? The cost of the active (drug) ingredient is usually so low that it would be against the interests of a business to shortchange consumers or make defective products that would quickly be found ineffective in the clinical arena.

Existing laws already subjects those who sell dangerous or fraudulent products to criminal prosecution and civil lawsuits.⁸⁷ These legal deterrents keep most consumer products generally safe to use.



Similarly, if a generic drug didn't contain the potency listed on its label, that's already a felony called **fraud**, which can result in severe legal repercussions. And, just like in every other industry, a company which would sell a lousy generic that isn't effective would lose its reputation and likely be driven out of business.

By way of example, let's assume a free market opens up in the generic drug industry. This would let **Walgreens**, for example, make their version of generic Pravachol® (pravastatin), a cholesterol-lowering drug. Since the active ingredient in pravastatin is so inexpensive, a month's supply could be profitably sold to consumers for under \$5.⁸⁸ A follow-up blood test would quickly show whether this free-market pravastatin is adequately lowering total cholesterol and LDL.

The FDA's regulation of the generic drug industry is at best redundant, but the truth is, it is deadly.

The FDA's oversight of generic drugs was intended to be done for the public good, to save lives. However, current FDA regulation of generic drugs hinders the welfare of the American people and is costing lives because too many Americans cannot afford the spiraling cost of the generic medications they need.⁸⁹⁻⁹¹

Earlier in the article it was cited that one in four Americans do not fill their prescriptions because they cannot afford the cost.³⁸ Too many Americans die from preventable, treatable illnesses as a result of the FDA's regulatory authority that keeps prices too high while making many vital drugs sporadically unavailable to the public.

Summary

It's easy to blame medical insurance companies for the suffocating costs that consumers now bear for their health care. Overlooked are spiraling medical costs that force insurance companies to raise premiums while cutting back on the portion of your sick care they will pay.

Big Pharma has effectively utilized its corrupting influence in Washington to usurp the wills and interests of the citizenry. Through this, it has effectively seized the power of the United States government through the manipulation of law and the crooked exploitation of regulation to plunder the welfare of the American people.

The endless flow of pharmaceutical money into the US political system enables the perversity of generic drug price gouging.

The FDA was created to foster and protect the health and welfare of the American people.

Not only does the FDA fail to serve this purpose, but it is destructive of it. Congress is tasked with keeping the FDA accountable to the people, while reining in on FDA abuse, overreach, and wrongdoing. Unfortunately, Congress and the FDA are no longer accountable to the citizens, nor even to common sense, but instead to the highest bidder.

The current system denies Americans dependable access to affordable medicine while stalling the acceleration of medical progress. Medications are purposefully made scarce and boast prices that are unattainable for many.



Our health, our wealth, and our very lives are being put at stake. The corrupt practices described in this article will persist and expand, until the anguished cries of every American grow loud enough that the apathetic are besieged into action and corrupting influences muffled into silence.

This is not a partisan issue. It adversely affects us all. The public should be rising up in outrage. ●

For life, rationality, and prosperity,
Chase Falcon

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

Legislation Urgently Needed!

Life Extension® is organizing a grassroots campaign to overwhelm the lobbyists that currently dominate Congress and federal agencies that are adversely impacting our health and longevity.

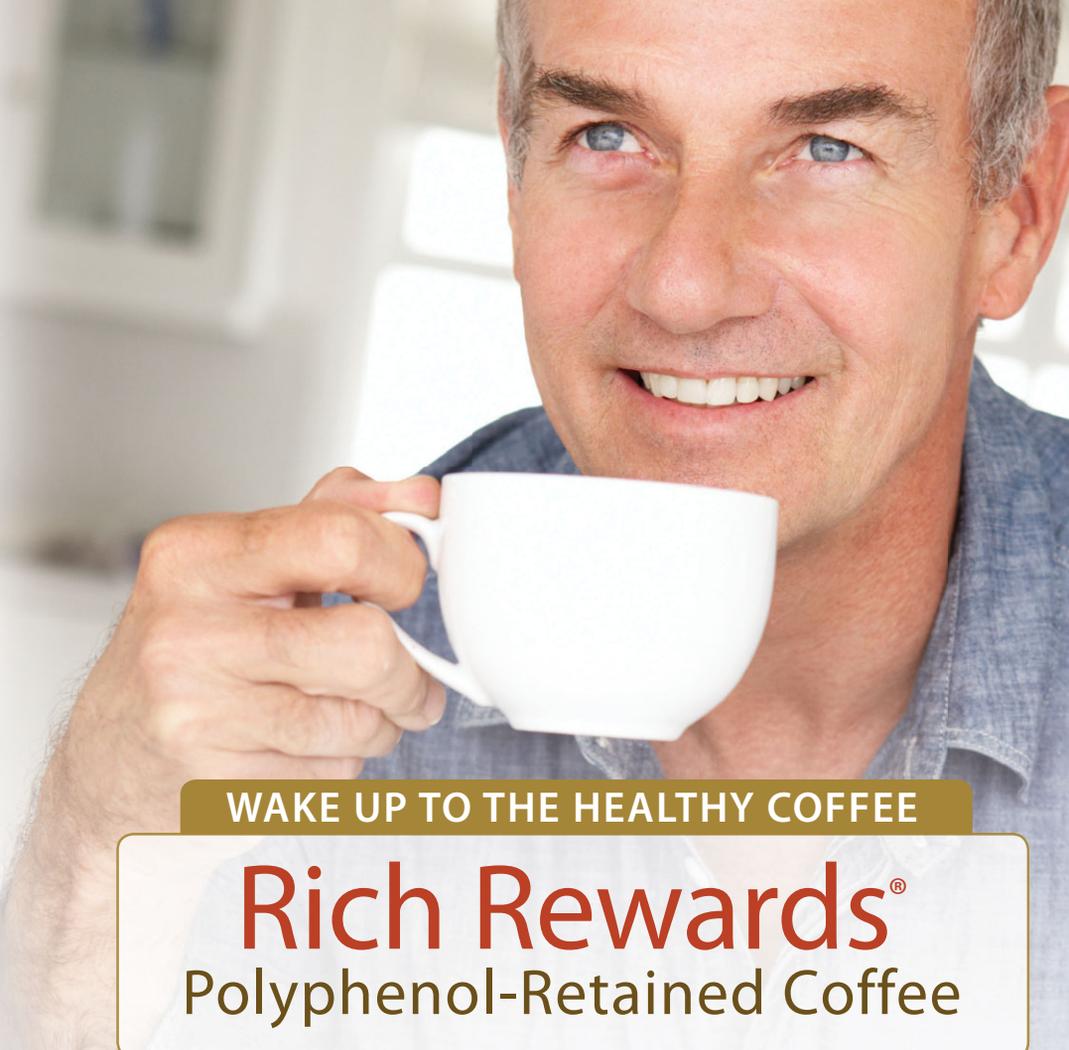
A website has been set up for those who want to enlist as **activists** to combat the atrocities perpetrated against the citizenry by our politicians and unelected/unaccountable bureaucrats.

To enroll in this campaign to tear down high drug prices, log on to:
LifeExtension.com/consumer

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Rich Rewards® Polyphenol-Retained Coffee

Most of a coffee bean's polyphenol content is **destroyed** during the roasting process. Among the most beneficial of these polyphenols is **chlorogenic acid**, a potent inhibitor of the **glucose-6-phosphatase** enzyme that stimulates excess **gluconeogenesis**.

A Patented Organic Roast

Life Extension's Rich Rewards® Breakfast Blend and Decaffeinated Roast are made using a patented, 100% natural process called **HealthyRoast®**. Rich Rewards® consists of 100% USDA certified organic arabica coffee beans.

Savory Taste Without Stomach Upset

The **HealthyRoast®** process also preserves special, naturally occurring compounds in coffee that soothe your stomach.

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With Rich Rewards® Decaffeinated Roast, you can limit your caffeine intake without compromising on flavor. The caffeine is removed through a chemical-free **water process**. It delivers the full flavor, aroma, and body of the arabica bean. Rich Rewards® Breakfast Blend contains up to **87% more chlorogenic acid** than conventional caffeinated coffees. Rich Rewards® Decaffeinated Roast contains up to **187% more chlorogenic acid** than conventional decaffeinated coffees.

Comparison of Conventional Coffee to Life Extension's Rich Rewards® Blend

Chlorogenic Acid		Chlorogenic Acid	
Conventional Coffee (Caffeinated)	92 mg	Rich Rewards® Coffee Blend (Caffeinated)	172 mg
Conventional Coffee (Decaffeinated)	46 mg	Rich Rewards® Coffee Blend (Decaffeinated)	132 mg

* US Patent 6,723,368.



Rich Rewards® Breakfast Blend

Item #01609 • 12 oz bag

	Retail Price	Your Price
1 bag	\$13	\$9.75



Rich Rewards® Decaffeinated Roast

Item #01610 • 12 oz bag

	Retail Price	Your Price
1 bag	\$14	\$10.50

To order either of the Rich Rewards® Antioxidant Coffees call 1-800-544-4440 or visit www.LifeExtension.com



Revitalize Hair, Skin, and Nail Beauty from Within

The quickest way to betray age is through tired, unhealthy hair, skin, and nails.

Working from the inside out, orally ingested nutrients are demonstrating clearly visible outward benefits. Clinical studies reveal these nutrients promote the structural proteins of collagen and keratin that keep hair, skin, and nails looking vibrant.

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- **Cynatine® HNS Plus:** This ingredient combination provides solubilized **keratin**, zinc, vitamins B3, B5, and B6, copper, and biotin—the raw materials needed for keratin formation for strong hair, skin, and nails. Clinical studies using **Cynatine®** showed an impressive **11.5% reduction** in the appearance of wrinkles and a marked **improvement** of almost **50%** in hair brightness and luster.^{1,2}
- **VERISOL® Bioactive Collagen Peptides®:** This patented bioavailable composition of **Bioactive Collagen Peptides®** supports the skin extracellular matrix by stimulating the formation of new collagen and elastin to promote the suppleness and elasticity of aging skin.³ Clinical studies on women demonstrated an average **20% reduction** in eye wrinkle volume after just eight weeks, an **18% increase** in elastin,³ and a **7% increase** in skin elasticity⁴—an effect even more pronounced in women over 50.⁴
- **Biotin:** Biotin is an essential co-factor in the synthesis of fat and **protein** molecules that are prominent in skin, hair, and nails.⁵ Studies demonstrate that biotin supplementation supports strength, hardness, and integrity of the nail.⁶
- **Silicon:** Silicon is required for the formation of the protein cross-links that hold **collagen** and **keratin** molecules in their unique, functional shapes.⁷

Hair, Skin & Nails Rejuvenation Formula with VERISOL®
Item #02002 • 90 tablets

	Retail Price	Your Price
1 bottle	\$32	\$24
4 bottles		\$22 each

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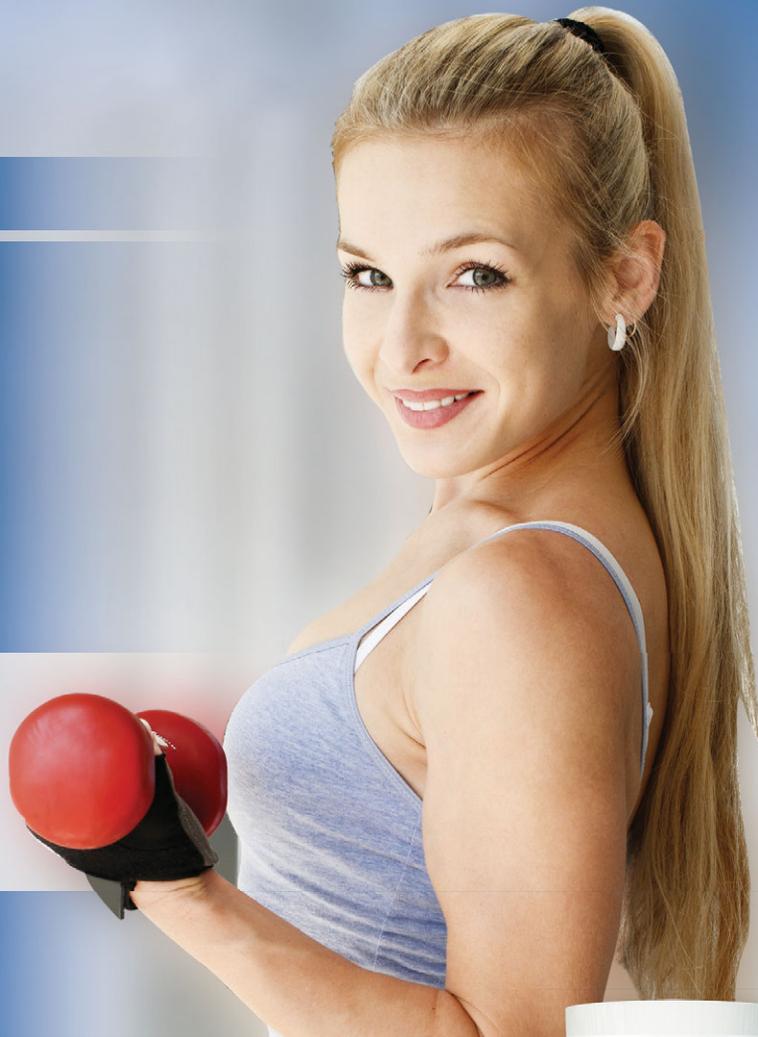
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Maintain Healthy Lean Muscle Mass

NEW ZEALAND Whey Protein CONCENTRATE

As people age, they become more susceptible to **muscle deterioration** and a **declining immune system**.^{1,2}



New Zealand Whey Protein Concentrate

is uniquely derived from grass-fed, free-range cows living healthy lives in New Zealand and not treated with growth hormone (rBST). Its naturally high content of branched-chain amino acids (BCAAs), lactoferrin, and immunoglobulins is ideal for those who wish to:³⁻⁷

- Help maintain lean muscle mass,
- Support healthy immune function, and
- Protect against free radical attack.

Available in both **natural chocolate** and **natural vanilla** flavors.

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New Zealand Whey Protein Concentrate (Vanilla)

Item #01770 • 520 grams

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1 bottle	\$30	\$22.50
4 bottles		\$19.95 each



New Zealand Whey Protein Concentrate (Chocolate)

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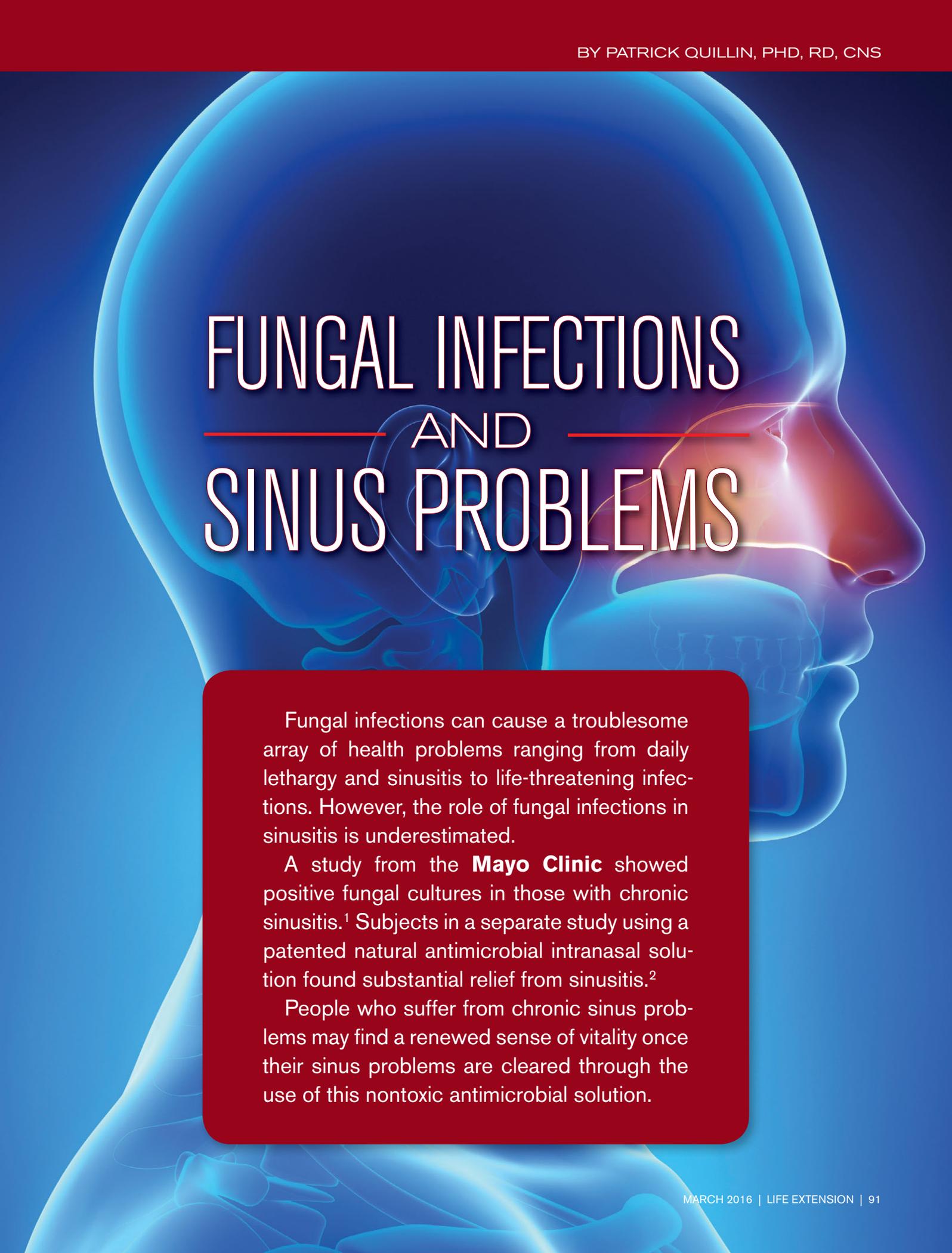
	Retail Price	Your Price
1 bottle	\$30	\$22.50
4 bottles		\$19.95 each



To order **New Zealand Whey Protein Concentrate**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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





FUNGAL INFECTIONS AND SINUS PROBLEMS

Fungal infections can cause a troublesome array of health problems ranging from daily lethargy and sinusitis to life-threatening infections. However, the role of fungal infections in sinusitis is underestimated.

A study from the **Mayo Clinic** showed positive fungal cultures in those with chronic sinusitis.¹ Subjects in a separate study using a patented natural antimicrobial intranasal solution found substantial relief from sinusitis.²

People who suffer from chronic sinus problems may find a renewed sense of vitality once their sinus problems are cleared through the use of this nontoxic antimicrobial solution.

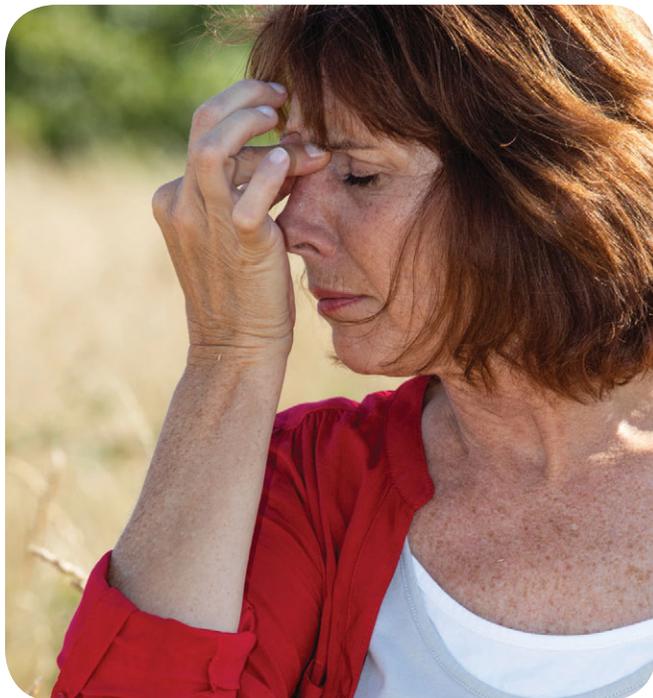
Cause of Many Illnesses

Many smart people in the global health care community argue that fungal infections are drastically underdiagnosed.

Orian Truss, MD, in his seminal work *The Missing Diagnosis*, argued that fungal infections may be at the root of many refractory ailments like stress, fatigue, depression, pain, and especially autoimmune conditions.

A.V. Costantini, MD, former director of the World Health Organization Mycotoxin Collaborating Center at the University of Freiburg, Germany, has written a series of books on fungal bionics claiming that many degenerative diseases of mankind are caused by fungal mycotoxins in the body (from the fungus organism) or fungal mycotoxins in our food supply through moldy grains and other contamination.³

While certain individuals are at a higher risk for fungal infections,^{4,5} some researchers discuss the connection between mycotoxins and their role in cancer. Many byproducts of fungi, or mycotoxins, can cause cancer.⁶ Aflatoxins, a byproduct found in moldy grains and other foods, is one of the most carcinogenic substances ever studied.⁷ Fungi can produce biofilms, which are best compared to a “bulletproof shield” against drugs because the biofilm makes the fungi resistant to the strongest antifungal drugs in use.⁸ With the explosion in research on the human microbiota (trillions of cells in the gut that dramatically affect health), scientists are finding that fungi probably play a role in many human health problems including sinusitis.



Sinusitis: More than a Minor Annoyance

Chronic sinusitis is one of the more commonly reported reasons for patient visits to a family physician. Each year, about 31 million Americans report having sinusitis, involving 73 million restricted activity days per year at a cost of \$5.8 billion in medical expenses. Common treatments for sinusitis involve antibiotics, steroid nasal sprays, prescription antihistamines, and eventually 200,000 sinus surgeries per year at a cost of \$800 million.^{2,9,10}

Masters of Evasion

Fungi are the top and the bottom of the food chain. They make potent medicines (think antibiotics) and perilous poisons. Through their bewildering array of digestive enzymes, they can decompose any life form back to the earth. Without fungi, the earth would be shoulder deep in dead matter that did not decay.

Fungi, mushrooms, yeast, and mold are all part of the kingdom Fungi or Mycota. While there are about 300 different horse breeds on earth and 2,600 different species of palm trees, there are up to 5 million species of fungi with almost 300 of those species causing diseases in humans.^{11,12}

Function of the Sinuses

We take in air usually through the nose, somewhere around **11,000 liters** per day (equaling 388 cubic feet). This air needs to be filtered and warmed by the four pairs of sinus cavities (frontal, ethmoid, sphenoid, and maxillary). In the presence of sinusitis, there is a need to address the underlying problem by cleansing the sinus cavities with safe antimicrobial agents that work in synergism.

Method to Lower Mold Load in the Sinuses

In response to this pervasive problem, researchers developed a patented nasal solution. Clinical tests showed favorable action in people suffering from chronic sinusitis.

This nasal solution was clinically tested under the guidance of an institutional review board (IRB) at the world famous Riordan Clinic in Wichita, Kansas. Forty patients with chronic sinusitis were recruited for this study, which compared saline (salt water) solution, the preferred method of cleansing the sinuses for many ear, nose, and throat (ENT) doctors, to the **antimicrobial sinus solution**. In only four weeks, the **antimicrobial nasal solution** improved symptoms by **27%**.²



Fight Fungal and Sinus Infections

- Fungal infections cause a variety of health issues ranging from everyday lethargy and sinusitis to life-threatening infections.
- A Mayo Clinic study showed positive fungal cultures in those with chronic sinusitis.
- When treating sinusitis, it's necessary to address the underlying problem by cleansing the sinus cavities with safe antimicrobial agents.
- In studies, an antimicrobial nasal solution of *Baptisia tinctoria*, grapefruit seed extract, oregano, and nano silver, in a pH balanced isotonic blend improved symptoms by 27%.

About one-third of the study subjects were able to reduce their use of antibiotics and other medications while continuing with their antimicrobial nasal irrigation. The authors of this article concluded: ***“Given the high incidence and morbidity of sinusitis, nasal irrigation seems underutilized by family physicians and otolaryngologists.”***

Antibiotics are toxic yet useful substances for treating certain infections. Yet, antibiotic usage has been linked to a higher incidence of breast cancer.¹³ By using a safe, enriched nasal solution, the sinus sufferer may be able to reduce their intake of antibiotics, hence improving overall health.

Natural Components of Antimicrobial Nasal Irrigator

The antimicrobial nasal solution consists of four primary ingredients blended in homeopathic dosages and technique: *Baptisia tinctoria* (wild indigo), grapefruit seed extract, oregano, and nano silver, in a pH balanced isotonic blend.

This enriched nasal solution is intended to be used only once daily.

Video Link for Best Results

Since the proper use of this enriched nasal solution is critical for obtaining best results, there is a medical animation at www.lifeextension.com/sinus to demonstrate this simple technique of cleansing the front and the back of the sinus regions.

This video should be reviewed before one purchases this novel sinus solution.

Simple Solution for Many Complex Health Problems

People with sinusitis, apnea (stop breathing while sleeping), halitosis (bad breath), wheezing, seasonal allergies, who snore, who work around mold (like animal dung) or sawdust (which irritates the sinuses), or who fly on commercial airlines (where you share the air with 200 people, some of whom are not well) should consider using this enriched nasal solution as a means to cleanse the sinuses, lower fungal load, and raise overall wellness level.¹⁴

Summary

People with sinus infections, as well as those with sleep apnea, who fly often, work around irritants, or suffer seasonal allergies often have a variety of health issues, from lethargy to life-threatening infections. Many sufferers test positive for fungal cultures.

While many over-the-counter solutions have a shelf life of two years maximum due to the growth of fungi in a liquid medium, this enriched sinus solution has proven to provide a five-year shelf life via stabilization studies conducted by an FDA-approved laboratory. All of the ingredients in this sinus solution work synergistically to retard the growth of fungi as proven by its extraordinary shelf life.

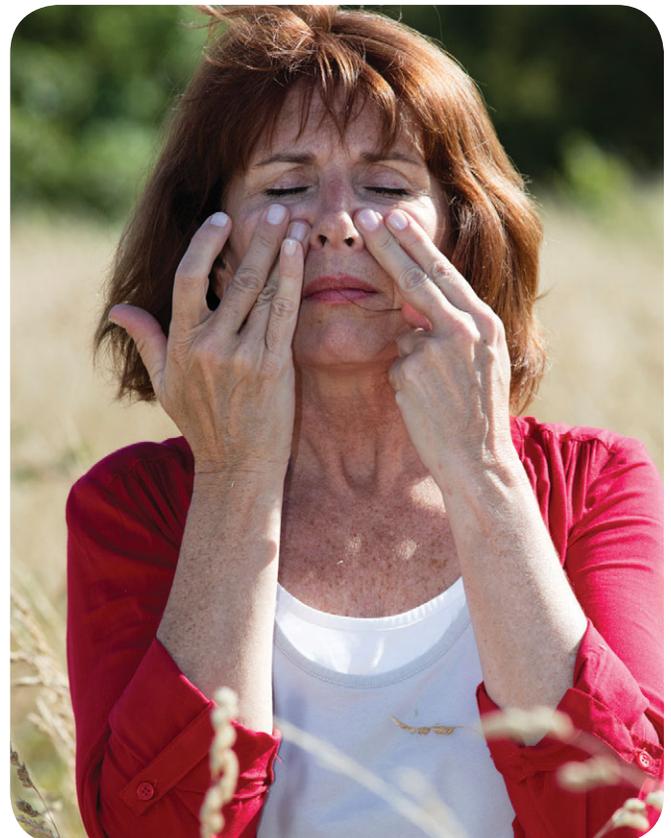
Those with sinus issues should consider cleansing the sinus cavities with antimicrobial agents. A pH-balanced isotonic blend solution of *Baptisia tinctoria*, grapefruit seed extract, oregano, and nano silver was shown to improve sinusitis symptoms by **27%**. ●

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

Patrick Quillin earned bachelor's, master's, and doctoral degrees in nutrition. He is a registered dietitian (RD) and certified nutrition specialist (CNS). His 17 health books, including the international bestseller *Beating Cancer with Nutrition*, have sold over 2 million total copies. He taught college nutrition for eight years, worked with both the La Costa Spa and Scripps Clinic, was vice president of nutrition for Cancer Treatment Centers of America for 10 years, and was a grant reviewer for the National Institutes of Health Office of Alternative Medicine and the US Army Breast Cancer Project. He has been interviewed over 200 times on radio, 40 times on TV, and has been a keynote speaker at many professional conferences. He holds two patents and is currently CEO of the publishing company Nutrition Times Press, Inc.

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- **Inhibited** lipid peroxidation by **55%** in culture.

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SAMe 400 mg

Item #01933 • 30 enteric coated tablets

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CAUTION: SAMe should not be taken by those diagnosed with bipolar disorder.

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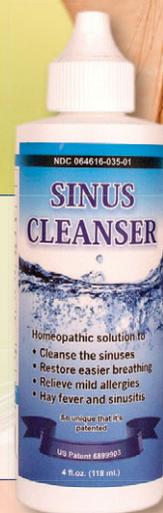
www.LifeExtension.com/sinus

*Hunninghake RE, Davis DR. Bio-Communications Research Institute. Unpublished.

Sinus Cleanser™

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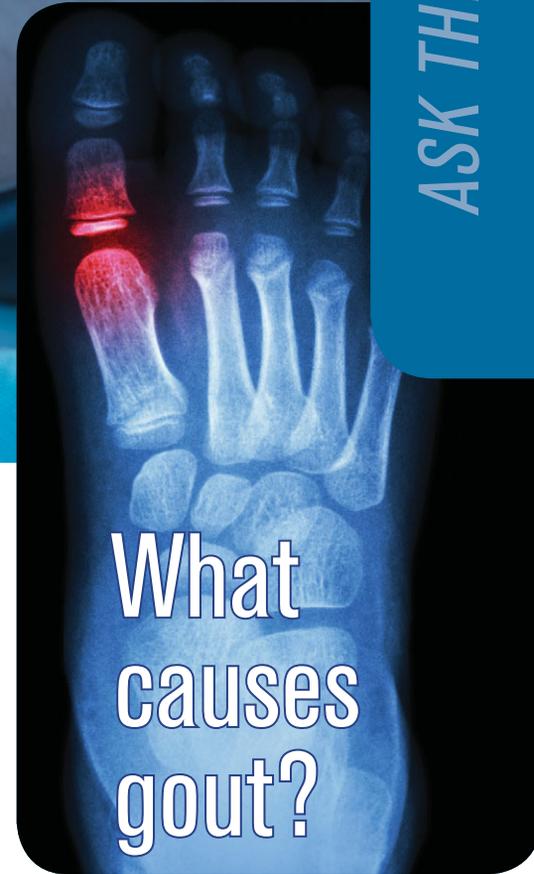
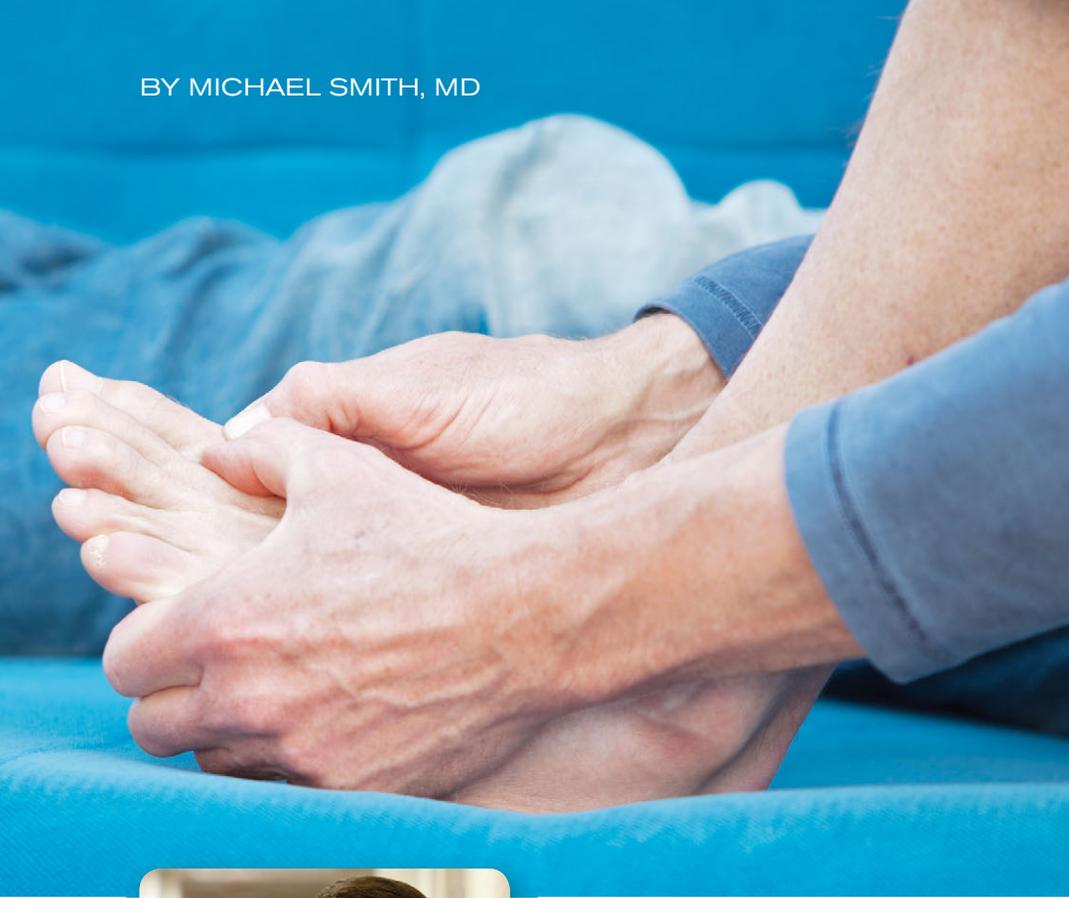
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UNDERSTANDING GOUT

MS: The underlying cause of gout is *hyperuricemia*, the buildup of excess uric acid in the blood. Uric acid is produced during the metabolism of *purines*, which are compounds found in high amounts in certain foods and beverages such as meats, poultry, seafood, and beer.

There are two ways to get purines, one is from the diet and the other is from making it in the body. Purines are important for the synthesis

of nucleic acids, the building blocks of DNA. However, your body doesn't need dietary purines, it can produce them on its own. So just about all dietary purines are converted to uric acid.¹

Hyperuricemia results either from excess production of uric acid, not enough excretion, or a combination of both. Underexcretion is the primary cause of hyperuricemia in about **90%** of cases, while overproduction is the cause in less than **10%**.²

However, high blood levels of uric acid don't necessarily mean you'll develop gout. It only increases the risk based upon varying degrees of hyperuricemia. When blood levels are between **7 and 8.9 mg/dL**, the risk of gout is less than **1%** per year.³ But when uric acid levels are greater than **9 mg/dL**, the risk of developing gout is **6 times** higher.^{4,7}

All of this is why the mainstay of gout treatment is preventing hyperuricemia. Unfortunately for a lot of us, this can be tough as gender, menopause, and genetics play a role. Men and post-menopausal women produce the most uric acid. If you fall into one of these two groups, you might consider taking preventative measures.

Research also shows that hyperuricemia is a genetic trait. Genetic studies have demonstrated a high degree of similarity (concordance) of hyperuricemia between pairs of twins, **53%** for identical twins and **24%** for fraternal twins.⁸

But there's good news for those of us at increased risk. All of the studies indicate that environmental factors substantially influence whether or not a predisposition for hyperuricemia will actually result in gout. Or simply put...lifestyle is a driving force behind the development of hyperuricemia and gout.

Here are a few lifestyle tips for preventing hyperuricemia:

- **Avoid excessive alcohol.** Drinking too much can interfere with the removal of uric acid from the body. Remember, underexcretion is the primary way it builds up.
- **Limit dietary purines.** This includes red meats, pork, lamb, and seafood.
- **Maintain a healthy weight.** Obesity increases the risk of gout. One theory is that excess body weight causes rapid turnover of body tissues, increasing the need for purines and nucleic acids. The end result is more uric acid production.
- **Optimize kidney health.** Since underexcretion causes **90%** of hyperuricemia cases, improving and maintaining kidney function is important.
- **Optimize thyroid function.** Hypothyroidism is associated with gout.
- **Optimize blood pressure.** Hypertension is associated with gout.
- **Lower lead in your body.** Chronic exposure has been linked to some cases of gout.

- **Minimize use of prescription diuretics.** Medications that increase urine flow are associated with gout. Talk to your doctor if you're at an increased risk for gout and discuss alternatives for treating high blood pressure.

- **Treat sleep apnea.** A recent study in *Arthritis & Rheumatology* has found that sleep apnea is an independent risk factor of gout.

LE: How does gout increase my risk of heart disease?

MS: Gout is bad for your heart because it's associated with diabetes and obesity, which are two independent risk factors of heart disease. For instance, the odds of developing gout are almost **4 times** higher for diabetics than nondiabetics.⁹

However, in the last few years, reports indicate that the underlying cause of gout, hyperuricemia, may in fact be an independent risk factor of cardiovascular disease.¹⁰ And the likely culprit is chronic inflammation.

Uric acid's crystalline structure appears to activate the immune system and trigger a robust inflammatory reaction. Detailed analysis of uric acid's role in initiating inflammation reveals a complex and powerful interaction between uric acid crystals, immune cells, multiple chemical signals, and eventual production of a powerful inflammatory protein, interleukin-1-beta.¹¹

Once released into circulation, interleukin-1-beta signals the activation of more and more immune cells and inflammatory proteins, resulting in a destructive inflammatory response.

Chronically elevated, inflammation can damage cells and tissues throughout the body, making it the common denominator of age-related disorders, including heart disease.

LE: Why is gout so painful?

MS: Gout is painful because needle-like crystals of uric acid are piercing joint tissues. And, as if that weren't enough, the crystals



also initiate a powerful inflammatory response that causes redness, swelling, and heat. This occurs within tight joint spaces with little ability to expand and relieve pressure.

It's so painful that a 2010 Gout Attitudes Patient Survey reported **37%** of people with the disease would trade a winning lottery ticket for an assurance of never suffering another flare-up of acute gout.¹²

The survey, developed by the Men's Health Network and Takeda Pharmaceuticals North America Inc., also found that:

- **23%** compare the pain to shattered glass piercing their skin, **28%** to breaking a bone, **34%** to a severe burn, and **37%** to a stubbed toe.
- **69%** describe the pain of an attack as "miserable."
- **73%** reported limited physical activity.
- **27%** of gout patients say the disease causes them to take time off from work.
- **43%** said they had canceled social plans because of a gout attack.
- **36%** said they would leave their homes more often if they did not have gout.

This is why people suffering from acute gout are willing to ingest large quantities of prescription and over-the-counter pain medications. But the possibility of severe side effects has some patients searching for safer ways to control the pain.

Cherries can help. Several studies provide strong evidence that the anthocyanins from cherries relieve pain and reduce inflammation. An animal study conducted at Johns Hopkins Hospital found that tart cherry extracts provided relief from painful inflammation com-

parable to the nonsteroidal anti-inflammatory drug indomethacin.¹³

Korean angelica is another alternative to side-effect prone pain medications. Used in traditional herbal medicine as a pain reliever, Korean angelica fights pain through its effects on the brain. This makes it useful for many types of pain, including the painful inflammation characterizing gout.¹⁴

Curcumin and Boswellia are additional alternatives simply because they are so effective at inhibiting powerful inflammatory pathways that are activated during acute gout.

LE: How is gout diagnosed?

MS: Classically, hyperuricemia and podagra (swollen, red big toe) are enough to make the diagnosis of gout. However, clinicians will tell you that gout doesn't only affect the big toe. Just about any joint can be involved.

So that leaves hyperuricemia (uric acid level greater than **8.6 mg/dL** in men and **7.1 mg/dL** in women) and severe pain in at least one joint as the criteria for most clinicians to call it gout. But keep in mind that gout occurs without hyperuricemia, and many people with raised uric acid levels never develop gout.

In cases with normal uric acid levels, synovial fluid analysis should be considered. Although some doctors might treat for gout without one, the presence of large needle-shaped crystals within the joint fluid confirms the diagnosis and can be used to differentiate gout from pseudogout or septic arthritis.

By the way, outside of ruling out a fracture, you probably can forgo the X-ray if your doctor orders one. It won't help in diagnosing acute gout, and should only be used to evaluate bone and joint erosions in chronic gout.

LE: If I already have high uric acid levels during an acute attack, how can I bring my levels down quickly without using prescription drugs?

MS: During an acute attack, lowering uric acid isn't beneficial. Instead, focus on quickly reducing inflammation. Start by icing and resting the affected joint. Talk with your doctor about conventional medications such as nonsteroidal anti-inflammatory drugs (NSAIDs), colchicine, glucocorticoids, and biologic agents that inhibit interleukin-1 beta. They might be appropriate for you, but they also have the potential for severe side effects.

Although not as effective in reducing inflammation from gout individually, natural extracts when taken together can be safe and effective at reducing acute inflammation. However, the quick progression and resolution of acute gout may make it less amenable to nutrient "interventions," many of which have only been tested for their long-term effects on inflammation.

But there are specific nutrients that target joint inflammation and inflammatory signals, including interleukin-1-beta. Taking them together, at a slightly higher-than-normal dose, for a short duration, may produce the wanted results. Curcumin, omega-3 fatty acids, and resveratrol may be especially suited for this purpose.

LE: I have chronically elevated uric acid. Luckily, I haven't had gout, but I don't want to keep pushing the odds. What are my top choices for reducing uric acid naturally?

MS: The immediate "natural" thing to do is change your diet.

Limit red meat, eat more vegetable protein, and drink more water. Reduce alcohol intake and eliminate sugar-sweetened drinks from your diet as well. All of this will help to lower dietary purines involved in the excessive uric acid production.

Once dietary changes are in effect, your next choice could be an extract from the fruit of *Terminalia bellerica*. Used in Ayurveda medicine for many years, researchers have now shown that *T. bellerica* provides compounds that may inhibit xanthine oxidase, an enzyme involved in the production of uric acid.⁴

In subjects with elevated uric acid levels, **500 mg** twice a day of *Terminalia bellerica* extract decreased uric acid by a little over **27%**.⁴

Vitamin C is also a xanthine oxidase inhibitor and is a good second choice. In a comprehensive review of 13 clinical studies, using an average dose of **500 mg** per day, uric acid was reduced on average by **0.35 mg/dL**.¹⁵

I already mentioned tart cherries for reducing pain. Well, they also reduce uric acid levels. A small set of case studies in the

1950s documented decreased duration and severity of gout attacks in people on cherry-supplemented diets.¹⁶

A more recent investigation demonstrated that following a single dose of **280 grams** of cherries, the blood urate levels in 10 healthy women dropped **14%** after five hours. Additionally, markers of inflammation (like C-reactive protein, CRP) also decreased slightly.¹⁷

And rounding out the natural choices is coffee. A well-conducted large study says four cups a day of coffee will reduce the risk of gout.¹⁸ It's believed caffeine is providing the benefit as a xanthine oxidase inhibitor. But interestingly, decaffeinated coffee also reduced the risk of gout. This implies that other compounds in coffee may also be important.

Because of the intense inflammatory response associated with hyperuricemia and gout, it's important to recognize if you're at risk and take appropriate steps to reduce inflammation and prevent the buildup of uric acid. Remember, gout is not just causing pain in your joints, it can negatively affect other parts of your body. ●

Dr. Smith, a graduate of the University of Texas Southwestern Medical School, is senior health scientist and online personality for Life Extension®. Often described as "the country doctor with a city education," Dr. Smith is an author, blogger, and lecturer who has created and conducted numerous health-related webinars, as well as scripted and hosted a variety of informative online videos.

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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- * Bio-identical Hormone Replacement Therapy
- * Free Standard Delivery/Shipping
- * Durable Medical Equipment
- * Trilingual (English, Spanish, French)
- * Licensed to ship into 37 States



Proud members of PCCA &



IACP
INTERNATIONAL ACADEMY OF
COMPOUNDING PHARMACISTS

PH:877-877-9700 FAX:877-877-9708

**Renew Rx's online
to receive
\$1 off each Rx**
(cash RX's only)

4401 Sheridan St. | Hollywood, Fl 33021

www.POSTHASTEPHARMACY.com

“Turn On” Your Body’s Longevity Genes!

Optimized Resveratrol supports longevity mechanisms **four** different ways:

- **Resveratrol** facilitates youthful *gene expression* analogous to some longevity functions of **calorie restriction**.¹
- **NIAGEN® nicotinamide riboside** helps replenish cellular NAD+ to enhance energy efficiency of mitochondria to support physical performance.²
- **Quercetin*** helps purge the body of inflammation-inducing senescent cells and augment the beneficial gene expression effects of resveratrol.³
- **Pterostilbene, fisetin,** and other **fruit** compounds work synergistically with resveratrol to facilitate youthful gene expression and mimic calorie restriction.^{2,4}

* **Optimized Resveratrol with Nicotinamide Riboside** provides **2.5 times** the previous amount of **quercetin**.



Just one vegetarian capsule of **Optimized Resveratrol** provides:

Trans-Resveratrol (most biologically active form)	250 mg
Quercetin	150 mg
NIAGEN® Nicotinamide Riboside	100 mg
Red grape (fruit) and wild blueberry (fruit) blend	40 mg
Fisetin	10 mg
Trans-Pterostilbene (from pTeroPure®)	0.5 mg

Optimized Resveratrol with Nicotinamide Riboside

Item #02031 • 30 vegetarian capsules

	Retail Price	Your Price
1 bottle	\$42	\$31.50
4 bottles		\$27 each

Non-GMO

To order **Optimized Resveratrol with Nicotinamide Riboside**, call **1-800-544-4440** or visit **www.LifeExtension.com**

References

1. *Cell Metab.* 2011 Nov 2;14(5):612-22.
2. *Aging Cell.* 2011 Oct;10(5):908-11.

3. *Aging Cell.* 2015 Aug;14(4):644-58.
4. *Neurobiol Aging.* 2012 Sep;33(9):2062-71.

pTeroPure® and NIAGEN® are registered trademarks of ChromaDex, Inc. Patents see: www.ChromaDexPatents.com.

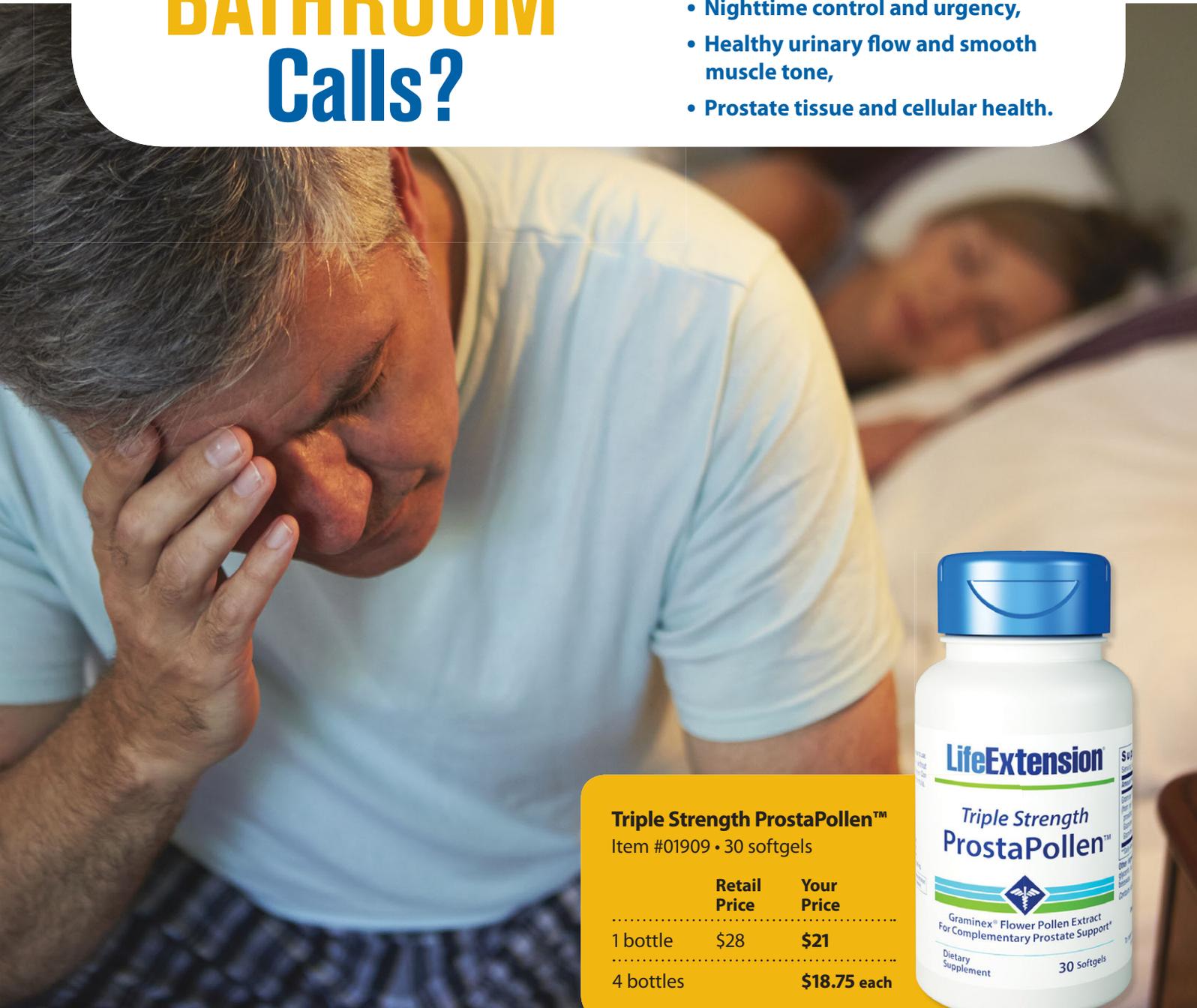
These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Frustrated with **Nightly** **BATHROOM** Calls?

Triple Strength ProstaPollen™ with specialized plant extracts **G60™** and **NAX™** utilizes clinically demonstrated ingredients for the aging prostate.¹⁻³

This innovative formula provides advanced support for:

- **Nighttime control and urgency,**
- **Healthy urinary flow and smooth muscle tone,**
- **Prostate tissue and cellular health.**



Triple Strength ProstaPollen™

Item #01909 • 30 softgels

	Retail Price	Your Price
1 bottle	\$28	\$21
4 bottles		\$18.75 each



To order **Triple Strength ProstaPollen™**, call **1-800-544-4440** or visit **www.LifeExtension.com**

*Ultra Natural Prostate contains 252 mg of original Graminex® extract providing 60 mg of G60™ water-soluble fraction and 3 mg of NAX™ lipid-soluble fraction in two softgels. Men completely satisfied with the effects of the Ultra Natural Prostate formula may not need this new Triple Strength ProstaPollen.

** Graminex® is a registered trademark of Graminex LLC.

References

1. *Br J Urol.* 1989 Nov;64(5):496-9.
2. *Br J Urol.* 1993 Apr;71(4):433-8.
3. *Eur Urol.* 2009 Sep;56(3):544-51.

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.



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

Five Easy Steps:

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

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

For Our Local Customers:

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

Blood Testing The Ultimate Information

MOST POPULAR PANELS

All of the blood test prices you see here are at least 25% off retail.

- COMPREHENSIVE PANELS**

○ MALE LIFE EXTENSION PANEL (LC322582) \$269
Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. **CBC** includes immune (white) cell count, red blood cell count and platelet count. Also includes: **C-Reactive Protein**, **DHEA-S**, **Homocysteine**, **TSH for thyroid function**, **Free Testosterone**, **Estradiol**, **Total Testosterone**, **Vitamin D 25-hydroxy**, **PSA (prostate-specific antigen)**, **Hemoglobin A1c**
- FEMALE LIFE EXTENSION PANEL (LC322535) \$269**
Chemistry Profile includes glucose, cholesterol, LDL, HDL, triglycerides, liver and-kidney function tests PLUS 20 additional tests. **CBC** includes immune (white) cell count, red blood cell count and platelet count. Also includes: **C-Reactive Protein**, **DHEA-S**, **Homocysteine**, **TSH for thyroid function**, **Free Testosterone**, **Estradiol**, **Total Testosterone**, **Progesterone**, **Vitamin D 25-hydroxy**, **Hemoglobin A1c**
- WEIGHT LOSS PANEL-COMPREHENSIVE (LC100028) \$275**
 CBC/Chemistry profile (see description at right), DHEA-S, free and total Testosterone, Estradiol, Progesterone, Cortisol, TSH, Free T3, Free T4, Reverse T3, Insulin, Hemoglobin A1c, Vitamin D 25-hydroxy, C-Reactive Protein (high sensitivity), and Ferritin.
- MALE ELITE PANEL* (LC100016) \$575**
 Chem/CBC profile, Free and Total Testosterone, Total Estrogens, Estradiol, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, Free and Total PSA, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, Ferritin, Homocysteine
- FEMALE ELITE PANEL* (LC100017) \$575**
 Chem/CBC profile, Free and Total Testosterone, Total Estrogens, Estradiol, Estrone, DHEA-S, Progesterone, Pregnenolone, DHT, FSH, LH, TSH, Free T3, Free T4, Reverse T3, IGF-1, SHBG, Vitamin D 25-OH, hs-CRP, Ferritin, Homocysteine
- MALE HORMONE ADD-ON PANEL (LCADDM)* \$120**
Pregnenolone and Dihydrotestosterone (DHT)
 To provide an even more in-depth analysis of a man's hormone status, Life Extension has created this panel as an addition to the Male Life Extension Panel. This panel provides valuable information about a testosterone metabolite that can affect the prostate, and the mother hormone that acts as a precursor to all other hormones.
- FEMALE HORMONE ADD-ON PANEL (LCADDF)* \$125**
Pregnenolone and Total Estrogens
 To provide an even more in-depth analysis of a woman's hormone status, Life Extension has created this panel as an addition to the Female Life Extension Panel. This panel provides valuable information about total estrogen status, and the mother hormone that acts as a precursor to all other hormones.
- COMPREHENSIVE THYROID PANEL (LC100018) \$199**
 TSH, T4, Free T4, Free T3, Reverse T3, TPO, ATA
- LIFE EXTENSION THYROID PANEL (LC304131) \$75**
 TSH, T4, Free T3, Free T4.
- THYROID PANEL WITH REVERSE T3 (LC100044) \$120**
 TSH, T4, Free T3, Free T4, Reverse T3
- MALE COMPREHENSIVE HORMONE PANEL* \$299 (LC100010)** CBC/Chemistry Profile (see description above right), DHEA-S, Estradiol, DHT, PSA, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3, Free T4, Cortisol.
- THE CBC/CHEMISTRY PROFILE (LC381822) \$35**
Note: This CBC/Chemistry Profile is included in many Life Extension panels. Please check panel descriptions.
CARDIOVASCULAR RISK PROFILE
 Total Cholesterol Cholesterol/HDL Ratio
 HDL Cholesterol Estimated CHD Risk
 LDL Cholesterol Glucose
 Triglycerides Iron

LIVER FUNCTION PANEL
 AST (SGOT) Total Bilirubin
 ALT (SGPT) Alkaline Phosphatase
 LDH

KIDNEY FUNCTION PANEL
 BUN BUN/Creatinine Ratio
 Creatinine Uric Acid

BLOOD PROTEIN LEVELS
 Total Protein Globulin
 Albumin Albumin/Globulin Ratio

BLOOD COUNT/RED AND WHITE BLOOD CELL PROFILE
 Red Blood Cell Count Monocytes
 White Blood Cell Count Lymphocytes
 Eosinophils Platelet Count
 Basophils Hemoglobin
 Polys (Absolute) Hematocrit
 Lymphs (Absolute) MCV
 Monocytes (Absolute) MCH
 Eos (Absolute) MCHC
 Baso (Absolute) Polynucleated Cells
 RDW

BLOOD MINERAL PANEL
 Calcium Sodium
 Potassium Chloride
 Phosphorus Iron
- FEMALE COMPREHENSIVE HORMONE PANEL* \$299 (LC100011)** CBC/Chemistry Profile (see description above right), DHEA-S, Estradiol, Total Estrogens, Progesterone, Pregnenolone, Total and Free Testosterone, SHBG, TSH, Free T3, Free T4, Cortisol.
- FOOD SAFE ALLERGY TEST** (LCM73001) \$198**
 This test measures delayed (IgG) food allergies for 95 common foods.
- STRESS MANAGEMENT PROFILE (LC100043) \$125**
 Cortisol AM/PM, DHEA-S, Glucose, Insulin, Progesterone, Free T3, Lipid Panel
- HEALTHY AGING PANEL-COMPREHENSIVE* (LC100026) \$249**
 CBC/Chemistry profile (see description above), C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Homocysteine, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Free T3, Free T4, Ferritin, Urinalysis, Fibrinogen, and Insulin.
- HEALTHY AGING PANEL-BASIC* (LC100025) \$149**
 CBC/Chemistry profile (see description above), C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Vitamin D 25-hydroxy, Hemoglobin A1c, TSH, Ferritin, and Insulin.
- 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.
- VAP™ PLUS* (LC100009) \$330**
 VAP, C-Reactive Protein (high sensitivity), Homocysteine, Fibrinogen, PLAC® Test (Lp-PLA2), Vitamin D 25-hydroxy.



Other Popular Tests and Panels

- NUTRIENT PANEL* (LC100024)** **\$349**
 Vitamin B12, Folate, Vitamin D 25-hydroxy, Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC Magnesium.
- CHRONIC FATIGUE PROFILE (LC100005)** **\$375**
 CBC/Chemistry Profile (see description previous page), Epstein –Barr Virus antibodies (IgG and IgM), Cytomegalovirus Antibodies (IgG and IgM), Ferritin, Total and Free Testosterone, DHEA-S, Free T3, Free T4, Cortisol, C-Reactive Protein (high sensitivity), Vitamin B12, Folate, Insulin.
- ANEMIA PANEL* (LC100006)** **\$79**
 CBC/Chemistry Profile (see description previous page), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate
- AUTOIMMUNE DISEASE SCREEN* (L100041)** **\$199**
 ANA screen, hs-CRP, TNF, Immunoglobulins, IgA, IgG, IgM
- DIABETES MANAGEMENT PROFILE – COMPREHENSIVE (LC100040)** **\$129**
 Hemoglobin A1C, Glucose, Insulin, Lipid Panel, Glycomark
- DIABETES MANAGEMENT PROFILE – BASIC (LC100039)** **\$39**
 Hemoglobin A1C, Glucose, Insulin
- ADVANCED CARDIAC BIOMARKERS**
- ADVANCED OXIDIZED LDL PANEL* (LC100035)** **\$285**
 This panel looks at vascular inflammatory biomarkers, beginning with lifestyle choices to the development of metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: F2-Isoprostanes, Myeloperoxidase, and Oxidized LDL.
- OXIDIZED LDL PANEL* (LC100034)** **\$175**
 This panel looks at vascular inflammatory biomarkers, beginning with the development of metabolic as well as cardiovascular disease and the formation of vulnerable plaque. The panel contains the following tests: Myeloperoxidase and Oxidized LDL.
- OXIDIZED LDL* (LC817472)** **\$75**
 OxLDL is a powerful initiator of inflammatory changes in the artery wall, which eventually lead to the formation of plaque.
- HORMONES**
- DHEA-SULFATE (LC004020)** **\$61**
 This test shows if you are taking the proper amount of DHEA. This test normally costs \$100 or more at commercial laboratories.
- MALE BASIC HORMONE PANEL (LC100012)** **\$75**
 DHEA-S, Estradiol, Free and Total Testosterone, PSA
- FEMALE BASIC HORMONE PANEL (LC100013)** **\$75**
 DHEA-S, Estradiol, Free and Total Testosterone, Progesterone
- DIHYDROTESTOSTERONE (DHT)* (LC500142)** **\$50**
 Measures serum concentrations of DHT.
- ESTRADIOL (LC004515)** **\$33**
 For men and women. Determines the proper amount in the body.
- INSULIN FASTING (LC004333)** **\$29.90**
 Can predict those at risk of diabetes, obesity, heart and other diseases.
- PREGNENOLONE* (LC140707)** **\$116**
 Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushing's syndrome.
- PROGESTERONE (LC004317)** **\$55**
 Primarily for women. Determines the proper amount in the body.
- SEX HORMONE BINDING GLOBULIN (SHBG) (LC082016)** **\$33**
 This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.
- GENERAL HEALTH**
- VITAMIN D (25OH) (LC081950)** **\$47**
 This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.
- FERRITIN (LC004598)** **\$28**
 Ferritin levels reflect your body's iron stores and is also a biomarker for insulin resistance.
- VITAMIN B12/FOLATE* (LC000810)** **\$39.68**
 Measurements of B12 and Folate help evaluate your general health and nutritional status since the B vitamins are important for cardiac health as well as energy production.
- PSA (PROSTATE SPECIFIC ANTIGEN) (LC010322)** **\$31**
 Screening test for prostate disorders and possible cancer.



With Your Healthy Rewards, you earn **LE Dollars** back on every purchase you make — including blood tests!

See www.LifeExtension.com/Rewards for details.

Blood tests available in the continental United States only. Restrictions apply in NY, NJ, PA, RI, and MA. Not available in Maryland.

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 Life Extension® 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 Life Extension® 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 _____

X _____

CUSTOMER 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**

* This test requires samples to be shipped to the lab on dry ice for customers using a Blood Draw Kit and will incur an additional \$35 charge. If the customer is having blood drawn at a LabCorp facility, this extra charge does not apply.

** This test is packaged as a kit, requiring a finger stick performed at home.

Amino Acids

Arginine/L-Ornithine Capsules
 Arginine Ornithine Powder
 Branched Chain Amino Acids
 D,L-Phenylalanine Capsules
 L-Arginine Caps
 L-Carnitine
 L-Glutamine
 L-Glutamine Powder
 L-Lysine
 L-Taurine Powder
 L-Tyrosine Powder
 Super Carnosine
 Taurine

Blood Pressure & Vascular Support

Advanced Olive Leaf Vascular Support with Celery Seed Extract
 Arterial Protect
 Blood Pressure Monitor Arm Cuff
 Endothelial Defense™ with Full-Spectrum Pomegranate™ and CORDIART™
 Endothelial Defense™ with GliSODin®
 Full-Spectrum Pomegranate™
 Natural BP Management
 NitroVasc with CORDIART™
 Pomegranate Complete
 Pomegranate Fruit Extract

Bone Health

Bone Restore
 Bone Restore with Vitamin K2
 Bone Strength Formula with KoAct®
 Bone-Up™
 Calcium Citrate with Vitamin D
 Dr. Strum's Intensive Bone Formula
 Strontium Caps

Brain Health

Acetyl-L-Carnitine
 Acetyl-L-Carnitine Arginate
 Blast
 Brain Shield® Gastrodin
 Cognitex® Basics
 Cognitex® with Brain Shield®
 Cognitex® with Pregnenolone & Brain Shield®
 Cognizin® CDP-Choline Caps
 DMAE Bitartrate (dimethylaminoethanol)
 Dopa-Mind™
 Ginkgo Biloba Certified Extract™
 Huperzine A
 Lecithin Granules
 Migra-Eeze™
 Neuro-Mag® Magnesium L-Threonate
 Neuro-Mag® Magnesium L-Threonate with Calcium and Vitamin D3
 Optimized Ashwagandha Extract
 Prevagen™
 PS (Phosphatidylserine) Caps
 Vinpocetine

Cholesterol Management

Advanced Lipid Control
 Cho-Less™
 CHOL-Support™
 Policosanol
 Red Yeast Rice
 Theaflavins Standardized Extract
 Vitamin B3 Niacin Capsules

Digestion Support

Artichoke Leaf Extract
 Carnosoothe with PicroProtect™
 Digest RC®
 Effervescent Vitamin C - Magnesium Crystals
 Enhanced Super Digestive Enzymes
 Enhanced Super Digestive Enzymes w/Probiotics
 Esophageal Guardian
 Extraordinary Enzymes

Fem Dophilus
 Ginger Force®
 Organic Golden Flax Seed
 Pancreatin
 Regimint
 Tranquil Tract™
 TruFiber™
 WellBetX PGX plus Mulberry

Energy Management

Adrenal Energy Formula
 Asian Energy Boost
 D-Ribose Powder
 D-Ribose Tablets
 Forskolin
 Mitochondrial Basics with BioPQQ®
 Mitochondrial Energy Optimizer with BioPQQ®
 NAD+ Cell Regenerator™
 Peak ATP® with GlycoCarn®
 PQQ Caps with BioPQQ®
 Rhodiola Extract
 RiboGen™ French Oak Wood Extract
 Triple Action Thyroid

Eye Health

Astaxanthin with Phospholipids
 Brite Eyes III
 Certified European Bilberry Extract
 Eye Pressure Support with Mirtogenol®
 MacuGuard® Ocular Support
 MacuGuard® Ocular Support with Astaxanthin
 Tear Support with MaquiBright®

Fish Oil & Omegas

Mega EPA/DHA
 Mega GLA with Sesame Lignans
 OMEGA FOUNDATIONS™ Super Omega-3 EPA/DHA with Sesame Lignans & Olive Extract
 OMEGA FOUNDATIONS™ Super Omega-3 Plus EPA/DHA with Sesame Lignans, Olive Extract, Krill & Astaxanthin
 Organic Golden Flax Seed
 Provinal® Purified Omega-7
 Vegetarian Sourced DHA

Food

Rich Rewards® Breakfast Blend
 Rich Rewards® Breakfast Blend Natural Mocha Flavor
 Rich Rewards® Breakfast Blend Natural Vanilla Flavor
 Rich Rewards® Breakfast Blend Whole Bean Coffee
 Rich Rewards® Decaf Roast
 Stevia Sweetener

Glucose Management

CinSulin® with InSea^{2®} and Crominex® 3+
 CoffeeGenic® Green Coffee Extract
 Mega Benfotiamine
 Natural Glucose Absorption Control
 Tri Sugar Shield®

Heart Health

Aspirin (Enteric Coated)
 Bio Active Folate & Vitamin B12 Caps
 Cardio Peak™ with Standardized Hawthorn and Arjuna
 Fibrinogen Resist™ with Nattokinase
 Optimized Carnitine with GlycoCarn®
 Super Ubiquinol CoQ10
 Super Ubiquinol CoQ10 with BioPQQ®
 Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™
 Super-Absorbable CoQ10 Ubiquinone with d-Limonene
 TMG Powder
 TMG Liquid Capsules

Hormone Balance

DHEA (Dehydroepiandrosterone)
 Inner Power
 Pregnenolone
 Triple Action Cruciferous Vegetable Extract with Resveratrol
 Triple Action Cruciferous Vegetable Extract

Immune Support

AHCC®
 Echinacea Extract
 Enhanced Zinc Lozenges
 i26 Hyperimmune Egg
 Immune Modulator with Tinofend®
 Immune Protect with PARACTIN®
 Immune Senescence Protection Formula™
 Kinoko® Gold AHCC
 Kyolic® Garlic Formula 102
 Kyolic® Garlic Formula 105
 Kyolic® Reserve
 Lactoferrin (apolactoferrin) Caps
 NK Cell Activator™
 Optimized Garlic
 Optimized Quercetin
 Peony Immune
 ProBoost Thymic Protein A
 Reishi Extract Mushroom Complex
 Standardized Cistanche
 Ten Mushroom Formula®
 Zinc Lozenges

Inflammation Management

5-LOX Inhibitor with AprèsFlex®
 Advanced Bio-Curcumin® with Ginger & Turmerones
 Black Cumin Seed Oil with Bio-Curcumin®
 Black Cumin Seed Oil
 Boswellia
 Cytokine Suppress™ with EGCG
 Nerva®
 Serraflazyme
 Specially-Coated Bromelain
 Super Bio-Curcumin®
 Zyflamend® Whole Body

Joint Support

Arthro-Immune Joint Support
 ArthroMax® Advanced with UC-II® & AprèsFlex®
 ArthroMax® with Theaflavins & AprèsFlex®
 Bio-Collagen with Patented UC-II®
 Fast-Acting Joint Formula
 Glucosamine/Chondroitin Capsules
 Krill Healthy Joint Formula
 MSM (Methylsulfonylmethane)

Kidney & Bladder Support

Cran-Max® Cranberry Whole Fruit Concentrate
 Optimized Cran-Max® with Ellirose™
 Uric Acid Control
 Water-Soluble Pumpkin Seed Extract

Liver Health & Detoxification

Anti-Alcohol Antioxidants with HepatoProtection Complex
 Calcium D-Glucarate
 Chlorella
 Chlorophyllin
 European Milk Thistle
 Glutathione, Cysteine & C
 HepatoPro
 Liver Efficiency Formula
 Mega L-Glutathione Capsules
 N-Acetyl-L-Cysteine
 PectaSol-C®
 Silymarin
 SODzyme® with GliSODin® & Wolfberry

Longevity & Wellness

AMPK Activator
 AppleWise Polyphenol Extract
 Berry Complete
 Blueberry Extract
 Blueberry Extract with Pomegranate
 CR Mimetic Longevity Formula

DNA Protection Formula
 Enhanced Berry Complete with Acai
 Essential Daily Nutrients
 Grapeseed Extract with
 Resveratrol & Pterostilbene
 Mega Green Tea Extract (decaffeinated)
 Mega Green Tea Extract (lightly caffeinated)
 Optimized Fucoidan with Maritech® 926
 Optimized Resveratrol
 Optimized Resveratrol with Nicotinamide
 Riboside
 pTeroPure®
 Pycnogenol® French Maritime
 Pine Bark Extract
 Resveratrol with Pterostilbene
 RNA (Ribonucleic Acid)
 Super Alpha-Lipoic Acid
 Super R-Lipoic Acid
 X-R Shield

Men's Health

Mega Lycopene Extract
 PalmettoGuard® Saw Palmetto with
 Beta-Sitosterol
 PalmettoGuard® Saw Palmetto/Nettle Root
 Formula with Beta-Sitosterol
 Pomi-T®
 Prelox® Natural Sex for Men®
 Super MiraForte with Standardized Lignans
 Triple Strength ProstaPollen™
 Ultra Natural Prostate

Minerals

Boron
 Chromium Ultra
 Copper
 Iron Protein Plus
 Magnesium (Citrate)
 Magnesium Caps
 Only Trace Minerals
 Optimized Chromium with Crominex® 3+
 Sea-Iodine™
 Se-Methyl L-Selenocysteine
 Super Selenium Complex
 Vanadyl Sulfate
 Zinc Caps

Miscellaneous

Advanced Iodine Complete
 Solarshield® Sunglasses

Mood & Stress Management

5 HTP
 L-Theanine
 Natural Stress Relief
 SAME (S-Adenosyl-Methionine)

Multivitamins

Children's Formula Life Extension Mix™
 Comprehensive Nutrient Packs ADVANCED
 Life Extension Mix™ Capsules without Copper
 Life Extension Mix™ Capsules
 Life Extension Mix™ Powder without Copper
 Life Extension Mix™ Powder
 Life Extension Mix™ Tablets with Extra Niacin
 Life Extension Mix™ Tablets without Copper
 Life Extension Mix™ Tablets
 Once-Daily Health Booster
 One-Per-Day Tablets
 Two-Per-Day Capsules
 Two-Per-Day Tablets

Personal Care

Anti-Aging Rejuvenating Scalp Serum
 Biosil
 Dr. Proctor's Advanced Hair Formula
 Dr. Proctor's Shampoo
 European Leg Solution Featuring Certified
 Diosmin 95
 Face Master Platinum
 Facial Toning System
 Hair, Skin & Nail Rejuvenation Formula
 w/VERISOL®

Hair Suppress Formula
 Life Extension Toothpaste
 Sinus Cleanser
 Venotone
 Xyliwhite Mouthwash

Pet Care

Cat Mix
 Dog Mix

Probiotics

Bifido GI Balance
 BroccoMax®
 FLORASSIST® Heart Health Probiotic
 FLORASSIST® Oral Hygiene
 FLORASSIST® Balance
 FLORASSIST® Mood
 FLORASSIST® Throat Health
 Theralac® Probiotics
 TruFlora® Probiotics

Skin Care

Advanced Anti-Glycation Peptide Serum
 Advanced Lightening Cream
 Advanced Peptide Hand Therapy
 Advanced Triple Peptide Serum
 Advanced Under Eye Serum with Stem Cells
 Amber Self MicroDermAbrasion
 Anti-Aging Face Oil
 Anti-Aging Mask
 Anti-Aging Rejuvenating Face Cream
 Anti-Glycation Serum with
 Blueberry & Pomegranate Extracts
 Antioxidant Facial Mist
 Anti-Oxidant Rejuvenating Foot Cream
 Anti-Oxidant Rejuvenating Foot Scrub
 Anti-Oxidant Rejuvenating Hand Cream
 Anti-Redness & Adult Blemish Lotion
 Bioflavonoid Cream
 Broccoli Sprout Cream
 Collagen Boosting Peptide Serum
 Corrective Clearing Mask
 DNA Repair Cream
 Dual-Action MicroDermAbrasion
 Enhanced FernBlock® with
 Red Orange Complex
 Essential Plant Lipids Reparative Serum
 Face Rejuvenating Anti-Oxidant Cream
 Fine Line-Less
 Healing Formula
 Healing Mask
 Healing Vitamin K Cream
 Hyaluronic Facial Moisturizer
 Hyaluronic Oil-Free Facial Moisturizer
 Hydrating Anti-Oxidant Facial Mist
 Hydroderm
 Lifting & Tightening Complex
 Lycopene Cream
 Melatonin Cream
 Mild Facial Cleanser
 Multi Stem Cell Skin Tightening Complex
 Neck Rejuvenating Anti-Oxidant Cream
 Pigment Correcting Cream
 Rejuvenating Serum
 Rejuvenex® Body Lotion
 Rejuvenex® Factor Firming Serum
 Renewing Eye Cream
 Resveratrol Anti-Oxidant Serum
 Skin Lightening Serum
 Skin Restoring Phytoceramides with Lipowheat®
 Skin Stem Cell Serum
 Stem Cell Cream with Alpine Rose
 Tightening & Firming Neck Cream
 Ultra Lip Plumper
 Ultra Rejuvenex®
 Ultra RejuveNight®
 Ultra Wrinkle Relaxer
 Under Eye Refining Serum
 Under Eye Rescue Cream
 Vitamin C Serum
 Vitamin D Lotion
 Vitamin E-ssential Cream
 Youth Serum

Sleep

Bioactive Milk Peptides
 Enhanced Natural Sleep® with Melatonin
 Enhanced Natural Sleep® without Melatonin
 Fast-Acting Liquid Melatonin
 Glycine
 L-Tryptophan
 Melatonin
 Optimized Tryptophan Plus

Sports Performance

Creatine Capsules
 Creatine Whey Glutamine Powder
 (Vanilla Flavor)
 New Zealand Whey Protein Concentrate
 (Natural Chocolate and Vanilla Flavor)
 Pure Plant Protein
 Tart Cherry Extract
 Whey Protein Isolate
 (Chocolate and Vanilla Flavor)

Vitamins

Ascorbyl Palmitate
 Benfotiamine with Thiamine
 Beta-Carotene
 BioActive Complete B-Complex
 Biotin
 Buffered Vitamin C Powder
 Daily C+
 Fast-C® with Dihydroquercetin
 Gamma E Tocopherol with Sesame Lignans
 Gamma E Tocopherol/Tocotrienols
 High Potency Optimized Folate
 Inositol Caps
 Liquid Emulsified Vitamin D3
 Liquid Vitamin D3
 Low-Dose Vitamin K2
 Methylcobalamin
 MK-7
 Natural Vitamin E
 No Flush Niacin
 Optimized Folate (L-Methylfolate)
 Pantothenic Acid (Vitamin B-5)
 Pyridoxal 5'-Phosphate Caps
 Super Absorbable Tocotrienols
 Super Ascorbate C Capsules
 Super Ascorbate C Powder
 Super K with Advanced K2 Complex
 Vitamin B12
 Vitamin B6
 Vitamin C with Dihydroquercetin
 Vitamin D3 with Sea-Iodine™
 Vitamin D3
 Vitamins D and K with Sea-Iodine™

Weight Management

7-Keto® DHEA Metabolite
 Advanced Anti-Adipocyte Formula
 Advanced Natural Appetite Suppress
 CalReduce Selective Fat Binder
 DHEA Complete
 Garcinia HCA
 HCAActive™ Garcinia Cambogia Extract
 Integra-Lean®
 Mediterranean Trim with Sinetrol™-XPur
 Optimized Irvingia with Phase 3™ Calorie
 Control Complex
 Optimized Saffron with Satiereal®
 Super Citrimax®
 Super CLA Blend with Guarana and
 Sesame Lignans
 Super CLA Blend with Sesame Lignans
 Waist-Line Control™

Women's Health

Advanced Natural Sex for Women® 50+
 Breast Health Formula
 Femmenessence MacaPause®
 Natural Estrogen without Soy Isoflavones
 Natural Estrogen
 ProgestaCare® for Women
 Super-Absorbable Soy Isoflavones
 Ultra Soy Extract

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
A							
01524	ACETYL-L-CARNITINE • 500 mg, 100 veg. caps	34.00	25.50	22.50			
01525	ACETYL-L-CARNITINE ARGINATE • 100 veg. caps	59.00	44.25	38.24			
01628	ADRENAL ENERGY FORMULA • 60 veg. caps	24.00	18.00	16.50			
01630	ADRENAL ENERGY FORMULA • 120 veg. caps	46.00	34.50	31.50			
01828	ADVANCED LIPID CONTROL • 60 veg. caps	30.00	22.50	20.25			
00681	AHCC® • 500 mg, 30 caps	59.98	44.99				
29727	AHCC® (KINOKO® GOLD) • 500 mg, 60 veg. caps	74.95	52.47				
00457	ALPHA-LIPOIC ACID W/BIOTIN (Super) • 250 mg, 60 caps	37.00	27.75	24.00			
01907	AMPK ACTIVATOR • 90 veg. caps	48.00	36.00	33.00			
01440	ANTI-ALCOHOL ANTIOXIDANTS W/HEPATOPRO • 100 caps	26.00	19.50	17.25			
01509	ANTI-ADIPOCYTE FORMULA W/MERATRIM® & INTEGRA LEAN® (Advanced) • 60 veg. caps	39.00	29.25	27.00			
01625	APPLEWISE POLYPHENOL EXTRACT 600 mg, 30 veg. caps	21.00	15.75	14.25			
01039	ARGININE/ORNITHINE • 500/250, 100 caps	17.99	13.49				
00038	ARGININE/ORNITHINE POWDER • 150 grams	22.95	17.21	14.25			
01624	(L)-ARGININE CAPS • 700 mg, 200 veg. caps	26.50	19.88	17.44			
02004	ARTERIAL PROTECT • 30 veg. caps	48.00	36.00	33.00			
01617	ARTHROMAX® W/THEAFLAVINS & APRÈSFLEX® 120 veg. caps	44.00	33.00	30.00			
01618	ARTHROMAX® ADVANCED W/UC-II® & APRÈSFLEX® 60 caps	36.00	27.00	24.00			
01404	ARTHRO-IMMUNE JOINT SUPPORT • 60 veg. caps	32.00	24.00	21.00			
00919	ARTICHOKE LEAF EXTRACT • 500 mg, 180 veg. caps	30.00	22.50	21.00			
01533	ASCORBYL PALMITATE • 500 mg, 100 veg. caps	22.50	16.88	15.00			
00888	ASHWAGANDHA EXTRACT (Optimized) • 60 veg. caps	10.00	7.50	6.75			
01805	ASIAN ENERGY BOOST • 90 veg. caps	24.00	18.00	16.50			
01066	ASPIRIN • 81 mg, 300 enteric coated tablets	6.00	4.50	4.00			
01923	ASTAXANTHIN WITH PHOSPHOLIPIDS • 4 mg, 30 softgels	16.00	12.00	10.50			
B							
00920	BENFOTIAMINE W/ THIAMINE • 100 mg, 120 veg. caps	19.95	14.96	13.95			
00925	BENFOTIAMINE (Mega) • 250 mg, 120 veg. caps	30.00	22.50	20.25			
01206	BERRY COMPLETE • 30 veg. caps	21.00	15.75	14.00			
01496	BERRY COMPLETE W/ACAI (Enhanced) • 60 veg. caps	29.00	21.75	19.50			
00664	BETA-CAROTENE • 25,000 IU, 100 softgels	11.25	8.44				
01622	BIFIDO GI BALANCE • 60 veg. caps	20.00	15.00	13.50			
01073	BILBERRY EXTRACT • 100 mg, 100 veg. caps	42.00	31.50	28.50			
01512	BIOACTIVE MILK PEPTIDES • 30 caps	18.00	13.50	12.00			
01631	BIO-COLLAGEN W/PATENTED UC-II® • 40 mg, 60 small caps	36.00	27.00	24.00			
*01006	BIOSIL™ • 5 mg, 30 veg. caps	18.95	15.16				
*01007	BIOSIL™ • 1 fl oz	31.99	25.59				
00102	BIOTIN • 600 mcg, 100 caps	7.50	5.63	4.88			
01709	BLACK CUMIN SEED OIL • 60 softgels	16.00	12.00	10.50			
01710	BLACK CUMIN SEED OIL W/BIO-CURCUMIN® • 60 softgels	32.00	24.00	22.50			
01008	BLAST™ • 600 grams of powder	26.95	20.21				
70000	BLOOD PRESSURE MONITOR (ACCUFIT™) • med/lq cuff	79.99	49.99				
70004	BLOOD PRESSURE MONITOR • Digital wrist cuff	69.95	52.46				
SUBTOTAL OF COLUMN 1							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
01214	BLUEBERRY EXTRACT • 60 veg. caps	22.50	16.88	15.00			
01438	BLUEBERRY EXTRACT W/ POMEGRANATE • 60 veg. caps	30.00	22.50	20.25			
01506	BONE FORMULA (DR. STRUM'S INTENSIVE) • 300 caps	56.00	42.00	37.50			
01726	BONE RESTORE • 120 caps	22.00	16.50	14.25			
01727	BONE RESTORE W/VITAMIN K2 • 120 caps	24.00	18.00	16.50			
01725	BONE STRENGTH FORMULA W/KOACT® • 120 caps	45.00	33.75	30.00			
00313	BONE-UP® • 240 caps	28.95	21.71	20.41			
01661	BORON • 3 mg, 100 veg. caps	5.95	4.46	3.94			
00202	BOSWELLA • 100 caps	38.00	28.50	22.50			
01802	BRAIN SHIELD® GASTRODIN • 300 mg, 60 veg. caps	33.00	24.75	22.50			
01253	BRANCHED CHAIN AMINO ACIDS • 90 caps	19.50	14.63	12.75			
01699	BREAST HEALTH FORMULA • 60 caps	34.00	25.50	22.50			
00893	BRITE EYES III • 2 vials, 5 ml each	34.00	25.50	24.00			
26576	BROCCO MAX® • 60 veg. caps	26.95	20.21				
01203	BROMELAIN (Specially-coated) 500 mg, 60 enteric coated tablets	21.00	15.75	14.25			
C							
01653	CALCIUM CITRATE W/VITAMIN D • 300 caps	24.00	18.00	15.94			
01651	CALCIUM D-GLUCARATE • 200 mg, 60 veg. caps	18.00	13.50	11.25			
*01823	CALREDUCE SELECTIVE FAT BINDER 120 mint chewable tablets	45.00	33.75	28.50			
01700	CARDIO PEAK™ W/STANDARDIZED HAWTHORN & ARJUNA 120 veg. caps	36.00	27.00	24.00			
00916	CARNITINE W/GLYCOCARN® (Optimized) • 60 veg. caps	36.00	27.00	24.00			
01532	L-CARNITINE • 500 mg, 30 veg. caps	15.00	11.25	9.90			
01258	CARNOOOSTHE W/PICROPROTECT™ • 60 veg. caps	29.95	22.46	20.25			
01829	CARNOSINE • 500 mg, 60 veg. caps	36.00	27.00	24.00			
01687	CARNOSINE (Super) • 500 mg, 90 veg. caps	66.00	49.50	45.00			
01932	CAT MIX • 100 grams powder	14.00	10.50	8.25			
01899	CHILDREN'S FORMULA LIFE EXTENSION MIX™ 100 chewable tablets	20.00	15.00	13.50			
00550	CHLORELLA • 500 mg, 200 tablets	23.50	17.63				
01571	CHLOROPHYLLIN • 100 mg, 100 veg. caps	24.00	18.00	15.00			
01359	CHO-LESS™ • 90 capsules	35.00	26.25				
01910	CHOL-SUPPORT™ • 60 liquid veg. caps	48.00	36.00	32.00			
01477	CHROMIUM ULTRA • 100 veg. caps	24.00	18.00	15.75			
01504	CHROMIUM W/CROMINEX® 3+ (Optimized) 500 mcg, 60 veg. caps	9.00	6.75	6.00			
01503	CINSULIN® W/INSEA2® AND CROMINEX® 3+ • 90 veg. caps	38.00	28.50	25.50			
01906	CISTANCHE (Standardized) • 30 veg. caps	20.00	15.00	12.00			
01818	CITRIMAX® (Super) • 180 veg. caps	40.00	30.00	28.50			
00818	CLA BLEND W/SESAME LIGNANS (Super) 1,000 mg, 120 softgels	36.00	27.00	24.75	19.75		
00819	CLA BLEND W/GUARANA & SESAME (Super) 1,000 mg, 120 softgels	42.00	31.50	28.75			
01896	COGNITEX® W/BRAIN SHIELD® • 90 softgels	60.00	45.00	39.00	36.00		
01897	COGNITEX® W/PREGNENOLONE & BRAIN SHIELD® 90 softgels	62.00	46.50	39.75	37.50		
01421	COGNITEX® BASICS • 60 softgels	38.00	28.50	26.25	24.00		
01659	COGNIZIN® CDP CHOLINE CAPS • 250 mg, 60 veg. caps	36.00	27.00	25.50			
SUBTOTAL OF COLUMN 2							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
01945	COMPLETE B-COMPLEX (BioActive) • 60 veg. caps	12.00	9.00	8.00			
02098	COMPREHENSIVE NUTRIENT PACKS ADVANCED • 30 packs	90.00	67.50	61.50			
00119	COPPER CAPSULES • 2 mg, 100 caps	9.91	7.43				
00949	COQ10 w/d-LIMONENE (Super-absorbable) 50 mg, 60 softgels	25.00	18.75	16.50	15.00		
00950	COQ10 w/d-LIMONENE (Super-absorbable) 100 mg, 100 softgels	46.00	34.50	28.00	26.25		
01929	COQ10 (Super ubiquinol) • 100 mg, 60 softgels	56.00	42.00	36.00	33.00		
01733	COQ10 w/BIOQQ® (Super ubiquinol) • 100 mg, 30 softgels	54.00	40.50	33.00	30.00		
01426	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super ubiquinol) • 100 mg, 60 softgels	62.00	46.50	39.00	36.00		
01425	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super ubiquinol) • 50 mg, 100 softgels	58.00	43.50	34.50	31.50		
01427	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super ubiquinol) • 50 mg, 30 softgels	20.00	15.00	12.00			
01431	COQ10 w/ENH MITOCHONDRIAL SUPPORT™ (Super ubiquinol) • 200 mg, 30 softgels	62.00	46.50	39.00	36.00		
00862	CRAN-MAX® • 500 mg, 60 veg. caps	17.50	13.13	11.25			
01424	CRAN-MAX® WITH ELLIROSE™ (Optimized) • 60 veg. caps	18.00	13.50	12.00			
01529	CREATINE CAPSULES • 120 veg. caps	10.95	8.21	6.94			
01746	CREATINE WHEY GLUTAMINE POWDER • 454 grams (vanilla)	30.00	22.50	20.25			
01429	CR MIMETIC LONGEVITY FORMULA • 60 veg. caps	39.00	29.25	27.00			
00407	CURCUMIN® (Super Bio) • 400 mg, 60 veg. caps	38.00	28.50	26.25			
01924	CURCUMIN® W/GINGER & TURMERONES (Advanced bio) 30 softgels	30.00	22.50	20.25			
01804	CYTOKINE SUPPRESS™ W/EGCG • 30 veg. caps	30.00	22.50	20.25			
COSMESIS							
80157	ADVANCED ANTI-GLYCATION PEPTIDE SERUM • 1 oz	53.00	39.75	34.50			
80154	ADVANCED LIGHTENING CREAM • 1 oz	65.00	48.75	42.75			
80155	ADVANCED PEPTIDE HAND THERAPY • 4 oz	46.00	34.50	29.25			
80152	ADVANCED TRIPLE PEPTIDE SERUM • 1 oz	65.00	48.75	42.75			
80140	ADVANCED UNDER EYE SERUM W/STEM CELLS • .33 oz	49.00	36.75	31.50			
80139	AMBER SELF MICRODERMABRASION • 2 oz	49.00	36.75	31.50			
80158	ANTI-AGING FACE OIL • 1 oz	59.00	44.25	39.00			
80118	ANTI-AGING MASK • 2 oz	72.00	54.00	47.52			
80151	ANTI-AGING REJUVENATING FACE CREAM • 2 oz	65.00	48.75	42.75			
80153	ANTI-AGING REJUVENATING SCALP SERUM • 2 oz	46.00	34.50	29.25			
80134	ANTI-GLYCATION SERUM W/BLEUBERRY & POMEGRANATE EXTRACTS • 1 oz	33.00	24.75	23.51			
80133	ANTIOXIDANT FACIAL MIST • 2 oz	32.00	24.00	22.80			
80127	ANTIOXIDANT REJUVENATING FOOT CREAM • 2 oz	45.00	33.75	32.10			
80128	ANTIOXIDANT REJUVENATING FOOT SCRUB • 2 oz	59.00	44.25	38.94			
80117	ANTIOXIDANT REJUVENATING HAND CREAM • 2 oz	64.00	48.00	43.12			
80105	ANTI-REDNESS & ADULT BLEMISH LOTION • 1 oz	74.50	55.88	49.17			
80147	BIOFLAVONOID CREAM • 1 oz	46.00	34.50	29.25			
80144	BROCCOLI SPROUT CREAM • 1 oz	46.00	34.50	29.25			
80156	COLLAGEN BOOSTING PEPTIDE SERUM • 1 oz	59.00	44.25	39.00			
80120	CORRECTIVE CLEARING MASK • 2 oz	64.50	48.38	42.57			
80141	DNA REPAIR CREAM • 1 oz	49.00	36.75	31.50			
80108	ESSENTIAL PLANT LIPIDS REPARATIVE SERUM • 1 oz	74.95	56.21	49.46			

SUBTOTAL OF COLUMN 3

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
80123	FACE REJUVENATING ANTIOXIDANT CREAM • 2 oz	69.50	52.13	45.87			
80107	FINE LINE-LESS • 1 oz	74.50	55.88	49.17			
80131	HAIR SUPPRESS FORMULA • 4 oz	59.00	44.25	38.94			
80137	HEALING FORMULA ALL-IN-ONE CREAM • 1 oz	53.00	39.75	34.07			
80115	HEALING MASK • 2 oz	64.50	48.38	42.57			
80102	HEALING VITAMIN K CREAM • 1 oz	79.50	59.63	52.47			
80109	HYALURONIC FACIAL MOISTURIZER • 1 oz	58.00	43.50	38.28			
80110	HYALURONIC OIL-FREE FACIAL MOISTURIZER • 1 oz	58.00	43.50	38.28			
80138	HYDRATING ANTIOXIDANT FACE MIST • 4 oz	39.95	29.96	28.50			
80103	LIFTING & TIGHTENING COMPLEX • 1 oz	74.50	55.88	49.17			
80146	LYCOPENE CREAM • 1 oz	28.00	21.00	19.05			
80135	MELATONIN CREAM • 1 oz	33.00	24.75	20.33			
80114	MILD FACIAL CLEANSER • 8 oz	59.00	44.25	38.94			
80159	MULTI STEM CELL SKIN TIGHTENING COMPLEX • 1 oz	59.00	44.25	39.00			
80122	NECK REJUVENATING ANTIOXIDANT CREAM • 2 oz	64.00	48.00	42.24			
80111	PIGMENT CORRECTING CREAM • 1/2 oz	74.00	55.50	48.84			
80106	REJUVENATING SERUM • 1 oz	74.50	55.88	49.17			
80150	RENEWING EYE CREAM • 1/2 oz	65.00	48.75	42.75			
80142	RESVERATROL ANTI-OXIDANT SERUM • 1 oz	46.00	34.50	29.25			
80112	SKIN LIGHTENING SERUM • 1/2 oz	85.00	63.75	56.10			
80130	SKIN STEM CELL SERUM • 1 oz	74.00	55.50	51.75			
80143	STEM CELL CREAM W/ALPINE ROSE • 1 oz	66.00	49.50	43.50			
80148	TIGHTENING & FIRMING NECK CREAM • 2 oz	39.00	29.25	26.25			
80116	ULTRA LIP PLUMPER • 1/3 oz	64.00	48.00	42.24			
80101	ULTRA WRINKLE RELAXER • 1 oz	89.95	67.46	59.82			
80113	UNDER EYE REFINING SERUM • 1/2 oz	74.50	55.88	49.17			
80104	UNDER EYE RESCUE CREAM • 1/2 oz	74.50	55.88	49.17			
80129	VITAMIN C SERUM • 1 oz	85.00	63.75	56.10			
80136	VITAMIN D LOTION • 4 oz	36.00	27.00	25.25			
80145	VITAMIN E-ESSENTIAL CREAM • 1 oz	28.00	21.00	19.50			
80149	YOUTH SERUM • 1 oz	65.00	48.75	42.75			
D							
01912	DAILY C+ CITRUS FLAVOR • 30 stick packs	21.00	15.75	14.25			
00658	7-KETO® DHEA METABOLITE • 25 mg, 100 caps	28.00	21.00	18.00			
01479	7-KETO® DHEA METABOLITE • 100 mg, 60 veg. caps	40.00	30.00	27.00			
01640	DHA (Vegetarian sourced) • 30 veg. softgels	20.00	15.00	13.50			
00607	DHEA • 25 mg, 100 tablets (Dissolve in mouth)	14.00	10.50	8.81			
01478	DHEA COMPLETE • 60 veg. caps	48.00	36.00	32.40			
00335	DHEA • 25 mg, 100 caps	16.00	12.00	11.00			
00454	DHEA • 15 mg, 100 caps	14.00	10.50	9.00			
00882	DHEA • 50 mg, 60 caps	19.00	14.25	12.75			
01689	DHEA • 100 mg, 60 veg. caps	24.00	18.00	16.50			
01358	DIGEST RC® • 30 tablets	19.95	14.96	12.75			
02021	DIGESTIVE ENZYMES (Enhanced Super) • 60 veg. caps	22.00	16.50	15.00			
02022	DIGESTIVE ENZYMES w/PROBIOTICS (Enhanced Super) • 60 veg. caps	28.00	21.00	18.00			
01671	D, L-PHENYLALANINE • 500 mg, 100 veg. caps	18.75	14.06	12.00			

SUBTOTAL OF COLUMN 4

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
01540	DMAE BITARTRATE • 150 mg, 200 veg. caps	18.00	13.50	11.25			
01570	DNA PROTECTION FORMULA • 60 veg. caps	34.00	25.50	24.00			
01931	DOG MIX • 100 grams powder	18.00	13.50	11.25			
02006	DOPA-MIND™ • 60 veg. tabs	48.00	36.00	32.00			
00321	DR. PROCTOR'S ADVANCED HAIR FORMULA • 2 oz	39.95	29.96	24.00			
00320	DR. PROCTOR'S HAIR SHAMPOO • 8 oz	24.95	18.71	16.50			
00899	DUAL-ACTION MICRODERMABRASION ADV. EXFOLIATE • 2.4 oz	39.95	29.96	29.21			
E							
01528	ECHINACEA EXTRACT • 250 mg, 60 veg. caps	14.35	10.76	9.38			
01997	ENDOTHELIAL DEFENSE™ w/FULL-SPECTRUM POMEGRANATE™ AND CORDIART™ • 60 softgels	68.00	51.00	46.50			
00997	ENDOTHELIAL DEFENSE™ w/GLISODIN® • 60 veg. caps	54.00	40.50	36.00			
00625	EPA/DHA (Mega) • 120 softgels	19.95	14.96	13.50			
01737	ESOPHAGEAL GUARDIAN (Berry flavor) • 60 chewable tablets	36.00	27.00	24.00			
01042	EUROPEAN LEG SOLUTION DIOSMIN 95 600 mg, 30 veg. tabs	20.00	15.00	13.50			
01706	EXTRAORDINARY ENZYMES • 60 caps	26.00	19.50	18.00			
01514	EYE PRESSURE SUPPORT W/MIRTOGENOL® • 30 veg. caps	38.00	28.50	25.50			
F							
*01054	FACE MASTER® PLATINUM • Facial Toning System	199.00	199.00				
00965	FAST-ACTING JOINT FORMULA • 30 caps	39.00	29.25	27.00			
01717	FAST-C® W/DIHYDROQUERCETIN • 120 veg. tabs	26.00	19.50	18.00			
20053	FEM DOPHILUS® • 30 caps	25.95	19.46				
20055	FEM DOPHILUS® • 60 caps	39.95	29.96				
01064	FEMMESENCE MACAPAUSE® • 120 veg. caps	34.99	26.24				
01728	FERNBLOCK® W/RED ORANGE COMPLEX (Enhanced) 30 veg. caps	42.00	31.50	28.50			
00718	FIBRINOGEN RESIST™ • 30 veg. caps	49.00	36.75	33.00			
01749	FLAX SEED (Organic golden) • 14 oz	11.67	8.75				
01821	FLORASSIST® HEART HEALTH PROBIOTIC • 60 veg. caps	32.00	24.00	21.00			
02011	FLORASSIST® ORAL HYGIENE • 30 lozenges	20.00	15.00	13.50			
01825	FLORASSIST® BALANCE • 30 liquid veg. caps	32.00	24.00	21.00			
02000	FLORASSIST® MOOD • 60 caps	33.00	24.75	22.50			
01920	FLORASSIST® THROAT HEALTH • 30 lozenges	20.00	15.00	13.50			
01913	FOLATE (Optimized) • 5,000 mcg, 30 veg. tablets	25.00	18.75	16.50			
01939	FOLATE (Optimized) • 1,000 mcg, 100 veg. tablets	19.00	14.25	12.75			
01842	FOLATE + VITAMIN B12 (Bio Active) • 90 veg. caps	12.00	9.00	8.00			
01544	FORSKOLIN • 10 mg, 60 veg. caps	16.00	12.00	10.50			
01513	FUCOIDAN W/MARITECH® 926 (Optimized) • 60 veg. caps	36.00	27.00	24.75			
G							
00559	GAMMA E TOCOPHEROL/TOCOTRIENOLS • 60 softgels	42.00	31.50	27.75			
00759	GAMMA E TOCOPHEROL W/SESAME LIGNANS • 60 softgels	32.00	24.00	21.75			
01394	GARLIC (Optimized) • 200 veg. caps	24.95	18.71	15.75			
**01122	GINGER FORCE® • 60 liquid caps	34.95	26.21				
01658	GINKGO BILOBA CERTIFIED EXTRACT™ 120 mg, 365 veg. caps	46.00	34.50	31.50			
00756	GLA WITH SESAME LIGNANS (Mega) • 60 softgels	19.50	14.63	13.50			
SUBTOTAL OF COLUMN 5							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
00345	(L-) GLUTAMINE CAPSULES • 500 mg, 100 caps	14.95	11.21	10.13			
00141	(L-) GLUTAMINE POWDER • 100 grams	22.00	16.50	15.00			
00522	GLUCOSAMINE/CHONDROITIN CAPSULES • 100 caps	38.00	28.50	24.00			
01541	GLUTATHIONE, CYSTEINE & C • 100 veg. caps	20.00	15.00	13.50			
00314	L-GLUTATHIONE (Mega) • 250 mg, 60 caps	39.64	29.73				
01669	GLYCINE • 1,000 mg, 100 veg. caps	12.00	9.00	8.10			
01411	GRAPE SEED EXTRACT W/RESVERATROL & PTEROSTILBENE 100 mg, 60 veg. caps	36.00	27.00	25.50			
01604	GREEN COFFEE EXTRACT COFFEEGENIC® 200 mg, 90 veg. caps	22.00	16.50	15.00			
01620	GREEN COFFEE EXTRACT COFFEEGENIC® 400 mg, 90 veg. caps	32.00	24.00	21.00			
00953	GREEN TEA EXTRACT (Mega) • lightly caffeinated, 100 veg. caps	30.00	22.50	18.00			
00954	GREEN TEA EXTRACT (Mega) • decaffeinated, 100 veg. caps	30.00	22.50	18.00			
H							
01074	5 HTP • 100 mg, 60 caps	27.95	20.96				
*02002	HAIR, SKIN & NAIL REJUVENATION FORM W/VERISON® 90 tabs	32.00	24.00	22.00			
01738	HCA (Garnicia) • 90 veg. caps	17.00	12.75	11.25			
29754	HCACTIVE™ GARCINIA CAMBOGIA EXTRACT • 90 caps	30.00	22.50				
01393	HEPATOPRO • 900 mg, 60 softgels	50.00	37.50	34.50			
01527	HUPERZINE A • 200 mcg, 60 veg. caps	40.00	30.00	27.00			
00661	HYDRODERM® • 1 oz	79.95	59.96	49.00			
I							
*01060	I26 HYPERIMMUNE EGG • 140 grams powder	54.99	46.75				
01704	IMMUNE MODULATOR W/TINOFEND® • 60 veg. caps	17.00	12.75	11.25			
00955	IMMUNE PROTECT W/PARACTIN® • 30 veg. caps	29.50	22.13	19.91			
02005	IMMUNE SENESCENCE PROTECTION FORMULA™ • 60 veg. tabs	40.00	30.00	27.00			
01049	INNERPOWER™ • 530 grams powder	42.00	31.50				
01674	INOSITOL CAPSULES • 1,000 mg, 360 veg. caps	62.00	46.50	43.50			
01292	INTEGRA-LEAN® AFRICAN MANGO IRVINGIA 150 mg, 60 veg. caps	28.00	21.00	18.00			
01248	IODINE COMPLETE (Advanced) • 12.5 mg, 180 tablets	46.00	36.50				
01677	IRON PROTEIN PLUS • 300 mg, 100 caps	28.00	21.00	19.50			
01492	IRVINGIA W/PHASE 3™ CALORIE CONTROL COMPLEX (Optimized African Mango) • 120 veg. caps	56.00	42.00	36.00			
J, K, L							
00056	JARRO-DOPHILUS EPS® • 60 veg. caps	22.95	17.21				
01834	K W/ADVANCED K2 COMPLEX (Super) • 90 softgels	30.00	22.50	20.25			
01600	KRILL HEALTHY JOINT FORMULA • 30 softgels	32.00	24.00	21.75			
01050	KRILL OIL • 60 softgels	33.95	25.46				
00316	KYOLIC® GARLIC FORMULA 102 • 200 veg. caps	26.45	19.84				
00214	KYOLIC® GARLIC FORMULA 105 • 200 caps	27.45	20.59				
00789	KYOLIC® RESERVE • 600 mg, 120 caps	27.95	20.96				
01681	LACTOFERRIN • 60 caps	52.00	39.00	36.00			
00020	LECITHIN • 16 oz granules	18.00	13.50	12.00			
02055	LIFE EXTENSION MIX™ • 315 tablets	80.00	60.00	52.00	43.75		
02057	LIFE EXTENSION MIX™ W/EXTRA NIACIN • 315 tablets	80.00	60.00	52.00	43.75		
02054	LIFE EXTENSION MIX™ • 490 caps	90.00	67.50	58.00	47.50		
SUBTOTAL OF COLUMN 6							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
02056	LIFE EXTENSION MIX™ POWDER • 14.81 oz	80.00	60.00	52.00	43.75		
02065	LIFE EXTENSION MIX™ • 315 tablets w/o copper	80.00	60.00	52.00	43.75		
02064	LIFE EXTENSION MIX™ • 490 caps w/o copper	90.00	67.50	58.00	47.50		
02066	LIFE EXTENSION MIX™ POWDER • 14.81 oz w/o copper	80.00	60.00	52.00	43.75		
01608	LIVER EFFICIENCY FORMULA • 30 veg. caps	18.00	13.50	12.00			
01639	5-LOX INHIBITOR W/APRÈSFLEX® • 100 mg, 60 veg. caps	22.00	16.50	15.00			
01678	L-LYSINE • 620 mg, 100 veg. caps	9.00	6.75	6.00			
00455	LYCOPENE (Mega) • 15 mg, 90 softgels	35.00	26.25	22.50			
M							
01926	MACUGUARD® OCULAR SUPPORT • 60 softgels	22.00	16.50	14.85			
01927	MACUGUARD® OCULAR SUPPORT w/ASTAXANTHIN 60 softgels	42.00	31.50	28.50			
01459	MAGNESIUM CAPS • 500 mg, 100 veg. caps	12.00	9.00	7.50			
01682	MAGNESIUM (CITRATE) • 160 mg, 100 veg. caps	9.00	6.75	5.63			
01908	MEDITERRANEAN TRIM WITH SINETROL™-XPUR 60 veg. caps	18.00	13.50	12.00			
01668	MELATONIN • 300 mcg, 100 veg. caps	5.75	4.31	3.75			
01083	MELATONIN • 500 mcg, 200 veg. caps	18.00	13.50	12.00			
00329	MELATONIN • 1 mg, 60 caps	5.00	3.75	3.47			
00330	MELATONIN • 3 mg, 60 caps	8.00	6.00	5.16			
00331	MELATONIN • 10 mg, 60 caps	28.00	21.00	18.00			
00332	MELATONIN • 3 mg, 60 veg. lozenges	8.00	6.00	5.16			
01734	MELATONIN (Fast-Acting Liquid) • 2 oz (Citrus-Vanilla)	12.00	9.00	8.25			
01787	MELATONIN TIMED RELEASE • 300 mcg, 100 veg. tabs	12.00	9.00	8.25			
01788	MELATONIN TIMED RELEASE • 750 mcg, 60 veg. tablets	8.00	6.00	5.25			
01786	MELATONIN TIMED RELEASE • 3 mg, 60 veg. tabs	12.00	9.00	8.25			
01536	METHYLCOBALAMIN • 1 mg, 60 veg. lozenges (vanilla)	9.95	7.46	6.00			
01537	METHYLCOBALAMIN • 5 mg, 60 veg. lozenges (vanilla)	32.00	24.00	18.75	17.25		
00709	MIGRA-EEZE™ (Butterbur) • 60 softgels	29.50	22.13	19.75			
01522	MILK THISTLE (European) • 60 veg. caps	34.00	25.50	22.50			
01922	MILK THISTLE (European) • 60 softgels	28.00	21.00	18.75			
01925	MILK THISTLE (European) • 120 softgels	44.00	33.00	30.00			
01698	MIRAFORTE w/STANDARDIZED LIGNANS (Super) • 120 caps	62.00	46.50	42.00			
01869	MITOCHONDRIAL BASICS W/BIOPPQ® • 30 caps	44.00	33.00	30.00			
01868	MITOCHONDRIAL ENERGY OPTIMIZER w/BIOPPQ® • 120 caps	72.00	54.00	48.00			
00065	MK-7 • 90 mcg, 60 softgels	28.00	21.00	18.75			
00451	MSM (Methylsulfonylmethane) • 1,000 mg, 100 caps	14.00	10.50	8.96			
N							
01534	N-ACETYL-L-CYSTEINE • 600 mg, 60 veg. caps	14.00	10.50	10.13			
01904	NAD+ CELL REGENERATOR™ • 100 mg, 30 veg. caps	34.00	25.50	19.50			
00066	NATTOKINASE • 60 softgels	25.50	19.13				
01807	NATURAL APPETITE SUPPRESS (Advanced) • 60 veg. caps	38.00	28.50	25.50			
00984	NATURAL BP MANAGEMENT • 60 tablets	44.00	33.00	30.00			
01892	NATURAL ESTROGEN • 60 veg. tabs	38.00	28.50	25.50			
01893	NATURAL ESTROGEN W/O SOY ISOFLAVONES • 30 veg. caps	32.00	24.00	21.00			
01626	NATURAL SEX FOR WOMEN® 50+ (Advanced) • 90 veg. caps	59.00	44.25	34.00			
01444	NATURAL SLEEP® • 60 veg. caps	13.00	9.75	7.50			
SUBTOTAL OF COLUMN 7							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
01551	NATURAL SLEEP® w/ MELATONIN (Enhanced) • 30 caps	22.00	16.50	15.00			
01511	NATURAL SLEEP® W/O MELATONIN (Enhanced) • 30 caps	20.00	15.00	13.50			
01445	NATURAL SLEEP® MELATONIN • 5 mg, 60 veg. caps	18.00	13.50	12.00			
00987	NATURAL STRESS RELIEF • 30 veg. caps	28.00	21.00	18.00			
01121	NERVIA® • 60 softgels	49.95	37.46				
01603	NEURO-MAG® MAGNESIUM L-THREONATE • 90 veg. caps	40.00	30.00	27.00			
01602	NEURO-MAG® L-THREONATE W/CALCIUM & VITAMIN D3 225 grams • Lemon flavor	40.00	30.00	27.00			
01990	NITROVASC w/CORDIART™ • 30 veg. caps	18.00	13.50	12.00			
01903	NK CELL ACTIVATOR™ • 30 veg. tablets	45.00	33.75	31.50			
00373	NO-FLUSH NIACIN • 800 mg, 100 caps	19.00	14.25	12.75			
O							
01824	OLIVE LEAF VASCULAR SUPPORT w/CELERY SEED EXTRACT (Advanced) • 60 veg. caps	36.00	27.00	24.00			
01988	OMEGA-3 PLUS EPA/DHA w/SESAME LIGNANS, OLIVE EXTRACT, KRILL & ASTAXANTHIN (SUPER) • 120 softgels	45.00	33.75	31.50	24.75		
01983	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 60 softgels	18.00	13.50	12.00	9.38		
01982	OMEGA-3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 120 softgels	32.00	24.00	21.00	17.05		
01984	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 120 enteric coated softgels	34.00	25.50	23.25	18.00		
01985	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 60 enteric coated softgels	20.00	15.00	13.50	10.50		
01986	OMEGA 3 EPA/DHA w/SESAME LIGNANS & OLIVE EXTRACT (Super) • 240 small softgels	32.00	24.00	21.00	17.25		
01989	ONCE-DAILY HEALTH BOOSTER • 60 softgels	52.00	39.00	36.00			
02001	ONE-PER-DAY • 60 tablets	22.00	16.50	15.00			
01328	ONLY TRACE MINERALS • 90 veg. caps	15.00	11.25	9.38			
P							
01789	PALMETTOGUARD® SAW PALMETTO W/BETA-SITOSTEROL 30 softgels	15.00	11.25	10.50	9.00		
01790	PALMETTOGUARD® SUPER SAW PALMETTO/ NETTLE ROOT W/BETA-SITOSTEROL • 60 softgels	28.00	21.00	19.50	18.00		
01323	PEAK ATP® WITH GLYCO-CARN® • 60 veg. caps	54.00	40.50	37.50			
00342	PECTA SOL-C® MODIFIED CITRUS PECTIN • 454 grams powder	109.95	82.46				
01080	PECTA SOL-C® MODIFIED CITRUS PECTIN • 270 veg. caps	79.95	59.96				
01811	PEONY IMMUNE • 60 veg. caps	36.00	27.00	24.00			
00673	PGX® PLUS MULBERRY (WellBetX®) • 180 veg. caps	34.95	26.21				
01676	PHOSPHATIDYLSERINE CAPS • 100 mg, 100 veg. caps	54.00	40.50	36.00			
01436	POLICOSANOL • 10 mg, 60 veg. caps	20.00	15.00	11.25			
01953	POMEGRANATE COMPLETE • 30 softgels	24.00	18.00	15.75			
00956	POMEGRANATE FRUIT EXTRACT • 30 veg. caps	19.50	14.63	13.16			
01797	POMI-T® • 60 veg. caps	33.33	25.00	22.50			
01500	PQQ CAPS W/BIOPPQ® • 10 mg, 30 veg. caps	24.00	18.00	13.50	12.00		
01647	PQQ CAPS W/BIOPPQ® • 20 mg, 30 veg. caps	40.00	30.00	24.00	21.00		
00302	PREGNENOLONE • 50 mg, 100 caps	26.00	19.50	16.50			
00700	PREGNENOLONE • 100 mg, 100 caps	30.00	22.50	20.25			
**01373	PRELOX® NATURAL SEX FOR MEN® • 60 tablets	52.00	39.00	36.00			
01576	PREVAGEN® • 30 caps	60.00	45.00				
*01577	PREVAGEN® ES • 30 caps	70.00	60.00				
SUBTOTAL OF COLUMN 8							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
00525	PROBOOST™ THYMIC PROTEIN A • 30 packets	66.60	49.95				
01441	PROGESTACARE® FOR WOMEN • 4 oz cream	35.50	26.63	24.38			
01928	PROSTATE FORMULA (Ultra NAT) • 60 softgels	38.00	28.50	26.25	24.00		
01909	PROSTAPOLLEN™ (Triple strength) • 30 softgels	28.00	21.00	18.75			
01742	PROTEIN-ISOLATE (Whey) Vanilla • 1 lb. powder	30.00	22.50	20.25			
01743	PROTEIN-ISOLATE (Whey) Chocolate • 1 lb. powder	30.00	22.50	20.25			
01770	PROTEIN CONCENTRATE (New Zealand Whey) Vanilla 520 grams	30.00	22.50	19.95			
01771	PROTEIN CONCENTRATE (New Zealand Whey) Chocolate 660 grams	30.00	22.50	19.95			
01812	PROVINAL® PURIFIED OMEGA-7 • 30 softgels	27.00	20.25	18.00			
01508	PTEROPURE® Pterostilbene • 50 mg, 60 veg. caps	32.00	24.00	22.50			
01209	PUMPKIN SEED EXTRACT (Water-soluble) • 60 veg. caps	20.00	15.00	13.50			
01587	PURE PLANT PROTEIN • Vanilla 540 grams powder	38.00	28.50	26.25			
01637	PYCNOGENOL® FRENCH MARITIME PINE BARK EXTRACT 100 mg, 60 veg. caps	64.00	48.00	45.00			
01217	PYRIDOXAL 5'-PHOSPHATE • 100 mg, 60 veg. caps	22.00	16.50	14.85			
Q, R							
01309	QUERCETIN (Optimized) • 250 mg, 60 veg. caps	22.00	16.50	15.00			
01030	RED YEAST RICE (Bluebonnet) • 600 mg, 60 veg. caps	16.95	13.56				
00605	REGIMINT • 60 enteric-coated caps	19.95	14.96	14.00			
01708	REISHI EXTRACT MUSHROOM COMPLEX • 60 veg. caps	30.00	22.50	20.25			
01448	REJUVENEX® BODY LOTION • 6 oz	24.00	18.00	14.85	12.75		
01621	REJUVENEX® FACTOR FIRING SERUM • 1.7 oz	65.00	48.75	37.50			
01220	REJUVENEX® (Ultra) • 2 oz	52.00	39.00	33.00	29.25		
00676	REJUVENIGHT® (Ultra) • 2 oz	39.95	29.96	27.00			
01410	RESVERATROL W/PTEROSTILBENE • 100 mg, 60 veg. caps	36.00	27.00	24.00			
02031	RESVERATROL W/NICOTINAMIDE RIBOSIDE (Optimized) • 30 veg. caps	42.00	31.50	27.00			
02030	RESVERATROL (Optimized) • 60 veg. caps	46.00	34.50	31.00			
00889	RHODIOLA EXTRACT • 250 mg, 60 veg. caps	14.00	10.50	9.00			
01900	RIBOGEN™ FRENCH OAK WOOD EXTRACT 200 mg, 30 veg. caps	36.00	27.00	24.75			
00972	(D) RIBOSE POWDER • 150 grams	27.50	20.63	18.56			
01473	(D) RIBOSE TABLETS • 100 veg. tabs	32.00	24.00	21.00			
01609	RICH REWARDS® BREAKFAST GROUND COFFEE • 12 oz. bag	13.00	9.75				
01730	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE Natural Mocha • 12 oz. bag	15.00	11.25	10.50			
01729	RICH REWARDS® BREAKFAST BLEND GROUND COFFEE Natural Vanilla • 12 oz. bag	15.00	11.25	10.50			
01612	RICH REWARDS® BREAKFAST BLEND WHOLE BEAN 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) • 240 mg, 60 veg. caps	49.00	36.75	33.75			
00070	RNA CAPSULES • 500 mg, 100 caps	17.95	13.46	12.12			
S							
01432	SAFFRON W/SATIEREAL® (Optimized) • 60 veg. caps	36.00	27.00	24.00			
01935	SAME (S-ADENOSYL-METHIONINE) 200 mg, 30 enteric coated tablets	25.00	18.75	16.50			
SUBTOTAL OF COLUMN 9							

ITEM No.	PRODUCT	YOUR PRICE				QTY	Total
		Retail Each \$	1 Unit Each	4 Unit Each	10 Unit Each		
01933	SAME (S-ADENOSYL-METHIONINE) 400 mg, 30 enteric coated tablets	36.00	27.00	24.00			
01934	SAME (S-ADENOSYL-METHIONINE) 400 mg, 60 enteric coated tablets	66.00	49.50	45.00			
01740	SEA-IODINE™ • 1,000 mcg, 60 veg. caps	8.00	6.00	5.40			
00046	SELENIUM • 2 fl. oz dropper	11.95	8.96				
01679	SE-METHYL L-SELENOCYSTEINE • 200 mcg, 100 veg. caps	12.00	9.00	8.25			
00318	SERRAFLAZYME • 100 tablets	18.00	13.50	12.00			
01884	SILYMARIN • 100 mg, 90 veg. caps	14.00	10.50	9.50			
01249	SINUS CLEANSER • 4 oz. bottle	25.00	18.75				
01596	SKIN RESTORING PHYTCERAMIDES w/LIPOWHEAT® 30 liquid veg. caps	25.00	18.75	17.25			
00961	SODZYME® w/GLISODIN® & WOLFBERRY • 90 veg. caps	28.00	21.00	18.00			
00657	SOLARSHIELD® SUNGLASSES • Smoke color	12.99	9.74	8.63			
01097	SOY EXTRACT (Ultra) • 150 veg. caps	87.00	65.25	58.50			
00432	STEVIA™ (Better) • 100 packets, 1 gram each	9.95	7.46				
00438	STEVIA™ ORGANIC LIQUID SWEETENER (Better) • 2 oz	11.00	8.25				
01476	STRONTIUM • 750 mg, 90 veg. caps	20.00	15.00	13.50			
01649	SUPER ABSORBABLE SOY ISOFLAVONES • 60 veg. caps	28.00	21.00	18.75			
01778	SUPER SELENIUM COMPLEX • 200 mcg, 100 veg. caps	14.00	10.50	9.00	8.25		
T							
01723	TART CHERRY EXTRACT W/STANDARDIZED CHERRYPURE® 60 veg. caps	22.00	16.50	15.00			
01827	TAURINE • 1,000 mg, 90 veg. caps	13.00	9.75	9.00			
01918	TEAR SUPPORT w/MAQUIBRIGHT® • 60 mg, 30 veg. caps	18.00	13.50	12.00			
00133	L-TAURINE POWDER • 300 grams	20.00	15.00	12.66			
13685	TEN MUSHROOM FORMULA® • 120 veg. caps	39.95	29.96				
01304	THEAFLAVIN STANDARDIZED EXTRACT • 30 veg. caps	18.00	13.50	12.00			
01683	(L) THEANINE • 100 mg, 60 veg. caps	24.00	18.00	15.38			
***01038	THERALAC® PROBIOTICS • 30 caps	47.95	35.96				
00668	THYROID FORMULA (Metabolic Advantage™) • 100 caps	21.95	16.46				
00349	TMG POWDER • 50 grams	14.00	10.50	8.25			
01859	TMG • 500 mg, 60 liquid veg. caps	13.00	9.75	9.00			
01400	TOCOTRIENOLS (Super-absorbable) • 60 softgels	30.00	22.50	21.00			
01278	TOOTHPASTE • 4 oz (Mint) tube	9.50	7.13	6.50			
01917	TRANQUIL TRACT™ • 60 veg. caps	52.00	39.00	34.50			
01468	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT 60 veg. caps	24.00	18.00	16.50			
01469	TRIPLE ACTION CRUCIFEROUS VEGETABLE EXTRACT w/RESVERATROL • 60 veg. caps	32.00	24.00	22.20			
02003	TRIPLE ACTION THYROID • 60 veg. caps	36.00	27.00	24.00			
01803	TRI SUGAR SHIELD® • 60 veg. caps	36.00	27.00	24.00			
01386	TRUFIBER™ • 180 grams	32.95	24.71				
01389	TRUFLOA® PROBIOTICS • 32 veg. caps	42.95	32.21				
01722	L-TRYPTOPHAN • 500 mg, 90 veg. caps	33.00	24.75	22.50			
01721	TRYPTOPHAN PLUS (Optimized) • 90 veg. caps	32.00	24.00	21.75			
02016	TWO-PER-DAY • 60 tablets	10.50	7.88	7.13			
SUBTOTAL OF COLUMN 10							

ITEM No.	PRODUCT	Retail Each \$	YOUR PRICE			QTY	Total
			1 Unit Each	4 Unit Each	10 Unit Each		
02015	TWO-PER-DAY • 120 tablets	20.00	15.00	13.50			
02014	TWO-PER-DAY • 120 caps	22.00	16.50	15.00			
00326	L-TYROSINE • 500 mg, 100 tablets	12.98	9.74				
U, V							
01921	URIC ACID CONTROL • 60 veg. caps	24.00	18.00	16.50			
00213	VANADYL SULFATE • 7.5 mg, 100 veg. tablets	15.00	11.25	9.38			
00408	VENOTONE • 60 caps	18.95	14.21	12.00			
01327	VINPOCETINE • 10 mg, 100 veg. tablets	18.00	13.50	10.50			
00372	VITAMIN B3 NIACIN • 500 mg, 100 caps	7.65	5.74	4.99			
00098	VITAMIN B5 • 500 mg, 100 caps (Pantothenic Acid)	10.50	7.88	7.04			
01535	VITAMIN B6 • 250 mg, 100 veg. caps	12.50	9.38	8.25			
00361	VITAMIN B12 • 500 mcg, 100 lozenges	8.75	6.56	5.44			
01634	VITAMIN C w/DIHYDROQUERCETIN 1,000 mg, 60 veg. tablets	10.00	7.50	6.75			
00927	VITAMIN C w/DIHYDROQUERCETIN 1,000 mg, 250 veg. tablets	25.50	19.13	17.44			
00084	VITAMIN C POWDER (BUFFERED) • 454 grams	23.95	17.96	16.50			
01736	VITAMIN C-MAGNESIUM CRYSTALS (EFFERVESCENT) 180 grams	20.00	15.00	13.50			
01732	VITAMIN D3 • 2,000 IU, 1 fl oz, Mint flavor	28.00	21.00	18.75			
01753	VITAMIN D3 • 1,000 IU, 90 softgels	7.00	5.25	4.50			
01751	VITAMIN D3 • 1,000 IU, 250 softgels	12.50	9.38	8.44			
01713	VITAMIN D3 • 5,000 IU, 60 softgels	10.00	7.50	6.50			
01718	VITAMIN D3 • 7,000 IU, 60 softgels	14.00	10.50	9.45			
01758	VITAMIN D3 W/SEA-IODINE™ • 5,000 IU, 60 caps	14.00	10.50	9.38			
00864	VITAMIN D3 LIQUID EMULSION • 2,000 IU, 1 oz.	28.00	21.00	18.75			
01840	VITAMINS D AND K W/SEA-IODINE™ • 60 caps	24.00	18.00	16.50			
01763	VITAMIN E (Natural) • 400 IU, 100 softgels	30.00	22.50	21.00	19.50		
01225	VITAMIN K2 (Low-dose) • 45 mcg, 90 softgels	18.00	13.50	12.00			
W							
01902	WAIST-LINE CONTROL™ • 120 veg. caps	42.00	31.50	28.50			
X, Y							
01919	X-R SHIELD • 90 veg. caps	15.00	11.25	9.75			
00409	XYLIWHITE™ MOUTHWASH • 16 oz	10.00	7.50				
Z							
01813	ZINC HIGH POTENCY • 50 mg, 90 veg. caps	7.95	5.96	5.25			
01561	ZINC LOZENGES • 60 veg. lozenges	9.00	6.75	6.00			
01961	ZINC LOZENGES (Enhanced) • 30 veg. lozenges	12.00	9.00	6.00			
*01051	ZYFLAMEND® WHOLE BODY • 120 liquid veg. caps	72.95	54.71				
BOOKS							
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33885	THE BLUE ZONES SOLUTION by Dan Buettner • 2015	26.00	19.50				
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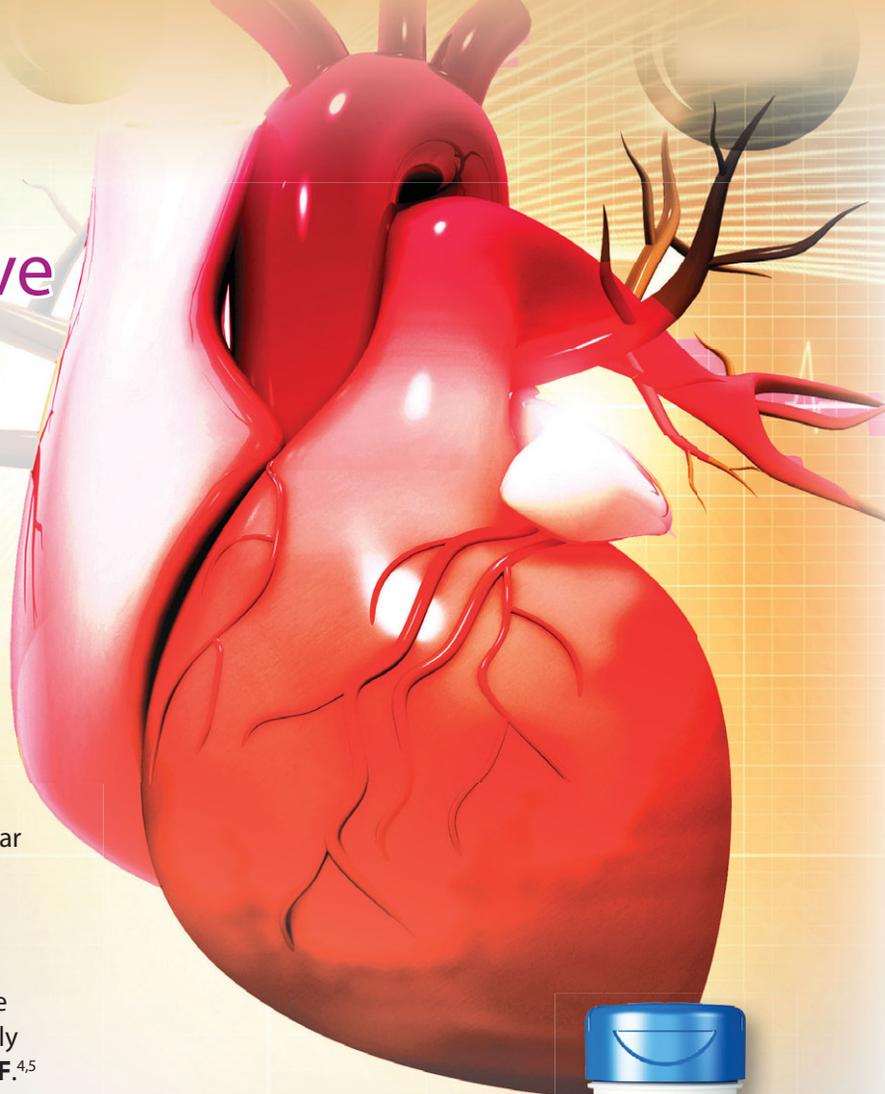
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The demand for **5-MTHF** has surged as more consumers have discovered its potent **homocysteine-lowering** effects.

Non-GMO
Quatrefolic® is a registered trademark of Gnosis, S.p.A.
Patent number 7,947,662.

References

1. *Am J Clin Nutr.* 2006 Apr;83(4):842-50.
2. *Am J Ther.* 2014; Epub Nov 17.
3. *Innov Clin Neurosci.* 2011 Jan;8(1):19-28.
4. *Am J Hum Genet.* 2002 Mar;70(3):758-62.
5. *Coll Antropol.* 2004 Dec;28(2):647-54.
6. *Br J Pharmacol.* 2004 Mar;141(5):825-30.

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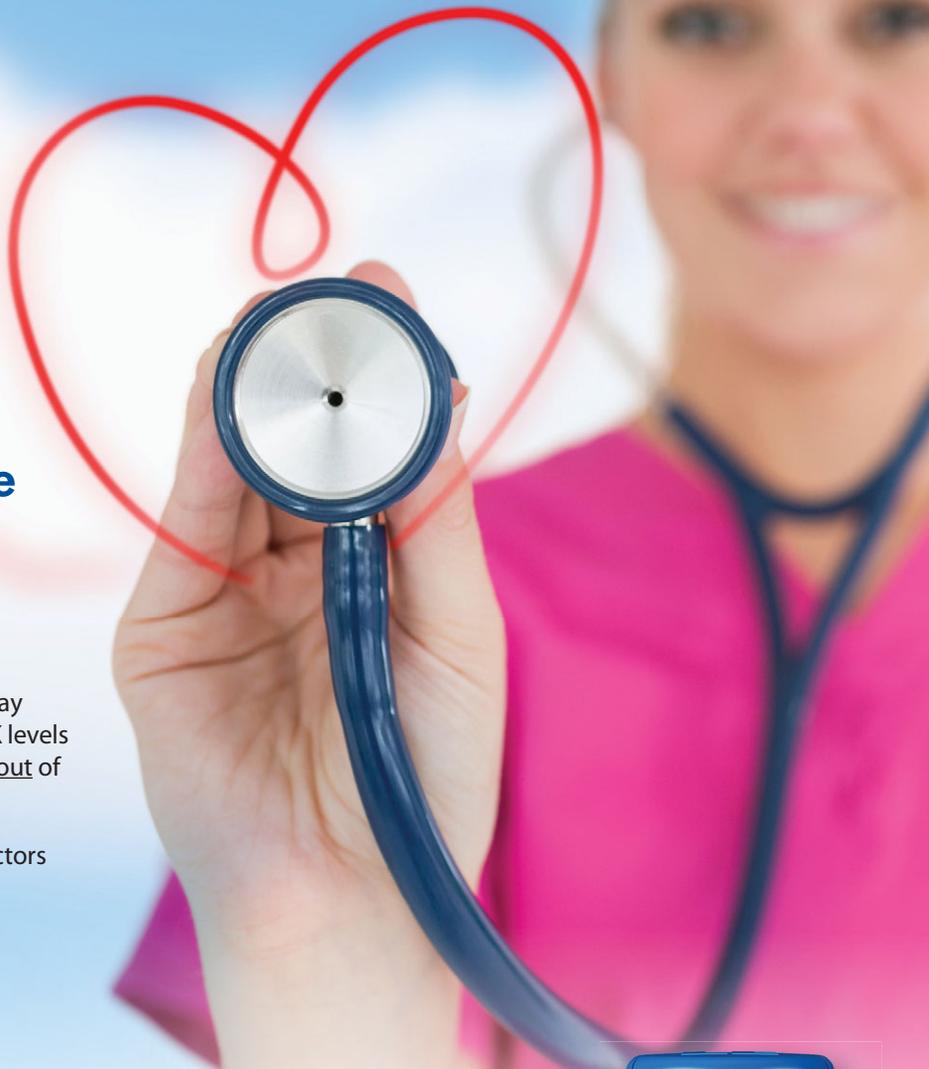
K2 is found in meat, dairy, and egg yolks. **MK-4** is the most rapidly absorbed kind of K2, while **MK-7** boasts a long half-life. This makes the two together the perfect complement to any vitamin K regimen.³

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References

1. *Br J Nutr.* 2012 Nov 14;108(9):1652-7.
2. *Asia Pac J Clin Nutr.* 2013;22(3):492-6.
3. *Blood.* 2007 Apr 15;109(8):3279-83.

Warning to Coumadin® (warfarin) Drug Users: Patients prescribed vitamin K-antagonist anticoagulant 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 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 your vitamin K supplement. Life Extension® provides several forms of low-dose vitamin K for physician consideration.



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