Annual SUPER SALE Begins!

Feel Younger By Boosting Your Brain Dopamine

Quercetin Increases Resveratrol Efficacy
Purge Your Body Of Senescent Cells

New Triple Action Thyroid Formula
Comprehensive Digestive Support

Obtain Advanced Nutrient Formulas At Year’s Lowest Prices
Life Extension’s annual SUPER SALE enables clients to obtain premium-grade nutrient formulas at the year’s lowest prices. Long-term supporters know that the quality of the products are backed by Life Extension’s commitment to radically extended human life spans. Below are a few examples of the savings you can enjoy during the SUPER SALE:

<table>
<thead>
<tr>
<th>Product</th>
<th>Retail Price</th>
<th>SUPER SALE Discount Price Per Bottle</th>
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</thead>
<tbody>
<tr>
<td>Two-Per-Day Multi-Nutrient Formula</td>
<td>$22</td>
<td>$13.50 (four-bottle purchase)</td>
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<tr>
<td>Super Omega-3 EPA/DHA with Sesame Lignans/Olive Fruit Extract</td>
<td>$32</td>
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<tr>
<td>AMPK Activator</td>
<td>$48</td>
<td>$29.70 (four-bottle purchase)</td>
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<tr>
<td>Optimized Resveratrol with Nicotinamide Riboside</td>
<td>$42</td>
<td>$24.30 (four-bottle purchase)</td>
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<tr>
<td>Taurine</td>
<td>$13</td>
<td>$8.10 (four-bottle purchase)</td>
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<tr>
<td>Health Booster (formerly called Super Booster)</td>
<td>$52</td>
<td>$32.40 (four-bottle purchase)</td>
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<tr>
<td>Advanced Bio-Curcumin® with Ginger and Tumerones</td>
<td>$30</td>
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<td>Ultra Natural Prostate</td>
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<tr>
<td>Triple Action Thyroid</td>
<td>$36</td>
<td>$21.60 (four-bottle purchase)</td>
</tr>
</tbody>
</table>

Customers traditionally take advantage of the SUPER SALE to stock up on a year’s supply of their favorite supplements. To place your order, call 1-800-544-4440 or visit www.LifeExtension.com (SUPER SALE pricing available only to customers in the US, Canada, and England.)

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.
4  BOOST BRAIN DOPAMINE LEVELS

Dopamine is a “feel-good” neurotransmitter involved in preserving cognitive function, positive emotions, and longevity. Once we pass 45 years, dopamine levels begin a steady decline that manifests as impaired neurological function and loss of enthusiasm. The main cause of dopamine decline is an enzyme called MAO-B. Scientists have discovered a wild green oat extract that inhibits MAO-B, resulting in improvements in measurements of cognitive ability and cerebral circulation.

20  PURGE DESTRUCTIVE SENILE CELLS

As cells age, they can degenerate into a tired, dysfunctional state (senescence) that fosters inflammation and organ malfunction. Scientists have discovered that the low-cost nutrient quercetin can selectively remove old cells without harm to normal, youthful cells. Studies suggest quercetin may slow aging and reduce the risk of degenerative processes.

38  ARE YOU SUFFERING FROM SUBOPTIMAL THYROID FUNCTION?

Maturing women and men often experience vague symptoms that include fatigue, weight gain, feeling cold, depression, and dry skin. The cause may be suboptimal thyroid function, which is often overlooked by conventional physicians. Researchers have discovered natural ways to boost thyroid hormone activity to help restore youthful balance.

52  WHY DIGESTIVE ENZYMES ARE SO POPULAR

Each year, people spend almost $10 billion on medications to relieve digestive distress. While these drugs may provide temporary relief of after-meal gas, bloating, and incomplete digestion, they do not solve the underlying problem. Proper use of digestive enzymes and probiotics can enable older adults to maintain digestive health with less abdominal stress and greater retention of nutrients.
Dear Life Extension Supporter,

For the first time, therapies to induce meaningful age reversal are being transformed into aggressive human research initiatives.

To put this into perspective, I have attended anti-aging scientific conferences since 1978. The focus was on disease prevention and slowing aging.

The concept of systemic age reversal was discussed as a breakthrough that would occur “sometime in the future.” That “future” arrived in 2015.

Scientists are now pushing through human studies with the objective of biologically transforming old people into measurably younger individuals.

The motives of these scientists go beyond profit and intellectual curiosity. These experts firmly believe that many aspects of pathologic aging can be eradicated using novel approaches that are being incorporated into human clinical trials.

The fact we may be so close to demonstrating systemic age reversal makes it imperative that we remain healthy enough to benefit.

Feel Better While Living Longer

Long life with impairments that make us “feel old” is not an attractive option.

One reason we suffer neurodegeneration is a destructive enzyme in our brain called MAO-B. This enzyme increases as we age, but there are ways to stop it.

An adverse impact of the MAO-B enzyme is that it degrades the neurotransmitter dopamine, which plays a critical role in how we feel, think, and control our bodily functions.

When MAO-B is inhibited, there are marked increases in life span and youthful functions such as more frequent sexual activity in the animal model.

Numerous studies reveal that inhibiting MAO-B confers age-defying effects by protecting neurons while simultaneously boosting levels of “feel good” dopamine. One way sugary foods, ethanol, and illicit drugs produce “feel-good” effects are the surges of brain dopamine they induce.

A safer way of achieving consistent dopamine levels is to inhibit excess MAO-B.

A standardized wild green oat extract has demonstrated potent MAO-B-inhibiting properties. Human studies show improvements in cerebral circulation, cognition, and measures of dopaminergic activity in response to supplementation with this patented green oat plant.

As we age past 45 years, the decline in our brain dopamine levels is one reason why we don’t “feel” as young as we used to be. There is now a natural way to reverse this trend.

Delay Aging With A Current Technology

We have long known that as cells age, they accumulate a population of poorly functioning senile (senescent) cells. These dysfunctional old cells emit persistent inflammatory signals that contribute to degeneration of our organs and greater susceptibility to chronic disease.

Scientists have discovered a simple approach to remove senescent cells without damaging healthy ones. It turns out that the plant nutrient quercetin has the unique ability to selectively remove old cells. This has the potential for extending life span by attacking aging through a novel mechanism.

More People Reaching 100 Before Age-Reversal Technology Goes Live

Even without access to emerging age-reversal therapies, there will be a 10-fold increase in humans living to age 100 (centenarians). Will you stay healthy enough to be one of them?

Quercetin has been included in popular formulas used for years by our loyal supporters. Based on this new discovery, we’ve increased the quercetin dose at no extra cost so that stronger potencies can be obtained without adding an extra pill.

Combat Common Digestive Discomforts

Do you remember how easy it was in youth to consume big meals and suffer no unpleasant after effects?

One way we internally managed foods were the massive amounts of digestive juices we produced that efficiently broke down foods for healthy absorption.

Contrast this to the gas, bloating, cramping, and other digestive problems that many adults suffer through after meals. Almost $10 billion a year is spent on over-the-counter drugs to relieve symptoms. Yet these drugs do not correct the underlying causes of such digestive distresses.

To simplify this widespread problem, a full spectrum of digestive enzymes and a special probiotic has been put into one formula to provide relief from the most common after-meal gastrointestinal discomforts.

Triple-Action Thyroid Support

A striking percentage of aging women and men suffer from insufficient output of vital thyroid hormones. Yet conventional doctors are failing to treat patients who fall within standard blood test “reference ranges.”

As we’ve reported for decades, laboratory reference ranges are so broad that a patient can have a thyroid deficit, yet still be within the so-called “normal” range.

The outward effects of thyroid insufficiency are unwanted weight gain, fatigue, dry skin, depression, and difficulty in adapting to colder environments.

The internal consequences of inadequate thyroid hormone secretion are elevated cholesterol, diminished circulation, and cellular energy exhaustion.

Those with clinically diagnosed thyroid deficiency are prescribed thyroid hormone drugs, but there are safe ways to restore thyroid gland function so that more beneficial hormones naturally flow when needed.

A new Triple Action Thyroid formula has been designed to boost the health of the thyroid gland, which may be considered by those with suboptimal or clinically diagnosed thyroid deficit.

New Lower Prices On Premium Formulas

Unlike prescription drugs that are spiraling upwards in price, the cost of some premium-grade nutrients has come down this year, meaning lower retail prices for consumers.

The cost for comprehensive formulas like Mitochondrial Energy Optimizer and Life Extension Mix™ has dropped, along with some popular individual nutrients.

It is now more affordable than ever to stay healthy and live better.

Annual Super Sale Savings!

Just once a year, we discount the price of ALL of our advanced formulas.

This enables consumers to obtain the latest versions of our premium nutrient blends at the lowest prices.

This is our 27th annual Super Sale. It begins November 16, 2015, and extends to February 1, 2016. With the new Your Healthy Rewards loyalty program, the savings have never been greater.

To order the nutrients you need to preserve your health today, call 1-800-544-4440 (24 hours) or log on to LifeExtension.com.

For longer life,

William Faloon

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Educational Mission Of Life Extension Magazine

Seven years before his death, Antony van Leeuwenhoek revealed why he devoted his life to making discoveries and disseminating his findings to the world:

“…my work, which I’ve done for a long time, was not pursued in order to gain the praise I now enjoy, but chiefly from a craving after knowledge, which I notice resides in me more than in most other men. And therewithal, whenever I found out anything remarkable, I have thought it my duty to put down my discovery on paper, so that all ingenious people might be informed thereof.”

—Antony van Leeuwenhoek, “Father of Microbiology”
Letter of June 12, 1716
Aging individuals suffer progressive frailty, cognitive dysfunction, and a diminished sense of well-being. These conditions correlate with declining dopamine levels in the aging brain.1-3

Dopamine functions as a neurotransmitter, where it signals nerve cells to regulate mood, cognition, and bodily function.4

From the time a person is born, dopamine plays a major role in reward behavior.5 So much so that dopamine response can dictate cravings for sugary foods, recreational drugs, ethanol, tobacco, gambling, and/or sex.6

All of these behaviors can prompt a dopamine release in the brain that creates individualistic pleasure addictions.7-13

The dilemma is that as we age, dopamine depletion causes us to lose neurological functions that enable us to enjoy and function in everyday life.

Restoring dopamine to more youthful ranges is vital for healthy longevity.
Role of Dopamine in Addictive Behaviors

Narcotics like cocaine have long been associated with intense dopamine-fueled euphoria. Less recognized is the impact that alcohol, nicotine, and activities like gambling play in the brain’s dopamine release.

This can be seen in the form of “binge drinking,” where ethanol initially prompts dopamine release, which motivates the drinker to imbibe increasing quantities of ethanol to enhance their dopamine high. Compulsive gamblers feel a surge of dopamine every time a card is flipped, causing gambling binges to go on for days in some cases without regard to sleep or food. This is especially true when gambling is combined with nicotine, which prompts even greater flows of euphoric dopamine.

Perhaps one of the most common dopamine-fueled cravings people have today is for sugary foods. Despite knowing the toxic effect of glucose overload, people excessively consume sweets because of the dopamine release it generates in the brain.

Activities that promote the rapid release of dopamine are often dangerous and addicting. Yet some very intelligent people succumb to these euphoric effects even though their lives are adversely impacted.

Clearly, safer methods are needed to restore brain dopamine to a more youthful “feel-good” range.

Dopamine and Brain Aging

Dopamine levels decline as we age past 45 years. When this happens, people no longer “feel” as young as they used to. This sometimes manifests as clinical depression. For the most part, however, aging people find that their motivation, their cognitive function, and their ability to enjoy pleasurable events all diminish.

Loss of dopamine also causes people to lose their sense of well-being, i.e. they don’t feel the same as they once did. This is often accompanied by reduced bodily coordination that may progress to frailty.

If we did not know what caused the age-related decline in brain dopamine, this would be a depressing situation for us all.

How to Boost Brain Dopamine

Fortunately, a prime reason for dopamine depletion was long ago discovered. It involves a dopamine-degrading enzyme in the brain called MAO-B, which stands for monoamine oxidase-B.

In youth, MAO-B is crucial in regulating just the right amount of dopamine in the brain. As humans age, however, MAO-B levels increase too much. The result of excess MAO-B is a dopamine deficit.

A natural method has been discovered to inhibit excess MAO-B in the brain. Placebo-controlled human studies show meaningful improvements in response to this novel dopamine restoration approach.

Dopamine is known as the “feel-good” neurotransmitter and it is a key factor in preserving a range of cognitive functions and promoting longevity.

By age 45, the brain’s levels of dopamine begin to diminish. This not only makes people feel older, but is also involved in accelerated brain aging.

Dopamine depletion is largely caused by rising levels of the MAO-B enzyme. The ensuing dopamine deficiency strikes the brain’s signaling system. The tragic result is cognitive decline, destruction of brain cells, reduction of youthful vigor/sexual desire, progression toward Parkinson’s/neurological disorders, and a decrease in life span.

Laboratory studies have shown that the inhibition of MAO-B not only preserves brain function by protecting dopamine, but it also has longevity benefits.

In a search for a safe method to block the insidious MAO-B enzyme, scientists have identified a bioactive extract of wild green oat that not only inhibits MAO-B and the resulting breakdown of dopamine, but enhances dopaminergic neurotransmission that normally declines with aging. These protective actions enable more dopamine availability for use by brain cells.
In human studies, the effects of *wild green oat extract* resulted in increased focus and concentration, processing speed, executive function, and working memory as well as other parameters of enhanced dopaminergic transmission.\(^{35,36}\)

The discovery of the specific actions of *wild green oat extract* represents a significant advance in the technology of age management. It provides a method for halting some of the most destructive aspects of neurological aging, thus helping improve cognitive function and enhancing the quality of life.\(^{37}\)

**A Drug that Safely Inhibits MAO-B**

Until recently, one of the best solutions to combat dopamine depletion was a prescription drug called deprenyl. Discovered in Hungary, deprenyl boosts dopamine levels by decreasing the damaging MAO-B enzyme while increasing life span in animals by a stunning 34%.\(^{38-42}\)

For the past 27 years, Life Extension\(^9\) has been reporting on the longevity benefits of deprenyl.

Despite impressive laboratory and clinical data, deprenyl has been denied to the general public due to FDA restrictions that limit deprenyl prescriptions only for those afflicted with Parkinson's disease. The tragedy of this restriction is that people over age 45 are deprived of this drug's unique anti-aging mechanisms.\(^{43}\) Deprenyl is the only drug compound ever discovered that both prolongs life and preserves cognition in higher animals.\(^{42,44,45}\)

**What You Need to Know**

- **Restore Youthful Cognition**
  - Deprenyl is a MAO-B inhibiting drug with powerful life-extending properties. Deprenyl has been well known and thoroughly researched for more than 30 years.
  - Studies reveal that deprenyl extends life span in animal models by as much as 34%.
  - Antiquated regulations in the United States have kept this potential life span-enhancer from the American public.
  - Only people who already show symptoms of Parkinson's disease are permitted access to deprenyl and its benefits.
  - Innovative researchers have, however, discovered a safe and natural alternative that operates by the same mechanism as deprenyl—inhbitition of the dopamine-degrading MAO-B enzyme.
  - Studies with the extract of a wild green oat strain show both MAO-B-inhibition and the improvements in brain activity and function that such inhibition produces.
  - Human studies with wild green oat extract confirm superior cognitive and memory function in both healthy people and those with early loss of cognition.
  - There is reason to anticipate that longer life spans may arise from this modest MAO-B inhibition, as has been shown with deprenyl.
Searching for an alternative MAO-B inhibitor that could be made available without prescription, researchers identified a patented extract from wild green oat that works along the same pathways as deprenyl.

Unlike the commercial oats that are eaten for breakfast, wild green oat extract is derived from the green, unripe part of the oat plant. Like deprenyl, wild green oat extract inhibits the damaging MAO-B enzyme.46

In a series of human studies, this special variety of green oat extract significantly improved concentration and cognitive functions, both in healthy people and in those whose brains are just beginning to fail.35,36 By preserving the “feel-good” aspects of dopamine, green oat extract also shows evidence of effectiveness as a tool in smoking cessation, consistent with the role that dopamine plays in addictive behaviors.47
Age-related symptoms of dopamine deficit include high rates of depression, loss of sexual vigor, and motor control problems resembling (and sometimes progressing to) Parkinson’s disease.50

Rising levels of MAO-B also increase mitochondrial damage and destruction of brain cells.25,58 That’s because in addition to MAO-B breaking down dopamine, it also produces hydrogen peroxide, an unstable molecule that is a massive source of destructive oxygen free radicals.59,60 Because the MAO-B molecule resides on the membranes of mitochondria, the outflow of reactive oxygen species can directly damage mitochondrial membranes, leading to inefficient energy use, additional cellular damage, and eventually, death of the cell.61,62

The Vicious Cycle of Increasing Levels of MAO-B

As the MAO-B enzyme begins to invade our brain and devour our precious reserves of dopamine, our life span begins to shorten.50,63-66 Why?

It turns out that excess MAO-B not only destroys functioning brain cells, but replaces these healthy cells with non-neuronal “zombie cells” (called glia cells) that continue to manufacture even more MAO-B.25,67,68

You can see that once started, this becomes a vicious cycle that increasingly depletes dopamine production and destroys functioning brain cells and progressively leads to a shortened life span. Without intervention, the aggression of the MAO-B enzyme can result in an early death.

Deprenyl Extends Life Span via MAO-B Inhibition

Deprenyl has been intensively studied from 1988 to the present, with particular focus on its long-term effects in animals.28 A surprising outcome of these studies has been the observation that, time after time, in a wide range of animal models, deprenyl is not only neuroprotective, but significantly increases life span, when given at the proper dose level.

To date, deprenyl remains the only drug that has been shown to increase longevity in at least four different mammalian species.41,42

In rats, deprenyl treatment:

- Extended **average** life span to **198** weeks. This is remarkable in that this average exceeds the estimated **maximum** age at death of a normal rat, **182** weeks.91,92 In this study, the **longest-living control rat** died at **164** weeks, while the longest-living deprenyl-treated rat lived to **226** weeks. That’s a nearly **25%** increase over the typical maximum age at death.

- Extended average life spans by up to **34%** when started at **24** months (late middle age for a rat).40,93

- Extended life span significantly even when started late (at **23 to 25** months of age).94

- Restored sexual activity in 64 of 66 2-year-old (elderly) rats (Untreated animals did not have full scale sexual activity past age 2).92

- Decreased brain MAO-B activity by **85%**.95

In mice, deprenyl treatment increased survival in immunocompromised animals by about **200%** compared with controls,96,97 while in hamsters, deprenyl produced a three-month delay in the onset of long-term memory impairment, compared with controls.98

And in elderly dogs, deprenyl treatment started while the animals were in late mid-life led to **80%** survival of treated animals to the end of a 26-month study, while just **39%** of placebo dogs were alive. Interestingly, when the first dopamine-treated dog died, **12.2%** of the placebo animals had already succumbed.78
Wild Green Oat Extract Inhibits MAO-B

A patented extract from wild green oat has shown potent MAO-B-inhibiting properties. A series of human studies have demonstrated neurological-enhancing effects.

Wild green oats are younger plants (different) than those used for cereal grains. They have a long history of traditional therapeutic use in supporting mental health and cognitive function.47,69 Extracts of this “oat herb” are now widely used for indications that include anxiety, tension, stress, excitation, and other neurologic problems.69

Given the brain protective and longevity benefits of deprenyl, European scientists turned to wild green oats in search of a natural MAO-B inhibitor. A patented extract of wild green oat was developed after researchers screened 36 different varieties of wild oats for their ability to inhibit MAO-B.46

Once scientists identified the specific strain of wild green oat with the most potent biological activity, laboratory assays were conducted using various concentrations of the extract (based on standardized concentrations of isovitexin, a bioactive flavone molecule).

What they found was a 50% inhibition of the MAO-B enzyme by wild green oat extract at small concentrations.46 These findings show that this specific strain of wild green oat extract, by inhibiting the MAO-B enzyme, could have the potential of raising dopamine levels in the brain.

Demonstration of significant MAO-B inhibition by wild green oat extract would not only be a safe and inexpensive means to improve cognitive function in aging adults, it would also be likely to have favorable impacts on life span itself.

Wild Green Oat Extract in Lab Studies

Once the potency of wild green oat extract had been standardized, a study of laboratory rats was conducted to examine actual changes in behavior as a result of MAO-B inhibition from ingestion of the extract.

Animals were fed for seven weeks with either a normal diet or one supplemented with two different dosages (low and high) of the wild green oat extract. All three groups then underwent a series of behavioral tests.69 In this study, the animals showed impressive gains in learning and memory formation. Animals supplemented with the lower dose made significantly fewer mistakes in learning, learned tasks faster, and demonstrated accelerated memory formation, compared with either control or high-dose rats. As an important added benefit, low-dose supplemented rats showed increased social interest in other animals and improvement of their reactions to social signals from others.

This response highlights the essential value of raising the “feel-good” aspects of dopamine levels by properly inhibiting MAO-B. These results are consistent with findings in the literature on the use of pharmaceutical MAO-B inhibitors in Parkinson’s disease patients.69

In another study in rats, scientists used an electroencephalogram (EEG) to evaluate the impact of wild green oat extract supplementation on specific areas of brain activity. The researchers were looking to measure changes in neurotransmitters as a result of ingesting wild green oat extract.70 These changes can be “mapped” and compared to those produced by known drugs that would produce similar behavioral outcomes.

Within the first hour of oral administration, the supplemented animals demonstrated positive changes in their electrical brain activity.70 The most impressive changes were seen in electrical frequencies that are known to be controlled by dopamine.

This confirmed previous studies showing that the wild green oat extract activates the dopamine-signaling system. In fact, the EEG signatures induced by the extract closely resembled those of known anti-dementia drugs.
Human Study Reveals Similar Finding

Scaling up from the animal studies, a similar investigation into EEG changes resulting from ingestion of wild green oat extract has now been conducted on humans. This enabled researchers to further validate the dopamine-promoting effects of wild green oat extract.36

In a human study testing concentration skills, a group of healthy males and females, aged 30 to 60 years, took a single dose of wild green oat extract at 1,250 or 2,500 mg or placebo. Using a specialized EEG brain mapping, positive changes were shown in the green oat groups during concentration tests in an area of the brain essential for cognitive function (the left frontotemporal lobe).

This EEG brain mapping also showed significant increases in the power of theta brainwaves that are involved in focusing attention and detection of signals.71

Signal detection, as measured by theta wave power, is an essential component of the process by which we recognize familiar faces and objects, skills that are all too often lost to neurodegenerative diseases.72,73 Theta brain activity is an important marker of cognitive health. It is well known that Alzheimer’s patients have heartbreaking difficulties recognizing the faces of loved ones.74,75

Wild Green Oat Reduces Mental Errors

A study was conducted among a group of elderly people, some of whom showed signs of mild cognitive impairment while others in the group showed no cognitive impairment. The researchers wanted to look for measurements of cognitive performance after taking wild green oat.35

Subjects were randomly assigned to receive single doses of the oat extract once a week. The three doses in the study were 0 mg (control group), 1,600 mg, or 2,400 mg. This was a “crossover” design, so that each subject was rotated through all three dosages and received each treatment arm on separate occasions, allowing each participant to function as a control.

Using the Stroop Color-Word Test, subjects were tested for a range of cognitive functions including memory, executive function, catching errors, appropriate response, and attention. It focuses on two key areas of the brain’s cortex. In the test, participants must look at a card covered with words that name colors. The difficulty is that each word is printed in a color that does not match the word (e.g., the word “RED” printed in blue). They are first asked to read all the words as quickly and accurately as possible. They are then asked to name the color of each word, disregarding the word name itself.76,77 While the test sounds simple, it is highly diagnostic with regard to cognitive abilities and brain health.

In this study, those not given the wild green oat extract made an average of 3.39 errors on the test. The study subjects receiving 1,600 mg of wild green oat extract group made only 1.2 errors, a significant improvement of 65%.

In the group of subjects that had no diagnosis of mild cognitive impairment, the improvement was even more dramatic, with patients taking the wild green oat extract averaging just 0.55 errors compared to placebo recipients, who averaged 2.13 errors. This represented a significant 74% improvement in this test of mental acuity for those taking wild green oat extract.

In this study, even those patients with mild cognitive impairment had a 26% reduction in a score that measured how distraction affects mental performance and the ability to concentrate (lower scores reflect better performance).

The conclusion from this study is analogous to lab experiments involving deprenyl that suggest that the earlier MAO-B inhibition is initiated the better chances of preserving brain function during aging.78

Interestingly, the higher dose (2,400 mg) of green oat extract did not show this cognitive improvement, indicating that excessively suppressing MAO-B does not elicit desired effects.78 This is analogous to deprenyl, where lower doses are shown to be more beneficial in some studies.79
**Boosting Cognitive Function**

*Wild green oat extract* has been associated with improving mental processing time and speed.

In a soon-to-be published study, 42 healthy middle-to-older aged adults (mean age 59), with self-reported age-related cognitive decline, were given a single dose (800 mg) of wild green oat extract. Before and after the dose, they were given a battery of neuro-cognitive tests administered by computer.80

Supplemented subjects showed significantly faster responses to stimuli compared with placebo recipients, taking less time to plan and complete specific tasks. Supplemented subjects also performed significantly better on memory-related tasks, making fewer errors in recalling words after a delay, and achieving greater accuracy in remembering spatial arrangements of objects.

Those who were given *wild green oat extract* showed a 180% increase in speed in the “global speed of performance test” compared to those given only the placebo.

These human trials represent a promising advance in the preservation of brain health.

**Improved Blood Flow to the Brain**

*Wild green oat extract* has demonstrated improvements in tests of systemic endothelial function and cerebral vascular responsiveness, as shown in a recent human study.

The study evaluated healthy adults older than 60 years, providing them with 1,500 mg a day of *wild green oat extract* or placebo.81

By the end of the 12-week study period, the group receiving *wild green oat* extract had a significant 41% increase in measurement of flow mediated dilation, indicating an improvement in endothelial function.

The study also showed that cerebral vascular responsiveness increased significantly by 42%, suggesting the middle cerebral artery’s ability to dilate in response to stress increased.

The ability of *wild green oat extract* to improve endothelial function as well as cerebral vasodilator function is a property that should capture the attention of anyone wishing to protect and improve their brain health and cognitive function.

“This is the first study in humans to show sustained improvement of cerebral vasodilator function following a chronic dietary supplementation,” researchers state.

Impairments of blood flow to the heart and brain are common ailments of aging.82,83

Compromised cerebral vasodilator function has been reported as an independent predictor of stroke and transient ischemic attack.84

**MAO-B and Brain Disease**

Both Parkinson’s and Alzheimer’s diseases have now been found to be associated with elevated MAO-B activity, even greater than those found in healthy people of the same age. This suggests a potential causative effect, due to the decreased dopamine availability, or the increased oxidant stress caused by MAO-B or both.53,60,68

One study found that MAO-B activity in Alzheimer’s patients was higher than in controls in all brain regions studied: up to 70% higher in white matter, and 20-50% higher in gray matter regions.99

Another study showed that Alzheimer's brains had up to 3-fold increased MAO-B activity compared with controls, with the bulk of the excess located in precisely the areas of greatest loss to Alzheimer’s patients, areas concerned with emotional processing, cognition, and personality.100

Aging people even without clear-cut diagnoses of neurodegenerative diseases also show evidence of substantial loss of brain cells, which may contribute to loss of cognitive performance and premature mortality.101,104 Given the cell-killing effects of excessive MAO-B, it seems likely that this brain shrinkage is related to increased activity of that enzyme, suggesting a potential mechanism for the life span-increasing effects of compounds that inhibit MAO-B.105-107
Impaired endothelial function is a well-established biomarker for future cardiovascular disease and cardiac events.85-87

The tests used in this study assessed blood flow markers to the brain and other parts of the body. Wild green oat extract supplementation improved outcomes in both of these tests of vascular function.

Green Oats and Smoking Cessation

Dopamine controls our sense of accomplishment and the cycle of addiction.

When a tobacco user smokes or ingests nicotine, it binds to brain receptors that results in the release of dopamine, producing a satisfying, even euphoric, initial sensation.47,88,89

But once the stimulus goes away, the user is left with a relative dopamine deficiency, which produces cravings and eventually dependence on yet another dose of nicotine.88,90

Japanese scientists realized that this sequence of events was ripe for intervention with a product that worked along dopamine pathways. Wild green oat extract was selected as a test product.47

A group of male smokers, who all used different cigarette brands, was given 300 mg wild green oat extract taken after each meal (900 mg per day) for 28 days. Average cigarette consumption prior to supplementation was almost 20 cigarettes (one pack) per day, but after the end of the study, average consumption fell to just 8.9 cigarettes per day. This was an astounding 54% decrease in tobacco intake versus baseline.

Scientists are aware that dopamine is involved in both addiction and reward stimulus in the brain. This study demonstrated how wild green oat extract could significantly reduce smoking by improving dopaminergic transmission.

The discovery that the dopamine-enhancing effects of wild green oat extract can reduce cigarette consumption may be a revolutionary advance in the science of smoking cessation.

Summary

Aging exposes our brain to increased MAO-B, which results in dopamine deficit, loss of brain cells, cognitive decline, and risk for early death.

Deprenyl, a selective inhibitor of MAO-B, has been proven to ameliorate dopamine deficiency and improve cognitive functions. Numerous animal studies demonstrate that regular deprenyl administration produces increases in life span.

The FDA does not allow Americans the use of deprenyl for the treatment of any longevity-related disease, or any disease for that matter except for Parkinson’s.

Fortunately, diligent research has yielded an exciting alternative. An extract from a specific strain of wild green oat has demonstrated MAO-B-inhibiting activity. Animal studies have established improvements in dopamine-related behavior and brain activity.

Human studies confirm significantly better performance on tasks of cognition and memory in response to this wild green oat extract, as would be expected from an MAO-B-inhibiting compound.

Improved indicators of blood flow to the brain and other parts of the body, along with a reduction in addictive behavior are among the quality-of-life enhancing properties of this natural extract from select wild green oats. ●

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

References


NEW HIGHLY PURIFIED
ALASKAN FISH OIL

The health benefits of eating cold-water fish are robust, yet concerns remain about contaminants found in wild and farm-raised fish.

A fish oil blend derived from pristine waters off the coast of Alaska utilizes a multistep process to remain exceptionally fresh. The result is that this Alaskan-derived fish oil has a greater than 5-fold reduction in the upper level threshold measurement for oxidation.

Current oxidation standards for quality fish oils ensure products that are free from rancidity. This Alaskan-derived fish oil specification advances this premium standard 5-fold better!

High Percentage EPA and DHA

An advantage to higher EPA and DHA fish oil concentrations is smaller-sized omega-3 softgels.

The addition of Alaskan-derived fish oil to the Super Omega-3 supplement group enables the same high-potency EPA/DHA to fit into slightly smaller softgels for easier swallowing.

International Fish Oil Association “Five-Star Rating”

The International Fish Oil Association (IFOS) is an independent organization that tests oils to determine their overall safety and quality. A Five-Star Rating indicates fish oils have been tested to meet very strict standards of quality as determined by EPA and DHA content, and for purity to rule out contamination with heavy metals, radiation, oxidation, and organic pollutants such as PCBs and dioxin.

Alaskan-derived fish oil enjoys the same Five-Star Rating mandated for all fish oils contained in the Super Omega-3 family of supplements.

Benefits of a Mediterranean Diet

The most popular Super Omega-3 formula provides the following potencies in just four smaller softgels:

<table>
<thead>
<tr>
<th>Ingredient</th>
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<td>(fruit and leaf)</td>
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<tr>
<td>Sesame seed lignan extract</td>
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Fish Oil+Olive Fruit Extract= Greater Efficacy

Research findings indicate that a combination of fish oil and olive oil can support a healthy inflammatory response better than fish oil alone.1 Super Omega-3 incorporates the benefits of both fish oil and olive fruit extract into a single novel formula. A four-softgel serving provides the equivalent polyphenol content of 8 to 12 tablespoons of extra virgin olive oil.

Sesame Lignans Enhance Fish Oil Efficacy

Studies show that when sesame lignans are added to fish oil, there is a greater safeguard against oxidation along with the EPA/DHA fatty acids being directed toward pathways that help with inflammatory reactions.2

Comprehensive Protective Benefits

There are hundreds of fish oil supplements on the market. Only one incorporates lifesaving findings to provide omega-3 and olive fruit extracts, along with sesame lignans, in a family of formulas called Super Omega-3.

Super Omega-3

Item #01982 • 120 softgels

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Retail Price  Super Sale Price

Non-GMO

References


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

Supportive but not conclusive research shows that consumption of EPA and DHA omega-3 fatty acids may reduce the risk of coronary heart disease.

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.
Replenish Youthful Dopamine

Dopa-Mind™ is a standardized wild green oat extract for aging individuals who wish to maintain more youthful cognitive health and performance.

With age, our brain’s levels of dopamine—which regulates mood and cognition—begin to diminish, leading to a corresponding decline in mental performance. This dopamine depletion is largely caused by rising levels of an enzyme called monoamine oxidase-B (MAO-B).

Published studies show that by inhibiting MAO-B, this bioactive wild green oat extract promotes healthy dopamine levels. This MAO-B inhibiting mechanism has been shown to support mental acuity and longevity. In a double-blind, randomized, placebo-controlled trial in aging volunteers, researchers demonstrated that 1,600 mg of the same wild green oat extract found in Dopa-Mind™ produced a 74% improvement on a standard test of mental acuity. In soon-to-be published research, 800 mg of the same extract supported mental processing time and speed. In other research, this extract exhibited support for cerebral vasodilator function, as well as endothelial function—both of which play roles in brain health.

The wild green oat extract in Dopa-Mind™ has been shown to promote more youthful cognitive performance and may support longevity. The suggested dose is one tablet of Dopa-Mind™ daily for the first month. If desired results do not manifest, increase the dose to two tablets daily.

References

To order Dopa-Mind™, call 1-800-544-4440 or visit www.LifeExtension.com
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Mention code YRL501A
SWEEP AWAY SENILE CELLS
If someone told you that taking a certain nutrient or drug could kill some of your cells, you might think it was a bad idea.

What few people understand is that as cells age, some of them degenerate into a population of poorly functioning senescent cells that accumulate throughout their body.1,2

There is no value to retaining these lingering senile cells. Their continued presence underlies a myriad of degenerative disorders. Senescent cells should be purged from the body!

The buildup of these dysfunctional senile cells contributes to decay of individual organs and greater susceptibility to disorders related to chronic inflammation.3,4

Pharmaceutical companies are developing technologies to remove or neutralize senile cells. They view this as a lucrative target of anti-aging research.6,7 The objective is to selectively remove senescent cells without damaging healthy cells.

Rather than wait for expensive drugs, scientists have discovered that the plant flavonoid quercetin has the unique ability to selectively remove old cells without harm to normal, actively dividing cells.5 This has the obvious potential for extending health span.

A number of studies suggest that low-cost quercetin may slow aging and reduce the risk of many age-accelerating processes—both by clearing senescent cells and via other beneficial mechanisms.8,10
Aging Cells, Aging Organs, Aging Body

It might seem logical that our cells age at the same time as our body as a whole, but that is not the case.

Cells have varying life spans. Some cells live only briefly and replace themselves frequently, while others have longer life spans and are replaced only after weeks, months, or even years. The exact frequency of cell renewal depends on the tissue in which the cells are found.

In the presence of various detrimental stimuli (such as ultraviolet radiation, oxidation, and environmental toxins), some cells undergo changes to their DNA that results in old cells that won't die when they're supposed to. Scientists refer to these as senescent (senile) cells.

Senescent cells pose a significant health problem because many of them produce pro-inflammatory signaling molecules and protein-digesting enzymes that contribute to acceleration of age-related diseases.

A healthy immune system can help remove senescent cells as part of its normal cellular housekeeping. This process is important in cancer prevention. As bodies age, the immune system itself begins to age via a process known as immune senescence. As a result, removal of senescent cells begins to fail. This leads to an acceleration of aging, and ultimately, an increase in the risk of most age-associated conditions, including cancer.

By selectively eliminating senescent cells so that they do not “clog up” our body's processes, it is possible to support or even regain youthful function in every organ and tissue. This was shown in a compelling fashion in a 2011 study from the Mayo Clinic, using a mouse model of rapidly accelerated aging similar to the disease progeria in humans.

Progeria is a rare disease of accelerated aging. It is the result of a gene mutation that produces premature accumulation of senescent cells, and causes young children to age so rapidly that most die before age 15, commonly of atherosclerosis or other age-related processes.

The Mayo researchers transplanted into the rapidly aging mouse model a specialized gene that selectively eliminated senescent cells. They found that, by removing senescent cells in tissues such as fat, skeletal muscles, and the eye, they could significantly delay onset of age-related disorders in those tissues. These included muscle loss, cataracts, and depletion of subcutaneous (under-the-skin) fat. Perhaps still more exciting, clearance of senescent cells even in late life slowed the progression of age-related disorders already in progress.

This study opened the door to the idea of senolytic (or “age-busting”) drugs. Testing this kind of gene transplantation therapy in humans is fraught with risks. A better, safer, and simpler solution was discovered in early 2015 by another group of scientists from several institutions, including the Mayo Clinic.

Delete Senescent Cells with Quercetin

The second Mayo study was carried out by researchers who recognized the threat of senescent cell accumulation. These scientists sought to correct this pathology in a simpler and safer way than gene transfers. They knew, from past research, that clearing away just 30% of senescent cells produced profound improvement in age-related signs and symptoms.

The researchers turned to several compounds known to induce cellular suicide (known technically as apoptosis) preferentially in senescent cells, while leaving healthy cells untouched. They tested 46 different drugs and nutrients, and ended up with two candidates: a chemotherapy drug called dasatinib and quercetin, a well-studied nutrient found naturally in apples, onions, and other vegetables. Both compounds powerfully affect the cellular regulation systems that produce beneficial apoptosis, but dasatinib, unlike quercetin, has a wide range of serious toxic side effects.

When human cell cultures were treated with either quercetin or dasatinib, the researchers found a sharp reduction in numbers of senescent cells. In this study, quercetin caused about a 50% reduction at the lowest two doses, with no effect on healthy cells. Dasatinib had similar effects when used alone.

In an animal study, the combination of the two compounds was still more effective. When administered to age-accelerated mice, the combination caused a significant reduction in a score of age-related symptoms, including hunched back, poor muscle function, tremors, loss of grip strength, gait abnormalities, urinary incontinence, and poor body condition. These effects were interpreted as an extension of the health span of the mice, both because of the delay in symptom onset and the reduction of their severity.
Of course, no one is proposing that dasatinib, a powerful chemotherapy drug, be used to prevent human aging. This study shows that quercetin alone is just as effective at deleting dangerous senescent cells as the drug dasatinib, and that such deletion delays aging and promotes a longer health span.8

Like most natural supplements, quercetin appears to achieve its effects by multiple pathways. For example, quercetin activates a well-researched enzyme known as SIRT1, which is also activated by resveratrol.25 Recent studies show that activated SIRT1 can suppress the pro-inflammatory signaling of senescent cells, thereby reducing their toxicity and potentially slowing aging.26 Numerous experiments have demonstrated that animals with experimentally increased SIRT1 activation live longer and experience fewer age-related disorders.27,28

Previous animal studies have shown that quercetin can extend life span. In one often-used model of aging using the roundworm Caenorhabditis elegans, quercetin treatment has been shown to prolong the mean life span by 16 to 23%.29-32

A wealth of evidence shows that quercetin acts by several mechanisms to delay aging, is safe, and is absorbed from the gastrointestinal tract after an oral dose.33,34 It is reasonable to examine quercetin's effects as an age-decelerator in the human tissues most affected by aging, as we'll now see.
Quercetin Slows Cardiovascular Aging

Cardiovascular disease (heart attacks, congestive heart failure, and stroke) is the leading cause of death among older Americans.\(^3\) Finding a way to slow aging of the heart and blood vessels is a vital factor when seeking to significantly prolong human life. Quercetin has numerous properties that help to combat various factors involved in heart disease.

First, quercetin has the ability to relax blood vessels, an action that reduces the risk of heart attack and stroke.\(^3\) Scientists believe this is due in part to quercetin’s ability to fight oxidation. Oxidation in cells that line blood vessels reduces their ability to produce and respond to nitric oxide, a vital signaling molecule that helps control blood pressure by telling cells to dilate and relax.

Secondly, quercetin has been found to increase levels of an important enzyme called paraoxonase-2 (PON2).\(^3\) Scientists now believe that this potent enzyme protects fat molecules from dangerous oxidation that can lead to atherosclerotic plaque formation and decreased blood flow.\(^3\) Indeed, animal studies demonstrate that supplementation with quercetin reduces markers of oxidation, while increasing heart weight (an indicator of good function in healthy animals), potentially improving the animals’ long-term health.\(^5\)

The third way quercetin helps protect against heart disease is by counteracting the pro-clotting effect of platelets, a leading contributor to arterial blockage in the presence of plaque. In a study of healthy human volunteers, doses of a quercetin supplement at both 150 and 300 mg were shown to decrease clotting of platelets. This action has the potential to reduce the risk of stroke and heart attacks.\(^2\)

Finally, quercetin directly opposes major components of metabolic syndrome (the combination of obesity, hypertension, glucose intolerance, insulin resistance, and lipid disturbances), a condition that vastly increases cardiovascular risk. When a group of overweight or obese subjects with features of metabolic syndrome received a daily 150 mg dose of quercetin for six weeks, mean fasting quercetin blood levels were boosted by nearly 4-fold.\(^8\) In this study, quercetin lowered systolic (top number) blood pressure and reduced levels of oxidized LDL (bad) cholesterol, a contributor to atherosclerosis.

Another study evaluated healthy men who had a genetic variant that increases cardiovascular risk. A quercetin dose of 150 mg per day was used. After eight weeks, there were reductions in waist circumference, after-meal systolic blood pressure, and triglyceride levels. Beneficial increases in HDL (good) cholesterol were found in these men taking just 150 mg per day of quercetin.\(^4\)

Synergistic Benefits of Quercetin + Resveratrol

Polyphenols are versatile molecules found throughout the plant world, where they offer protection against the stresses imposed by extreme environments, UV radiation, and other factors.\(^6\) Recent studies have focused especially on the polyphenols quercetin and resveratrol, and on their synergistic effects when used together.

Resveratrol has important impacts on energy metabolism, and functioning of the tiny intracellular powerhouses called mitochondria.\(^6\) Resveratrol’s molecular effects are in some ways similar to those of profound calorie restriction, which has been found to extend life span in virtually every animal system in which it has been tested.\(^6\)

Combining quercetin with resveratrol has been shown to have synergistic effects, meaning that the combination provides benefits that are greater than the simple sum of each nutrient’s effects together. Studies show that quercetin and resveratrol work together by multiple, complementary mechanisms.\(^6\)
Quercetin Protects Brain Cells

Scientists have determined that senescent, inflammation-generating cells accumulate in the brain during “normal” aging. This discovery has opened a new door to therapies aimed at preventing the decline associated with neurodegenerative diseases like Parkinson’s and Alzheimer’s. With quercetin’s ability to selectively delete senile cells in the brain, we can expect further advances in preventive neurology from this impressive natural flavonoid.

A great deal has already been discovered about quercetin’s ability to reduce the memory deficits and other features of neurodegenerative disorders by protecting brain cells’ structure and function.39

Studies show, for instance, that quercetin is absorbed in the blood after oral dosing, and is detectable soon thereafter in brain tissue.40 As a result, quercetin has been shown to help protect the brains of rats subjected to a high-stress environment.

In a study published in Free Radical Biology and Medicine, the rats initially developed oxidative stress in vital memory and movement centers of their brains as a result of the high-stress environment.40 However, when those same rats were supplemented with quercetin, the cognitive deficits they had experienced were reduced.

Oxidative stress and senescent cells are significant contributors to the gradual development of Alzheimer’s and Parkinson’s diseases, two common neurodegenerative consequences of aging.41-43 Quercetin has been shown to help battle both of these underlying issues.

In a rat model of Parkinson’s disease, quercetin or fish oil demonstrated valuable brain-protective properties. However, the combination of quercetin and fish oil produced even more protective benefits such as reducing behavioral impairment, improving production of the neurotransmitter dopamine, and rescuing ailing mitochondria.44

Protection Against Environmental Toxins

Environmental toxins play a significant role in the development of neurodegenerative diseases. Parkinson’s disease, for example, is known to be promoted by exposure to PCBs (polychlorinated biphenyls, a class of environmental chemical toxins).45,46 PCBs damage brain cells that produce the neurotransmitter dopamine, which is deficient in Parkinson’s disease.47-49 Brain dopamine levels steadily decline as humans age past 45 years.50

One study demonstrated that quercetin reduces damage to dopamine-producing brain cells after rats are exposed to PCBs.39 Subsequent experiments demonstrated that quercetin protected the dopamine-producing cells by scavenging the destructive oxygen-free radicals induced by the toxin.39

How Quercetin Enhances Efficacy of Resveratrol

Resveratrol has become a popular “anti-aging” supplement because of its beneficial effect on gene expression.71,72 Quercetin has been shown to make more resveratrol available to the body. It does this by reducing the rate of resveratrol degradation (sulfation) in the liver and enhancing its bioavailability.

When resveratrol is ingested, about 70% of it is absorbed from the intestine into the blood.73 The absorbed resveratrol is then transported to the liver. When the liver adds sulfate groups, there is some deactivation of the resveratrol.74

Since quercetin has favorable influences on the bioavailability of resveratrol, it makes sense to take these two nutrients together.75 Interestingly, while red wine is known to contain small amounts of resveratrol, it usually contains even more quercetin, meaning the health benefits associated with red wine may be due to both its resveratrol and quercetin content (along with other polyphenols).75,76
In addition to memory loss, animals exposed to PCB also developed signs of anxiety. A separate study found that quercetin supplementation was able to reverse both the brain changes and the neurological deficits associated with PCB-induced anxiety.51

Further supporting quercetin’s ability to protect the brain from damaging toxins, a study published in Toxicology and Industrial Health found that supplementation with the nutrient reversed changes in the brains of rats previously exposed to a common industrial solvent called toluene. When the researchers examined microscopic evidence of the animals’ brains, they found that quercetin supplementation in fact led to structural improvements in brain architecture that had been damaged by the chemical. Amazingly, these improvements occurred even when quercetin was administered after the brain damage was done.52

Exposure to PCB weakens the blood-brain barrier, which allows PCB and other damaging toxins to leak into brain cells.53 However, researchers found that quercetin can protect brain cells against environmental toxins by stopping them from ever reaching the brain in the first place.53

**Summary**

The accumulation of pro-inflammatory senescent cells in the maturing body is an underlying factor behind premature aging. Research into this scientific arena provides a real-world opportunity to combat this degenerative mechanism.

Quercetin is a flavonoid found in many fruits and vegetables. It has recently been shown to remove dysfunctional cells without harming healthy ones. Studies in animals and humans show that quercetin fights oxidative stress and inflammation, while beneficially modulating genes known to be involved in the aging process.

How Senescent Cells Impact the Entire Body

Troublesome senescent cells can be found throughout the body.17 Wherever those cells build up, they cause damage to that part of the body. These “retired cells” are responsible for increasing malfunctions in a once-vibrant body. For example:

- In the immune system, senescent T cells have been found built up in the lymph nodes of older animals.54 These older cells are rich in memories of older threats, but are unable to “learn” about new threats, making them less effective, for example, against next year’s flu virus.55
- Senescent cells also affect skin integrity. The impaired skin and wound healing so commonly associated with aging may be related to an accumulation of senescent fibroblasts,56 which are all-purpose cells in the skin that are essential for producing new skin tissue.57
- The most common form of arthritis, osteoarthritis, is due in part to the accumulation of old cartilage-producing cells (chondrocytes) in the joints.58 Joint stresses, such as overuse, produce chronic oxidative stress, which has been shown to hasten chondrocyte aging and accumulation of senescent cells.59
- Senescent cells are also being explored as important targets for treating age-related brain disorders such as Alzheimer’s and Parkinson’s diseases.7 Brains of older animals have been shown to contain senescent cells that secrete highly inflammatory cytokines, and may contribute to growth of the age-associated brain tumor called glioma.60
- **Heart tissue** from people with cardiovascular disease contains more senescent, rapidly aging cells than tissue from healthier, or younger, people. Interestingly, studies also show that, at least in heart tissue, some people may be born with a tendency for their cells to age more rapidly. In theory, this could explain why some people appear to be at higher risk for cardiovascular disease and death than others, despite having similar backgrounds in other ways.5
- Smoking and air pollution promote chronic obstructive pulmonary disease (COPD). Senescent cells secreting highly inflammatory substances have recently been discovered in the lungs of smokers with chronic obstructive pulmonary disease, and are thought to promote the condition.16
- Finally, senescent cells accumulating in liver tissue hasten loss of liver function.61 In addition, because these cells progress to form scar tissue, they may be involved in the advance of life-threatening liver cirrhosis from milder, earlier conditions such as non-alcoholic fatty liver disease (NAFLD).6

Clearly, senescent cells contribute to aging and disease in organs and tissues throughout the entire body. Fortunately, scientists have discovered a nutrient that selectively eliminates many such senescent cells. By doing so, it may be possible to support or even regain youthful function in every organ and tissue in the body.
Suppressing Herpes in the Brain

Infection with herpes simplex virus 1 (HSV-1) is widespread and typically manifests outwardly as cold sore outbreaks on the mouth and/or lips.\(^7\)

What many people don’t know is that in approximately 70% of the population over 50 years old, the virus enters the brain and infects neurons.\(^2\) It is not known how many recurrent HSV-1 reactivation episodes occur in neurons before infection (Herpes Simplex Encephalitis) develops.\(^7\)\(^9\)\(^\)\(^8\)

A fascinating study published in 2015 reveals how quercetin or resveratrol may reduce viral propagation and/or counteract the effects of neuronal herpes infection.\(^7\)\(^9\)

The scientists analyzed viral replication, neuronal viability, and neurodegenerative events during HSV-1 infection. In this study, pretreatment of neurons with resveratrol or quercetin significantly reduced markers of damage associated with HSV-1 infection.

The scientists concluded that their results could be potentially useful in reducing the risk of HSV-1 infection in neurons and the cellular damage associated with reactivation episodes.

The age-accelerating effects from chronic infections with herpes viruses such cytomegalovirus (CMV), herpes simplex I and II, herpes zoster and Epstein-Barr are increasingly being recognized, especially as it relates to disease.\(^8\)\(^1\)\(^2\)

Chronic viral infection creates a sustained inflammatory response that is thought to contribute to increased cognitive impairment seen in preclinical and clinical Alzheimer’s disease.\(^8\)\(^3\)\(^-\)\(^8\)\(^4\) It is not yet possible to completely eradicate these chronic viruses, but this new study indicates that resveratrol or quercetin may at least mitigate their pathological impact.

Quercetin Dosing Suggestions

Quercetin is a low-cost dietary supplement that has health-promoting properties in the heart, brain, and other systems. Doses of 150 mg per day have demonstrated significant benefits in human studies and might be a good maintenance dose. Furthermore, higher dose amounts of 500 to 1,000 mg per day are generally recognized as safe based upon current data, especially over the short term, and thus higher dosing in this range may be considered based upon individual health needs. At the current time, little safety evidence exists to confidently support chronic daily dosing higher than 1,000 mg.

A prudent course to follow might be to take 500-800 mg per day of quercetin for three months to purge accumulated senile cells and then stay with a maintenance dose of 150 mg each day thereafter.

Note: For those individuals taking warfarin, please check with your physician if concomitantly taking high doses of quercetin.

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

References

Purging Senescent Cells: Science’s New Anti-Aging Strategy

Scientists have now confirmed that an innovative life extension strategy of safely purging worn-out—or senescent—cells can increase longevity.

As we age, our bodies’ cells divide a finite number of times and eventually enter the state of senescence. These dysfunctional senescent cells cannot be turned back into functional, dividing cells, nor do they die, and appear to have some built-in survival mechanism. But the longer they hang around in the body the more they become deformed and chemically altered, pumping out destructive proteins that create inflammation. “We’ve seen them in every organ we’ve looked at,” says Judith Campisi, PhD, at the Buck Institute for Research on Aging.

Virtually all age-related diseases involve inflammation, and over time, the result of senescence-driven inflammation is a litany of disabling and deadly diseases.

Evidence now shows that it is possible to eliminate these nonfunctioning cells from the body, which can prevent or even reverse age-related diseases. In fact, Darren Baker, PhD, at the Mayo Clinic and colleagues have accomplished this in mice.

The Mayo team genetically engineered mice so that senescing cells would carry a tag marking them as targets for a drug capable of destroying them. By selectively removing the senescent cells, even at an advanced age, the drug delayed aging, inhibited muscle wasting, produced more youthful skin, and stalled onset of age-related diseases.

Dr. Campisi and her team have managed to stop senescent cells from producing pro-inflammatory toxins by using an existing drug known as rapamycin, which boosts life span in mice by 10%. But it weakens the immune system and raises the risk of diabetes. Campisi and other research groups are now seeking safer alternatives.

This raises another challenge. Any treatment targeting the inflammatory chemicals pumped out by senescent cells would need to be taken regularly, something difficult to justify in otherwise healthy people, no matter how safe the drug. A better option may be to clear out senescent cells altogether—but only periodically.

“Senescent cells accumulate slowly over time,” says Campisi. “You could take a drug to wipe them out every five years, for example.” Treatments could begin around age 50, which is when accumulated senescent cells start causing problems.

Earlier this year, a study on cells published in Aging Cell illustrated the effectiveness of two drugs, as well as quercetin, in removing senescent cells from different types of human cells. In this study, led by James Kirkland of the Mayo Clinic, senescent cells were essentially forced to commit suicide.

Scientists working specifically on the problem of senescent cells now believe that this approach may reverse multiple conditions of aging with just one senescent cell-purging agent, efficiently striking down every age-related disease with a single blow. “That’s the dream,” says Campisi. “It would revolutionize the way medicine is practiced.”

Animal studies show increased longevity with senescent cell removal. However, Campisi agrees that few scientists believe aging is caused entirely by senescent cells. But removing dangerous and inflammation-powering senescent cells from the body could translate into a state of slowed aging with none of the usual diseases linked to aging itself, diseases such as diabetes, cancer, mild cognitive impairment, Parkinson’s disease, heart problems, and osteoarthritis.


42. Zhu Y, Armstrong JL, Tchkonia T, Kirkland JL. Quercetin mediated lifespan extension in Caenorhabditis elegans is modulated by age-1, daf-2, sek-1 and unc-43.


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Life Extension®’s Two-Per-Day formulas are the highest-potency multivitamins on the market. In fact, they have the highest potencies of any science-based multivitamin formula that can fit inside two easy-to-take tablets or capsules.

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- 50 times more vitamin B1
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- 25 times more vitamin B6
- 10 times more biotin
- 10 times more selenium
- 8 times more vitamin C
- 2 times more vitamin D
- 2 times as much vitamin E
- 2.5 times as much vitamin B3
- 3 times as much zinc

Life Extension®’s Two-Per-Day contains 5-methyltetrahydrofolate (5-MTHF), the active form of folate that is up to 7 times more bioavailable than folic acid. This greater bioavailability is especially important in people with a genetic enzyme deficiency since it requires no conversion to become metabolically active.

### Compare CENTRUM® to TWO-PER-DAY:

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<td>Vitamin D3</td>
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<td>Vitamin B1</td>
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<td>Vitamin B2</td>
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<td>Vitamin B6</td>
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<tr>
<td>Vitamin B12</td>
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<td>300 mcg (methylcobalamin)</td>
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<td>Niacin</td>
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<td>Pantothenic acid</td>
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<td>Vitamin E</td>
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<td>100 IU (natural)</td>
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<td>Folate</td>
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<td>Zinc</td>
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<td>Magnesium</td>
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<td>Boron</td>
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<td>Inositol</td>
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<td>25 mg</td>
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<td>Natural Mixed Tocopherols (providing gamma, delta, alpha, and beta tocopherols)*</td>
<td>(none)</td>
<td>20 mcg</td>
</tr>
<tr>
<td>NIAGEN® Nicotinamide Riboside**</td>
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<td>1 mg</td>
</tr>
</tbody>
</table>

*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.

To order Two-Per-Day Tablets or Two-Per-Day Capsules, 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.
Hundreds of published studies validate the neurological properties of the individual ingredients contained in Cognitex®.

Scientists wondered what would happen if these cognitive-enhancing nutrients were combined into one formula. An open label study was performed to assess the effects of Cognitex® on the brain health of elderly human subjects.

Here is a summary from a study that was published in the Journal of Dietary Supplements in June 2011:

**Study design:** 26 elderly participants with memory complaints completed the study. Participants were given three capsules daily of Cognitex® for 12 weeks with assessments at two weeks and 12 weeks.

**Memory** at two weeks:
- Recall: +11.15 points vs. baseline—a **15%** improvement
- Recognition: +8.68 points vs. baseline—a **11%** improvement
- Spatial short-term memory: +19.85 points vs. baseline—a **42%** improvement

**Attention** (sustained and focused) at two weeks:
- Sustained attention: +9.46 points vs. baseline—a **12%** improvement
- Focused attention: +3.77 points vs. baseline—a **4%** improvement

**Visuospatial learning** at two weeks:
- +17.31 points vs. baseline—a **33%** improvement

**Activities of daily living** (executive functions and mental flexibility) scores at two weeks:
- Executive functions: +9.45 points vs. baseline—a **14%** improvement
- Mental flexibility: +9.92 points vs. baseline—a **15%** improvement

After **10 additional weeks** of Cognitex® supplementation, further statistically significant improvements in **activities of daily living** (executive functions and mental flexibility) were observed:
- Executive function: +9.15 points vs. two-week scores—a **12%** improvement
- Mental flexibility: +9.73 points vs. two-week scores—a **13%** improvement

Cognitex® is designed to improve cerebral performance and protect against neurological problems over the long term. This study evaluated the effects of Cognitex® on boosting brain function over a short-term period.

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Perluxan® is used with permission.
Sensoril® is protected under US Patents Nos. 6,153,198 and 6,713,092 and is a registered trademark of Natreon, Inc.
Sharp-PS® is a registered trademark of Enzymotec Ltd.

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**The suggested daily dose of three Cognitex® with Pregnenolone & Brain Shield® softgels provides:**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Dosage</th>
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<tbody>
<tr>
<td>Alpha-Glyceryl Phosphoryl Choline (A-GPC)</td>
<td>600 mg</td>
</tr>
<tr>
<td>Phosphatidylserine (from Sharp-PS® Green)</td>
<td>100 mg</td>
</tr>
<tr>
<td>Brain Shield® (Gastrodin)</td>
<td>50 mg</td>
</tr>
<tr>
<td>Vinpocetine</td>
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<tr>
<td>Leucoselect® Grape Extract (seed)</td>
<td>150 mg</td>
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<tr>
<td>Sensoril® Ashwagandha Extract</td>
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<tr>
<td>BlueActiv™ Wild Blueberry Extract</td>
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<tr>
<td>Uridine-5'-Monophosphate (disodium)</td>
<td>50 mg</td>
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<tr>
<td>Proprietary NeuroProtection Complex Blend</td>
<td>125 mg</td>
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<tr>
<td>Pregnenolone</td>
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**Cognitex® with Pregnenolone & Brain Shield® (Gastrodin)**

Item #01897 • 90 softgels

<table>
<thead>
<tr>
<th></th>
<th>Retail Price</th>
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<tr>
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<tr>
<td>4 bottles</td>
<td>$35.78 each</td>
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To order Cognitex® with Pregnenolone & Brain Shield®, call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
In aging individuals, the accumulation of nonfunctional cells parallels a decline in natural immune function, which is linked to problematic outcomes in normal aging.¹ Scientists have found that the flavonol quercetin supports the body’s normal ability to perform “cellular housekeeping” to selectively break down these nonfunctional cells—promoting their removal.²

Optimized Resveratrol with Nicotinamide Riboside now includes 150 mg of quercetin, which is 2.5 times the previous amount.

Quercetin supports cell-regulating systems that produce beneficial apoptosis (cell death) in aged, dysfunctional cells.² It also supports immune response by inhibiting inflammation-causing substances.³

Optimized Resveratrol with Nicotinamide Riboside is a complex of key cellular support ingredients formulated to promote the body’s prolongevity mechanisms:

- **Resveratrol** favorably alters genes that help slow the aging process and triggers some of the same beneficial youthful gene expression activated by calorie restriction.⁵
- **Quercetin** enhances the longevity-supporting enzyme SIRT1, which is also activated by both resveratrol⁴ and nicotinamide riboside.⁶
- **NIAGEN® nicotinamide riboside** supports mitochondrial health and promotes longevity pathways.⁵
- **Pterostilbene** and **fisetin**, specific compounds found in berries, work together with resveratrol to “turn on” the body’s own longevity genes.⁷,⁸

Optimized Resveratrol with Nicotinamide Riboside

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<th>Item #02031</th>
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<td>4 bottles $24.30 each</td>
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Optimized Quercetin

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<th>Item #01309</th>
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<td>4 bottle $13.50 each</td>
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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 0.5 mg

For Those Who Want Higher Dose Quercetin

The new Optimized Resveratrol with Nicotinamide Riboside (described above) provides an ideal daily maintenance dose (150 mg) of quercetin. (Item #02031)

For those seeking to sweep away excess accumulated senescent cells, additional potencies of quercetin may be considered for a two- to four-month period. Optimized Quercetin provides 250 mg of a quercetin food blend from apples, onion, and buckwheat. One to two capsules of Optimized Quercetin a day may be taken in addition to the Optimized Resveratrol formula over a two- to four-month period.

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

References

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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.
We are pleased to announce our 27th annual SUPER SALE. During this special event, customers can buy our most advanced formulas at extra discounted prices. When consumers purchase products from Life Extension®, they can rest assured that the quality of the product is backed by our commitment to achieving indefinitely extended life spans.

During Super Sale, premium-quality nutrients are available at prices below those charged by commercial companies. This enables health enthusiasts to obtain nutrients they can trust at discounted prices. While Life Extension® loyalists always receive a 25% discount off the retail price, far greater savings occur when multiple bottles are purchased during Super Sale.

This year, Life Extension introduced the Your Healthy Rewards program, which provides even more money-saving benefits. This new program allows customers to earn reward dollars on every purchase they make that can then be applied to future purchases. Customers also have the choice of joining the Premier Healthy Rewards program for just $49.95 a year, which doubles reward dollars, provides free shipping, and includes a $50 reward bonus to use on any product or blood test. (Current members automatically obtain double reward dollars.)

Not only do Life Extension customers save substantial dollars, they also gain access to the most technologically advanced nutrient formulations in the world. This special edition of Life Extension® magazine introduces exciting new products as well as enhancements to existing formulations.

For example, in aging adults, a declining level of dopamine results in cognitive decline and a diminished sense of well-being. A standardized wild green oat extract promotes healthy dopamine levels that can result in increased cognitive function and improved quality of life.

The production of digestive enzymes, essential to the body’s absorption of vital nutrients, decreases with age. Five enzymes—amylose, protease, lipase, cellulase, and lactase—have been formulated to optimize digestion and nutrient absorption. The addition of a probiotic creates a protective shield and suppresses less beneficial bacteria to further improve digestive comfort.

For those looking to boost brain function, the upgraded Mitochondrial Energy Optimizer with BioPQQ® now contains taurine, a free amino acid that increases new brain cell formation in the area of the brain connected to learning and memory. Last year’s retail price was $94. The new, lower retail price for this improved product is $72—and only $48.60 during Super Sale. (When four bottles of Mitochondrial Energy Optimizer are purchased during Super Sale, the price is reduced to $43.20 per bottle.) (Item #01868)

Optimized Resveratrol with Nicotinamide Riboside is an advanced formulation of nutrient concentrates that have been shown to “turn on” beneficial longevity genes. It now includes 2.5 times as much quercetin to support beneficial removal of aged, dysfunctional cells.

Even More Super Savings on the NEW Life Extension Mix™

The high-potency multi-nutrient Life Extension Mix™ is vastly superior to commercial multivitamins because it provides a remarkably broad array of fruit and vegetable extracts. Packed into this blend are extracts of fruits ranging from grape and maqui to pomegranate and tart cherry. Its vegetable extracts range from olive to broccoli and artichoke.

Life Extension Mix™ provides an exhaustive list of water- and fat-soluble vitamins, minerals, amino acids, and more. Since its introduction over three decades ago, the Life Extension Mix™ formula has been upgraded dozens of times to reflect new research found in the scientific literature. The upgraded Life Extension Mix™ formula now contains 5-methyltetrahydrofolate (5-MTHF), the biologically active form of folate that is up to 7 times more bioavailable than folic acid.

Life Extension Mix™ has always been a bargain because the cost of taking all these individual nutrients separately would be astronomical. We are pleased to announce that the price of Life Extension Mix™ has been reduced by up to 21%, and customers can obtain the full dose for as little as $1.12 a day if they buy during Super Sale! On a cost-per-milligram basis, Life Extension Mix™ provides far more potency for far less money than commercial formulas.

Here’s how customers can obtain Life Extension Mix™ at substantial savings:

The retail price of a five-week supply of the new Life Extension Mix™ (315 tablets) is $80. The price for one bottle during Super Sale is $54. (Item #02055) If a customer buys four bottles, the price is reduced to $46.80 per bottle. When a customer buys 10 bottles during Super Sale, the price goes down to just $39.38 per bottle. Since each bottle lasts for five weeks, that means that 10 bottles will last for almost a full year!

This year’s Super Sale begins November 16, 2015.
Numerous scientific studies document that people who eat the most fruits and vegetables have much lower incidences of health problems. Few people, however, consistently eat enough plant food to protect against common age-related decline, and commercial multivitamins do not provide all of the vital plant components needed to maintain good health. Life Extension Mix™ is vastly superior to other multivitamins on the market today—partly because it provides a remarkably broad array of fruit and vegetable extracts. Packed into this blend are extracts of fruits ranging from grape and maqui to bilberry and tart cherry. Its standardized vegetable extracts range from olive to broccoli and tomato.

Rounding out the superiority of Life Extension Mix™ is its exhaustive list of water- and fat-soluble vitamins, minerals, amino acids, and more. This formula contains 5-methyltetrahydrofolate (5-MTHF), the biologically active form of folate. 5-MTHF is up to 7 times more bioavailable than folic acid. This greater bioavailability is especially important in people who have a genetic enzyme deficiency since it requires no conversion to become metabolically active.

Life Extension Mix™ is the most comprehensive, high-potency daily multivitamin anywhere.

When the original Life Extension Mix™ was introduced in 1983, people lined up to purchase it because it provided the most efficient way to affordably obtain a broad-array of beneficial nutrients. Since its introduction 32 years ago, the Life Extension Mix™ formula has been upgraded dozens of times to reflect new findings in the scientific literature.

Life Extension Mix™ has always been a bargain because the cost of taking the individual nutrients separately would be much higher than its retail price. We are pleased to announce that the price of Life Extension Mix™ has been reduced by up to 21%.

Life Extension Mix™ is the most comprehensive, high-potency daily multivitamin anywhere. During Super Sale, the full daily dose can be obtained for as little as $1.12 a day!

Each Bottle Provides a 5-Week Supply!

(Turn this page to review the entire Life Extension Mix™ formula.)
Unlike folic acid, 5-MTHF—which is more bioavailable—is able to cross the blood-brain barrier. This is especially important for people with cognitive difficulties to enhance the synthesis of acetylcholine in the brain, the neurotransmitter associated with memory. It also better facilitates maintenance of healthy homocysteine levels.

Scientists have identified multiple mechanisms by which green tea extract helps protect against LDL oxidation, neuronal degradation, and a host of other structural and functional age-related changes. LIFE EXTENSION MIX™ provides more green tea extract than found in commercial formulations.

Broccoli is one of the vegetables best documented to protect healthy DNA. The broccoli concentrate in LIFE EXTENSION MIX™ is standardized to provide sulforaphane and other glucosinolates, compounds responsible for broccoli’s protective benefits.

Olive polyphenols help protect against LDL oxidation, quench free radicals, and stabilize cell membranes. LIFE EXTENSION MIX™ contains an olive extract standardized to provide the best-documented polyphenol called hydroxytyrosol.

Lutein is a flavonoid found in parsley, artichoke, basil, celery, and other foods. It has shown the ability to help protect against DNA oxidative damage. When measured against 27 other citrus flavonoids, lutein proved one of the most beneficial at maintaining healthy DNA. Lutein also suppresses excess levels of interleukin-6 and interleukin-1b. LIFE EXTENSION MIX™ contains a standardized dose of 8 mg of lutein.

Lycopene is the red carotenoid in tomatoes that supports a healthy prostate and helps promote healthy lipid profiles for those already within a normal range.

Lutein is found in spinach and collard greens and has been shown to help maintain eye macula pigment structure.

Pomegranate may be the most effective plant to help maintain optimal endothelial function. This pomegranate extract is standardized to provide the punicalagins and other polyphenols found in up to 2.6 ounces of pomegranate juice.

Sesame lignans increase tissue levels of vitamin E, including gamma tocopherol, and inhibit the formation of an inflammatory precursor called arachidonic acid.

Wild blueberry extract, standardized to help maintain optimal neuronal function.

Bilberry extracts have antioxidative properties that not only are neuroprotective, but they also help suppress photooxidative processes and have been shown to improve microcapillary circulation.

Cyanidin-3-Glucoside is a berry compound that promotes healthy function of the retina to help support night vision.

Pterostilbene is a compound naturally found in blueberries and grapes that has been shown to have beneficial, anti-aging effects on gene expression and to promote healthy cognitive function.

D-glucarate is found in grapefruit, apples, oranges, broccoli, and Brussels sprouts. D-glucarate supports a detoxification process that helps to remove DNA toxins.

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.
**THE MOST COMPLETE MULTIVITAMIN AVAILABLE TODAY**

*Life Extension Mix™* provides a remarkably broad array of fruit and vegetable extracts. Packed into this blend are extracts of fruits ranging from grape and maqui to bilberry and tart cherry. Its standardized vegetable extracts range from olive to broccoli and artichoke. All with known health benefits throughout the body.

Rounding out *Life Extension Mix™* is its extensive list of water and fat soluble vitamins, minerals, amino acids. *Life Extension Mix* provides enzymatically-active forms of B-vitamins like pyridoxal-5-phosphate that provide immediate anti-glycation benefits.

**Fat-Soluble Vitamins**
- Vitamin A (as beta-carotene and acetate) 5,000 IU
- Vitamin D3 (cholecalciferol) 2,000 IU
- Vitamin E (natural d-alpha tocopheryl succinate and D-alpha tocopherol) 100 IU
- Natural mixed tocopherols (providing gamma, delta, alpha, and beta tocopherols) 60 mg

**Amino Acid Complex**
- N-acetyl-L-cysteine 600 mg
- Taurine 200 mg

**Mineral Complex**
- Selenium (from Se-methyl L-selenocysteine) 100 mcg
- Selenium (from L-selenomethionine—SelenoPure™) 50 mcg
- Selenium (from sodium selenite) 50 mcg
- Zinc (as zinc citrate, OptiZinc® as zinc monomethionine) 35 mg
- Boron (Albion® bororganic glycine) 3 mg
- Copper (as copper bisglycinate chelate TRAKS™) 1 mg
- Chromium as Crominex® 3+ chromium stabilized with Capros® and PrimaVie® Shilajit) 500 mcg
- Potassium (as potassium chloride) 35 mg
- Molybdenum (as molybdenum glycinate chelate) 125 mcg
- Manganese (as manganese gluconate, citrate) 1 mg
- Iodine (potassium iodide) 150 mcg
- Magnesium (as magnesium oxide, arginate, citrate, taurinate, glycinate, ascorbate) 400 mg

**Cholinergic Complex**
- Choline (from bitartrate) 120 mg
- Phosphatidylcholine (from soy) 150 mg
- Inositol 250 mg

**Fatty Acid Nutrition**
- Medium-chain triglycerides 80 mg

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1) Delphinol® is a registered trademark of MNL; protected by U.S. patent application US 13/076,117 and WIPO PCT/IB2010/002698. 2) OptiZinc® is a registered trademark of InterHealth Nutritionals, Inc., Patents see: www.ChromaDexPatents.com. 3) MirtoSelect® is a registered trademark of Indena, S.p.A., Milan, Italy. 4) Crominex® is a registered trademark of Health Systems, Inc. 5) Leucovorin® is a registered trademark of Inresa S.p.A. 6) Builite® is a registered trademark of Cyrex Nutrition. 7) L-Methyl-Folate® is a registered trademark of Natrex, Inc. 8) Pteroln® is a registered trademark of Verdure Sciences, Inc. 9) MitoPure® and NACGEN® are registered trademarks of ChromaDex, Inc., Patients see: www.ChromaDexPatents.com. 10) MitoPure® is a registered trademark of Indena, S.p.A., Milan, Italy. 11) TRAKS™ and Albion® are registered trademarks of Albion Laboratories, Inc.

**Vitamin D3** helps maintain healthy bone density and DNA. There is five times more vitamin D in LIFE EXTENSION MIX™ compared to conventional multivitamins.

The **LIFE EXTENSION MIX™** utilizes natural mixed tocopherols that provide natural vitamin E from alpha tocopherol and a small amount of gamma tocopherol (40 mg). Compared to synthetic vitamin E, the natural form is far more bioavailable to the body.

**N-acetyl-L-cysteine** suppresses free radicals inside the cell and maintains healthy glutathione levels. **Taurine** may protect against free radicals between cells and supports eye health.

**Zinc** is often poorly absorbed, but **LIFE EXTENSION MIX™** provides two of the most bioavailable forms of zinc.

**Boron** is not only needed to maintain healthy bone density but may also help promote healthy prostate cell function.

**LIFE EXTENSION MIX™** provides a high amount of an optimal form of chromium to help maintain arterial wall structure and already normal glucose levels.

**Magnesium** helps protect arteries and heart valves, and supports heart and brain cells. **LIFE EXTENSION MIX™** provides high potencies of six different forms of magnesium to fully saturate the body with this life-saving mineral.

Maintaining high levels of acetylcholine in the brain helps support cognitive function and memory.

A healthy type of dietary fat, medium-chain triglycerides are easily absorbed intact and transported directly to the liver, where they are immediately used for energy.

To order, call toll-free 1-800-544-4440 or visit www.LifeExtension.com

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*NEW LOWER PRICES!*
Do you regularly experience any of the following symptoms?

- Unexplained fatigue
- Depression or anxiety
- Dry skin
- Feeling cold
- Brain fog
- Unexplained weight gain
- Low libido

These vague but troubling symptoms are often difficult to diagnose and are usually dismissed by physicians as “just getting older.” While this collection of symptoms affects women more than men, plenty of men experience this same feeling of being “run down” and “not themselves.”

These symptoms may be the warning signs of suboptimal thyroid function, a condition sometimes referred to as subclinical hypothyroidism.¹ ²

Your doctor may have checked your thyroid using standard blood tests and declared you in the “normal” range. As you’ll learn in this article, too many people with suboptimal thyroid function are overlooked, and live with uncomfortable symptoms along with increased risks of common disorders.
DO YOU SUFFER FROM SUBOPTIMAL THYROID FUNCTION?

Magnitude of Thyroid Deficit

More than 27 million Americans suffer from some form of thyroid condition, and nearly half of these, or about 13 million, remain undiagnosed.3

As a result, they agonize in silence with no apparent treatment for their underlying disorder. With age, the risk of having low thyroid function increases, especially in the elderly.3,4

Mainstream medicine has largely been at a loss to recognize suboptimal thyroid function. Fortunately, several bioactive nutrients have been identified that address the main causes of suboptimal thyroid function.

Why Is the Thyroid Important?

The thyroid gland is part of the endocrine system that secretes hormones to regulate bodily functions such as burning fat for energy and maintaining proper blood lipid levels.

Daily stress, age, and poor diet can interfere with normal endocrine functioning. The thyroid hormones T3 and T4 play a major role in metabolism and energy regulation. Like all aspects of biology, balance of T3 and T4 hormones is essential.

When the thyroid is sluggish, production of thyroid hormones slows down, resulting in diminished metabolic activity. Classic symptoms of suboptimal thyroid function include unexplained fatigue, depression, weight gain, and feeling cold at room temperature.

Suboptimal thyroid function is often overlooked by mainstream physicians. This is because the “normal” range for levels of thyroid stimulating hormone (TSH) is very broad. As a result, it is easy to overlook a thyroid gland problem. If someone falls into this “normal” range, doctors are hesitant to consider a thyroid deficit despite the outward symptoms.

When doctors test thyroid stimulating hormone levels, a score above or towards the high end of “normal” indicates a deficit of thyroid hormone levels.

The reason that a high TSH blood level indicates low thyroid status is that when your pituitary gland senses a thyroid hormone deficiency, it secretes lots of TSH (thyroid stimulating hormone) in attempt to restore normal thyroid hormone balance. Your thyroid gland, however, may not be responding to the TSH.

Thus, someone whose TSH levels are at the higher end of the normal range and with T4 and T3 levels in the low-normal range would be told by most doctors they do not have a thyroid problem, when in fact they may be suffering suboptimal thyroid dysfunction.

The Dangers of Suboptimal Thyroid Function

Most of the signs and symptoms of suboptimal thyroid function are so common and often so vague that mainstream physicians are likely to write them off as simply “normal aging,” or mild anxiety and depression.5

That’s a potentially deadly mistake. Studies show that suboptimal thyroid function can be an early stage of progression towards full-blown hypothyroidism.1 Research indicates measurements of TSH above 2.0 μIU/mL increase the probability of developing hypothyroidism.6 And both hypothyroidism and suboptimal thyroid function are linked to many preventable age-related health problems.

Please understand that normal TSH blood levels are considered to be around 0.45-4.5 μIU/mL, which is a very wide (10-fold) range. Studies show that people with elevated TSH levels (higher than 4.0 μIU/mL) are at a higher risk of coronary heart disease than age-matched controls.7 Such patients also display other risk factors that include higher levels of triglycerides, “bad” LDL and VLDL cholesterol, and lower levels and protective function of HDL (“good”) cholesterol.1,8-10

Those with suboptimal thyroid function would likely go unnoticed by conventional physicians unless their TSH reading was over 4.5. Life Extension® recommends optimal TSH levels should be between 1.0-2.0 μIU/mL. There is substantial evidence of a connection between suboptimal thyroid function and metabolic syndrome, insulin resistance, and chronic kidney disease.11
DO YOU SUFFER FROM SUBOPTIMAL THYROID FUNCTION?

The connection between thyroid function and these conditions is logical: The thyroid gland governs metabolic rate and these conditions reflect reduced metabolism. This leads directly to obesity, as shown by studies linking increased body mass index (BMI) and waist circumference with elevated thyroid stimulating hormone (TSH).12

Once body fat begins to increase, metabolic syndrome is not far behind. In fact, four of the five metabolic syndrome components (increased waist circumference, elevated triglycerides, low HDL, and elevated glucose) have been associated with low-normal thyroid function, especially free T4 levels.13 Insulin resistance is a reflection of decreased transport of blood sugar into cells under the influence of insulin. Studies show that suboptimal thyroid function reduces cell membrane levels of the specific molecular glucose transporter that cells use to move that glucose inside.14

Chronic kidney disease arises when flow of blood through the kidneys becomes reduced enough to lower the amount of waste being filtered out and it is known to be associated with thyroid function.15,16 In a large population-based study of people in Norway with “normal” TSH levels, the higher the TSH (indicating lower thyroid function), the lower the kidney’s normal filtration rate.16 Those with TSH levels in the highest one-third of values were at a 31% higher risk for advanced chronic kidney disease, compared with those in the lowest one-third.16

What You Need to Know

Battle Suboptimal Thyroid Function

- Aging adults often suffer from a variety of vague complaints, such as fatigue, inexplicable weight gain, feeling cold, depression, and dry skin.
- A common explanation for such complaints is suboptimal thyroid function.
- Suboptimal thyroid function has three major causes: insufficient production of the important thyroid hormones T3 and T4, inadequate conversion of T4 into T3, and overproduction of reverse T3 (rT3), which blocks thyroid hormone receptors and degrades the natural effects of T3.
- All of these deficits can be addressed using natural approaches.
- Ashwagandha extract has been shown to enhance production of T3 and T4 in the thyroid.
- Guggul helps augment T4 to T3 conversion, boosting levels of the more active T3 hormone.
- Fermented Korean ginseng helps reduce concentrations of inactive, inhibitory rT3.
- These triple-acting ingredients are further supported by the addition of iodine and tyrosine, both essential parts of the final thyroid hormone molecule.
DO YOU SUFFER FROM SUBOPTIMAL THYROID FUNCTION?

Major depression and bipolar disorder are other debilitating conditions that may be worsened by the presence of suboptimal thyroid function.17-19 One recent study found that women with the highest TSH levels (a sign that the thyroid is not keeping up) had an almost 124% increased risk for major depression compared with those having the lowest levels.18

Making matters worse, studies have shown that people with major depression who also have suboptimal thyroid function are less likely to respond positively to antidepressant medications and are more likely to have anxiety in addition to depression.2,17

In a recent meta-analysis (a large study of data from numerous smaller studies), roughly 50% of patients with difficult-to-treat depression had evidence of suboptimal thyroid function, while among patients who responded well to treatment, the prevalence was only 8% to 17%.2

Women are not only more likely to have suboptimal thyroid function,20 but also take the brunt of some of its other health threats, including amenorrhea (loss of menstrual periods)21 and bone fractures.22

**Thyroid Hormone Drugs**

Those with persistently low levels of T3 and T4 can ask their doctor for a prescription thyroid hormone drug such as Armour® Thyroid, Nature-throid*, or Westhroid™. These prescription medications contain desiccated porcine thyroid gland.

Natural thyroid extracts have been used since 1892 and were approved by the Food and Drug Administration in 1939. They have the advantage of containing both T4 and T3 compared to the commonly used Synthroid® medication which is T4 only. Those with problems converting T4 to more metabolically active T3 are less likely to benefit from a T4-only drug like Synthroid.

A starting dose is often 30 mg Armour® Thyroid (about a half grain), with increments of 15 mg every two to three weeks. However, it is important to dose it according to both lab work and symptoms discussed with your doctor. Thyroid hormone should never be dosed purely on lab numbers.

**Naturally Boost Thyroid Production**

There are three main underlying causes of suboptimal thyroid function:
- Insufficient production of the thyroid hormone T4
- Decreased conversion of T4 to T3 (T3 is the most active form)
- Increased production of inhibitory rT3 (reverse T3) that blocks normal thyroid function

A multifaceted problem requires treatment or prevention with multitargeted therapies.

Scientists have found that a combination of nutrients can address the three main contributors to suboptimal thyroid function with a triple-action approach. Preclinical and clinical research indicates:

1. Ashwagandha increases levels of the thyroid hormones T3 and T4.23-26
2. Guggul, an extract of Commiphora mukul, enhances conversion of T4 to T3.27,28
3. An extract of Korean ginseng reduces concentrations of inactive, thyroid hormone-inhibiting rT3.29

**Ashwagandha Boosts T3 and T4**

Ashwagandha, a shrub grown in India, has a long medicinal history as an “adaptogenic” herb. Adaptogens have been utilized by traditional medicine to restore balance to the body.30

Modern scientific techniques are revealing some of ashwagandha’s benefits that specifically apply to improving thyroid function. Ashwagandha supports thyroid function, in part, because it contains glycowithanolide bioactive compounds that reduce stress and cortisol levels. Along with reducing stress hormones, the root extract of ashwagandha has been shown in preclinical studies to increase serum concentrations of T3 and T4.25,26
In an early animal study, mice were given ashwagandha root extract orally and their thyroid hormone levels were monitored. This treatment increased T3 by 18% and T4 by 111%, after just 20 days.31

Human studies are supporting this finding. In one study, a subset of patients (10 of the 60 subjects) showed evidence of suboptimal thyroid function along with bipolar disorder at the baseline start of the study.32 The patients were treated with 500 mg daily of ashwagandha. At the end of the two-month treatment period, all of the patients receiving ashwagandha saw an improvement of TSH. Their T4 levels also increased from baseline by up to 24%.32

In the placebo subjects not supplemented with ashwagandha, T4 levels dropped from baseline by as much as 23%, showing a significant decline in thyroid function. One unsupplemented patient’s TSH rose into the abnormal range, suggesting a worsening of thyroid function.

This study indicated that ashwagandha therapy can be a factor in improving the thyroid hormone T4 along with adjusting TSH levels.32

Another mechanism by which ashwagandha supports and restores healthy thyroid function may be through its reduction of the stress hormone cortisol.

People with thyroid diseases in general have elevated rates of depression and anxiety and other stress-related disorders. Elevations of cortisol and stress increase reverse T3 (rT3), which interferes with T3’s beneficial activities.33

As an adaptogen, ashwagandha is particularly effective at combatting stress because of its ability to restore balance in metabolism and body functions.34 A human study of people with known chronic stress demonstrated that daily supplementation with 300 mg of ashwagandha (high-concentration, full-spectrum root extract), significantly lowered both scores on a stress assessment scale and serum cortisol levels. As the study's authors concluded, "The findings of this study suggest that a high-concentration full-spectrum ashwagandha root extract safely and effectively improves an individual's resistance towards stress and thereby improves self-assessed quality of life."34

Life Extension® offers a new Thyroid Panel that includes TSH, total T4, free T3, free T4, and reverse T3. These tests can identify the most common reasons for thyroid insufficiency. There are other thyroid tests available, but for most people, the new Thyroid Panel with Reverse T3 will detect the underlying causes of thyroid deficiency.

The retail price of this new Thyroid Panel with Reverse T3 is $160. Until February 1, 2016, the price has been reduced to $94.

Those with outward symptoms of a thyroid deficiency might consider initiating a nutrient-based approach first, then having their blood drawn for this new thyroid panel within 45 days. This would enable the individual and their physician to ascertain if additional thyroid support measures are needed.

While you might wait until January 2016 to have your blood drawn for this Thyroid Panel with Reverse T3 panel, it is good to have the requisition and list of local blood draw stations on hand so you can have this test done at your convenience. To order this test today at more than 40% off normal pricing, call 1-800-208-3444.
DO YOU SUFFER FROM SUBOPTIMAL THYROID FUNCTION?

Korean Ginseng Reduces rT3 Production

Korean ginseng, also an adaptogen like ashwagandha, contains properties known as ginsenosides that have been shown to support thyroid function through a unique pathway.

With age, we accumulate an unhealthy amount of a deleterious hormone known as reverse T3 (rT3).

Reverse T3 is the inactive form of thyroid hormone or the reverse of the healthy T3 hormone. The problem with excess reverse T3 is that it will bind to normally functioning T3 receptors and inhibit active T3, thereby reducing vital metabolic activity.40,41

Traditional Asian practitioners discovered that Korean ginseng is an effective way to stop this action of reverse T3 from destroying the body’s healthy T3 activity.

This finding led to the development of a novel fermented ginseng preparation that provides not only higher amounts of ginsenoside compounds but also enhanced absorption. Studies in humans reveal that, compared with standard ginseng extracts, a specialized form of fermented ginseng extract (called GS15-4) is absorbed 15.5 times as much in 24 hours, achieves a 27-fold higher peak concentration in blood, and reaches that peak in roughly a quarter of the time (3.29 hours versus 12.04 hours).42

A human study of 54 adults with congestive heart failure demonstrated just how much of an impact ginsenosides from ginseng had on thyroid hormone levels.29 At the outset of the study, all of the subjects with heart failure had reduced levels of T3 and T4 along with higher levels of inhibitory rT3. Treatment with the ginseng extract (by injection) resulted in improved clinical outcomes in all patients. What the researchers found was a healthy increase of T3 and T4 levels, and a significant reduction in the inhibitory rT3 levels.29

Another study looking at the application of Korean ginseng was evaluated to assess its effects on a classic symptom of suboptimal thyroid function, cold hands and feet. This symptom is more prevalent amongst women than men and is often a result of an imbalance of the thyroid hormones. Eighty female patients were given 500 mg of Korean ginseng powder in capsule form for eight weeks. Using various forms of measurement, the researchers noted that those women who ingested the Korean ginseng during the study all had “significantly higher skin temperature of the hands and feet.”43

Korean ginseng has also been found in randomized controlled trials to improve a lack of sexual arousal in women and reduce fatigue—both of which are common symptoms of low thyroid function.44-46

Guggul Extract Increases T3 Hormone

Guggul (Commiphora mukul) is a natural extract of the sap from the Indian myrrh tree.

Scientists are discovering that guggul helps fight against suboptimal thyroid function by enhancing the conversion of T4 to T3, which is the more potent form of the thyroid hormone.27,28

Traditionally, guggul has been used for treating low metabolism, which is frequently seen in suboptimal thyroid function.35

Guggul contains ketosteroid molecules, which have shown strong thyroid-stimulating properties. One study found that when rats were administered guggul, it increased iodine uptake by the thyroid gland and increased activity of vital thyroid enzymes. This resulted in increased oxygen consumption, demonstrating a true thyroid-enhancing metabolic effect.36

A preclinical study helped explain how guggul enhances thyroid function. In the study published in Life Sciences, researchers found that guggul supplementation increased the blood concentration of the potent T3 thyroid hormone. This was accomplished by improving the conversion of lower-potency T4 to the more active T3 hormone.28

In yet a third study, guggul was found to increase the activity of the specific enzyme (5’-deiodinase) that converts T4 to T3.27,37

Every cell in the body depends upon thyroid hormones for regulation of their metabolism. The normal thyroid gland produces about 80% T4 and about 20% T3. Most T3 is formed in the peripheral tissues by the conversion of T4 to T3 by the 5’-deiodinase enzyme. T3 possesses about four times the hormone “strength” as T4.38,39

COMMIPHORA MUKUL
DO YOU SUFFER FROM SUBOPTIMAL THYROID FUNCTION?

Summary

Suboptimal thyroid function is a major hidden threat, particularly among women and older Americans. It may explain many of the vague and difficult-to-pin-down symptoms that plague us all as we grow older.

Ignoring or waving away symptoms of suboptimal thyroid function is a dangerous approach because the condition is strongly associated with many chronic disorders of aging, especially cardiovascular disease and metabolic syndrome.

It can be difficult to recognize suboptimal thyroid function, particularly when those who have the condition may have laboratory results that fall within the conventional “normal” range. It is not difficult, however, to take steps aimed at resolving it.

If you have symptoms that might be attributable to suboptimal thyroid function, such as fatigue, dry skin, feeling cold, unexplained weight gain, or depression, consider supplementing with fermented Korean ginseng extract, ashwagandha, and guggul, along with vitamins and nutrients that support thyroid function.

Korean ginseng extract, ashwagandha, and guggul target three important mechanisms that contribute to suboptimal thyroid function: They raise circulating levels of the thyroid hormones T4 and T3, boost activity of the enzyme responsible for converting T4 to active T3, and reduce thyroid-hormone-blocking reverse T3 (rT3).

If you suffer from any of the many complaints that can arise from suboptimal thyroid function, you may find surprising relief from using nutrients that boost thyroid function by directly reversing the three major processes that degrade thyroid function and leave you vulnerable.

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-30

References


Additional Thyroid Support

Along with the traditional herbs of ashwagandha, guggul, and Korean ginseng, four compounds have been found to further strengthen thyroid function, including the two building blocks of T4 and T3.

These four thyroid-supporting nutrients are:

- **Iodine**, an absolute requirement for normal thyroid hormone function (each molecule of T3 has three iodine atoms attached, while each T4 has four)

- **Tyrosine**, the amino acid from which T3 and T4 are derived by the enzymatic addition of iodine atoms

- **Vitamin B12**, which is often deficient in patients with thyroid disease

- **Vitamin A**, which has been shown to improve serum TSH levels, in part by raising serum T3 levels, helping to reverse the state of suboptimal thyroid function. Low thyroid function can impair the conversion of beta carotene into vitamin A.

If you have any questions on the scientific content of this article, please call a Life Extension® Health Advisor at 1-866-864-30


A culprit is an imbalance that involves a deficit of naïve T cells and a surplus of memory T cells. This produces a less vigilant immune response—or immune senescence, which has been linked to problematic outcomes in normal aging.

Life Extension researchers have developed an innovative formula that provides three potent ingredients designed to work in a complementary fashion to help rebalance the major arms of the aging immune system.

**Pu-Erh Tea**

*Immune Senescence Protection Formula* now includes Pu-Erh Tea extract—providing additional and unique protection.

The cultivation of Pu-Erh tea began over 2,000 years ago and was historically consumed by emperors to provide them with longevity. Pu-Erh tea is rich in polyphenols and other bioactive molecules, including a unique group of compounds developed during the post-fermentation process.

Modern science has shown that Pu-Erh Tea extract may support healthy bone marrow function, which helps to rebuild the peripheral immune cellular components. An animal study demonstrated that Pu-Erh Tea extract supports immune balance by decreasing interleukin-6 (IL-6) by a remarkable 43%, as well as increasing natural killer (NK) cells by 7% and naïve T cells by 10%.

**Cistanche**

Cistanche plant extract promotes development of naïve T cells and supports a reduced number of memory T cells, helping to balance the immune response. It also supports NK cell activity—resulting in a 15% life span increase in animal research. In a human study, a supplement containing standardized Cistanche produced improved immune factors, including an 11.7% increase in NK cell activity and a 20.2% improvement in the ratio of CD4 to CD8 cells—which is indicative of healthy, youthful immune function.

**Reishi Mushroom**

Numerous Reishi mushroom components help reverse many factors of immune senescence. Reishi extract boosts the function of innate immune cells, the immune system’s first line of defense. The unique polysaccharides, triterpenes, and other constituents enhance the body’s hematopoietic stem cells, macrophages, and other crucial immune factors—broadly supporting immune function and longevity.

Just two vegetarian tablets of the new *Immune Senescence Protection Formula* provide comprehensive daily immune support.

### Immune Senescence Protection Formula™

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### References


These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
It's not easy to get all the vital nutrients you need to take care of your eyes from food alone. Fortunately, MacuGuard® Ocular Support with Astaxanthin contains the nutritional building blocks necessary to maintain the structural integrity of your eyes.

MacuGuard® Ocular Support with Astaxanthin maintains eye health in many ways:1-7

- Supports lutein concentration in the eye
- Supports efficient absorption of lutein in the bloodstream
- Provides phospholipids to enhance lutein in the cell membrane
- Maintains zeaxanthin concentrations in the eye
- Provides meso-zeaxanthin, which is difficult to obtain from dietary sources
- Contains cyanidin-3-glucoside, shown to help with night vision.
- Provides astaxanthin to protect against free radical-induced DNA damage, which may play a protective role against eye fatigue.

Contains soybeans.

LuteinPlus® and Mz® are registered trademarks of Nutriproducts Ltd., UK, licensed under U.S. Patent 8,623,428.

References

To order MacuGuard® Ocular Support with Astaxanthin, call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
A healthy thyroid gland not only acts as the body’s thermostat, but it’s also one of the major regulators of metabolism, including fat burning for energy.

Life Extension® introduces Triple Action Thyroid, a formulation that combines critical nutrients that have been scientifically demonstrated to support healthy thyroid function.

Optimal thyroid function can help improve energy levels, motivation, metabolism, healthy weight management, and concentration.

**Comprehensive Thyroid Support**

The new Triple Action Thyroid formula provides:

- **Ashwagandha**, an “adaptogenic” herb, shown to support natural production of the thyroid hormone T4. In one study, researchers found that 500 mg per day of standardized ashwagandha extract enhanced T4 levels.

- **Guggul**, an extract of Commiphora mukul, shown in one study to support the activity of the enzyme that converts T4 into the most active thyroid hormone, T3.

- **Korean ginseng**, found in one study to reduce levels of the inactive, thyroid hormone-inhibiting reverse T3 (rT3) and support healthy T3 and T4 levels.

The following additional nutrients are included in Triple Action Thyroid to further enhance benefits:

- **Iodine** and **tyrosine**, which are required for thyroid hormone production.

- **Vitamin B12**, a sufficient level of which is needed for healthy thyroid activity.

- **Vitamin A**, an important nutrient for supporting healthy serum T3 (active) levels.

The suggested dose of Triple Action Thyroid is one capsule twice daily. If blood testing for thyroid function reveals less than optimal hormone levels, consult your physician for further evaluation.

To order Triple Action Thyroid, call 1-800-544-4440 or visit www.LifeExtension.com

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Due to the source of kelp, this product may contain fish and shellfish.

**References**


GS15-4TM is a trademark of ILHWA N.A. Sensoril® is protected under US Patent Nos. 6,153,198 and 6,713,092 and is a registered trademark of Natreon, Inc.

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**Discount Prices**

**For Premium-Quality Products**

Life Extension® customers are longevity enthusiasts who take extraordinary steps to stave off disease and aging while attaining optimal health.

When customers buy products from Life Extension, they are assured of receiving the highest-quality products based on the latest published scientific studies that demonstrate benefits.

The discounts available to consumers enable them to purchase premium-quality supplements at prices below those charged by commercial companies.

These pages provide examples of savings customers can enjoy during the annual SUPER SALE. And remember that each purchase at these discount prices qualifies for valuable Rewards Dollars that reduce your cost of future orders.

**To order call toll-free 1-800-544-4440**

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<td>Absorbable formulation promotes healthy lipids, joint function, and DNA. Each bottle lasts two months.</td>
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<td>AMPK Activator • 90 vegetarian capsules, Item #01907</td>
<td>$48</td>
<td>$29.70 (four-bottle purchase)</td>
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<td>Activating AMPK &quot;turns off&quot; many of the destructive factors of aging, enabling cells to return to their youthful vitality. Research shows that the two plant extracts contained in this formula (Gynostemma pentaphyllum and trans-tiliroside), promote AMPK activation.</td>
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<td>Super Omega-3 EPA/DHA with Sesame Lignans &amp; Olive Extract • 120 softgels, Item #01982</td>
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<td>A highly refined fish oil blend derived from pristine waters off the coast of Alaska is formulated to remain exceptionally fresh. This purified EPA/DHA from Alaskan Pollock, plus sesame lignans and potent olive (fruit plus leaves) extract, provide essential components of the Mediterranean diet clearly differentiating this omega-3 formula from commercial fish oil.</td>
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<td>Two-Per-Day • 120 tablets, Item #02015</td>
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<td>Compared to commercial multivitamin/multi-nutrient products like Centrum®, Two-Per-Day has up to 50 times the potency of specific nutrients, as well as unique ingredients. The newly formulated product now contains 5-MTHF, the biologically active form of folate, which is up to 7 times more bioavailable than folic acid. (Also available in capsule form at a slightly higher price.)</td>
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<td>Health Booster • 60 softgels, Item #01981</td>
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<td>Just one softgel (formerly called Super Booster) contains a variety of valuable nutrients, including vitamins K1 and K2, blueberry extract, gamma tocopherol, sesame lignans, chlorophyllin, lycopene, and a carotenoid phospholipid blend that contains trans-zeaxanthin, meso-zeaxanthin, and lutein. Taken individually these ingredients would cost 2 to 3 times more!</td>
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<td>FlorAssist® Probiotic Liquid • 30 liquid vegetarian capsules, Item #01825</td>
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<td>Dual-encapsulation technology delivers potent doses of the six most important probiotic strains.</td>
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<td>Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ 100 mg, 60 softgels, Item #01426</td>
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<td>The superior ubiquinol form of CoQ10 plus a natural compound (shilajit) shown to double mitochondrial CoQ10 levels.</td>
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<td>The updated product contains compounds that “turn on” the body’s longevity genes. It now includes 150 mg of quercetin—2.5 times the previous amount—to support cell-regulating systems systems that produce beneficial apoptosis in aged, dysfunctional cells plus trans-resveratrol and a NAD+ cell booster.</td>
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<td>High-potency vitamin D in a softgel to provide greater absorption into the bloodstream.</td>
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<td>Ultra Natural Prostate • 60 softgels, Item #01898</td>
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<td>Comprehensive support for an aging prostate gland utilizing standardized lignans, plus boron and phospholipids for enhanced absorption.</td>
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<td>Offers triple eye protection with meso-zeaxanthin, lutein, and trans-zeaxanthin. This product is not needed by those already taking Health Booster, which contains these same ingredients.</td>
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<td>Comprehensive formula providing 1000 mcg of vitamin K1, 1000 mcg of immediate-acting MK-4 vitamin K2, and 200 mcg of long-acting MK-7 vitamin K2 in a base of extra-virgin olive oil. This same vitamin K formula is included in Health Booster.</td>
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<td>A hormone that declines with aging, benefits overall health.</td>
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<td>This glycation-protection formula helps maintain healthy cellular function, protein structural integrity, and mitochondrial biogenesis. It now contains taurine, a free amino acid that boosts new brain cell formation in the area of the brain connected to learning and memory. New Lower Price!</td>
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<td>This upgraded high-potency multi-nutrient formula contains 5-methyltetrahydrofolate (5-MTHF), the biologically active form of folate that is up to 7 times more bioavailable than folic acid.</td>
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<td><strong>Bone Restore</strong></td>
<td>120 capsules</td>
<td>#01726</td>
<td>$22</td>
<td>$12.83 (four-bottle purchase)</td>
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<tr>
<td>Highly absorbable forms of calcium and FruiteX B® OsteoBoron®, magnesium, zinc, and vitamin D3. Also available with vitamin K2 at as lightly higher price. (Those taking Super K or Health Booster don't need additional vitamin K.)</td>
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<tr>
<td><strong>Cognitex® with Brain Shield®</strong></td>
<td>90 softgels</td>
<td>#01896</td>
<td>$60</td>
<td>$35.10 (four-bottle purchase)</td>
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<tr>
<td>Optimal support for the brain. Includes gastrodin, alpha-glyceryl phosphoryl choline, vinpocetine, phosphatidylserine, uridine-5’-monophosphate, and more. Available with or without pregnenolone.</td>
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<td><strong>Enhanced Super Digestive Enzymes with Probiotics</strong></td>
<td>60 vegetarian capsules</td>
<td>#02022</td>
<td>$28</td>
<td>$16.20 (four-bottle purchase)</td>
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<td>Contains amylase, protease, lipase, cellulase, and lactase to break down protein, starch and short sugar chains, fat, cellulose, and lactose. It has the added benefit of the probiotic Bacillus coagulans, which creates a coating that resists digestion in the stomach, allowing it to fully colonize in the intestines.</td>
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<tr>
<td><strong>Immune Senescence Protection Formula™</strong></td>
<td>60 vegetarian tablets</td>
<td>#02005</td>
<td>$40</td>
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<td>Standardized full-spectrum Reishi mushroom extract with Cistanche and Pu-Erh tea extracts to help restore youthful immune balance.</td>
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<td><strong>Triple Action Thyroid</strong></td>
<td>60 vegetarian capsules</td>
<td>#02003</td>
<td>$36</td>
<td>$21.60 (four-bottle purchase)</td>
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<td>A combination of ashwagandha, guggul, and Korean ginseng extract work in synergy to combat many of the ailments arising from a poorly functioning, suboptimal thyroid.</td>
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<td><strong>European Milk Thistle</strong></td>
<td>60 softgels</td>
<td>#01822</td>
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<td>High-absorption phospholipid-enhanced formula delivers nearly 5 times more active components to the bloodstream to support detoxification processes as well as promote liver health and function.</td>
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<td><strong>Skin Restoring Phytoceramides</strong></td>
<td>350 mg, 30 vegetarian capsules</td>
<td>#01596</td>
<td>$25</td>
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<td>Oral phytoceramides derived from wheat can reach the skin’s deepest layers to offset the body’s natural decline with age.</td>
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<td><strong>ArthroMax® Advanced with UC-II® and AprèsFlex®</strong></td>
<td>60 capsules</td>
<td>#01618</td>
<td>$36</td>
<td>$21.60 (four-bottle purchase)</td>
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<td>Promotes joint health and may promote comfortable joint structure and function.</td>
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<td><strong>FLORASSIST® Oral Hygiene</strong></td>
<td>30 lozenges</td>
<td>#02011</td>
<td>$20</td>
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<td>This unique blend of two powerful, oral probiotics—S. salivarius and Bacillus coagulans—inhibits harmful bacteria that develop in your mouth, affecting your teeth, gums, and overall health.</td>
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<td><strong>Advanced Bio-Curcumin® with Ginger and Tumerones</strong></td>
<td>30 softgels</td>
<td>#01808</td>
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<td>Triple-action formula acting on multiple signaling pathways to deliver broad-spectrum protection against chronic inflammation.</td>
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<td><strong>Neuro-Mag® Magnesium L-Threonate</strong></td>
<td>90 vegetarian capsules</td>
<td>#01603</td>
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<td>Optimal form of magnesium to protect synaptic density of neurons.</td>
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*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.*
Do you remember how easy it was in youth to consume a high-calorie meal and suffer no unpleasant aftereffects?

One reason we internally managed foods so easily back in those days were the massive amounts of digestive juices we produced that efficiently broke down foods for healthy absorption.

Contrast this to what many adults take after meals, such as over-the-counter drugs like Alka-Seltzer® and Pepto-Bismol® to relieve gas, bloating, cramping, and other digestive problems. These drugs can provide temporary relief, but they don’t treat the underlying cause of the problem.

Over-the-counter drugs are a huge business. In the United States alone, people with digestive discomfort spend $9.5 billion on over-the-counter stomach remedies, and studies show that people taking such medications commonly report not thinking that their problem was serious enough to seek medical attention.
A national survey in 2013 demonstrated that 72% of respondents experienced one or more symptoms such as diarrhea, gas, bloating, stomach pain, frequent bowel movements, unexplained weight loss, or nonspecific abdominal discomfort and 74% of those surveyed reported living with their symptoms for more than six months.4

Unfortunately, over-the-counter drugs could be masking a more serious issue.

After-meal abdominal symptoms often represent poor digestion of complex foods, causing one to be unable to fully absorb nutrients needed for optimal health. This can lead to chronic low-level malnutrition and/or stomach distress after most meals.5,6

A common cause of these widespread digestive problems is the age-related decline of active enzymes that help break down foods into absorbable nutrients.7-9

A second major cause of abdominal symptoms in older adults is the chronic imbalance of the trillions of beneficial organisms that populate our gastrointestinal (GI) tract. Such disturbances contribute to nutrient malabsorption, while also producing inflammation that can weaken the intestinal barrier and allow bacteria and toxins into the circulation where they may aggravate food allergies and sensitivities.10-13

Fortunately, studies show that it is possible to address both of these underlying causes of gastrointestinal distresses. By properly supplementing with digestive enzymes and probiotics, healthy older adults can take meaningful steps to maintain good digestive health. The result can be better digestion, less abdominal stress, and greater retention of nutrients.

Why Digestive Enzymes Are so Important

In order for the food we eat to be absorbed into our bloodstream, the actions of powerful enzymes are required to break down the food in order to extract vital nutrients. Each of the three major food groups—carbohydrates, proteins, and fats—must be broken down by specific enzymes before being absorbed by cells in the digestive tract.

When the digestive tract is in good working order, food is almost completely broken down by the time it reaches the end of our small intestine, leaving few undigested food molecules to pass into the colon. The result is a well-nourished body that continuously renews itself, and a comfortable sensation following a meal.

With age, the production of normal digestive enzymes begins to fall off, leaving significant amounts of all three major food groups (fats, proteins, and carbohydrates) to pass undigested into the large intestine, or colon.8,9,14

This can lead to bloating, gas, diarrhea, and cramping—and even worse, can contribute to the malnutrition that threatens older people as a result of lost appetite and changes in muscle and fat stores.15,16 That’s why the proper complement of healthy enzymes is crucial not just for healthy digestion—but for good health in general.

Improving Digestive Comfort and Function

A natural solution to declining levels of digestive enzymes is to supplement with digestive enzymes that cover the major needs of the body to break down all classes of food, including starch, proteins, fats, cellulose, and milk.

For optimal digestion, it is important to include these major digestive enzymes:

- **Amylase** to break down starch and short sugar chains called oligosaccharides,
- **Protease** to help break down proteins,
- **Lipase** to break down fats,
- **Cellulase** to break down the indigestible polysaccharide in dietary cellulose, and
- **Lactase** to break down lactose (milk sugar).
People suffering from pancreatic insufficiency as a result of cystic fibrosis, pancreatic surgery, or trauma have long used supplemental digestive enzymes. But researchers have recognized that the addition of digestive enzymes is beneficial to healthy individuals as well.

In various studies, each of these major enzymes has shown specific benefits in digesting food. Animal studies have repeatedly demonstrated that when supplemental digestive enzymes are added to the normal food supply, they can significantly improve digestibility of dietary foods, improve nutrient absorption, reduce gas production, and, in at least one case, reduce food intake, as a result of improved nutritional status. Furthermore, in stressed or aged animals, a mix of pancreatic digestive enzymes improved muscle wasting in addition to the other benefits.

Human studies are now revealing similarly impressive results for supplemental digestive enzymes. In a study of adults with chronic pancreatic insufficiency, in which the subjects were unable to fully digest and absorb fats and proteins, researchers tested two pancreatic enzyme replacement products. A supplement with bromelain proved significantly more effective at improving both protein and fat digestion and absorption.

Pancreatic lipase (the fat-digesting enzyme) has been routinely used for years in people with pancreatic insufficiency to assist with digestion. A study in healthy volunteers demonstrated that the use of this enzyme could be beneficial in others as well.

**Enzymes and Probiotics for Healthy Digestion**

- Research indicates over 70% of Americans report feeling discomfort, bloating, gas, cramps, or urgency to defecate following a meal.
- This problem is especially prevalent in older adults, whose natural production of digestive enzymes dwindles with age.
- Loss of normal balance of beneficial gastrointestinal microbes further exacerbates symptoms.
- Supplementation with digestive enzymes that break down starches, protein, fats, and fiber is a proven method to reduce symptoms and improve nutritional status.
- Supplementation with B. coagulans, a beneficial probiotic microbe, can further improve comfort and reduce symptoms by balancing your population of intestinal organisms.
- If you suffer from any degree of discomfort following what should be a pleasant and fulfilling meal, it’s time to add digestive enzymes and sustainable probiotic bacteria to your regimen.
For the study, subjects ate 185 grams (about 6 ounces) of cookies containing 1,196 calories and 72 grams (about 2.5 ounces) of fat, along with capsules of lipase or a placebo. They were then followed for up to 17 hours. Compared to placebo patients, patients supplemented with lipase showed significant reductions in bloating over the entire period, with significant reductions in bloating, gas, and fullness later in the day.

Lactase, the enzyme that breaks down lactose, or "milk sugar," is sharply reduced in adults from everywhere except Northern Europe, and both human and animal studies demonstrate that this lactase deficiency increases with advancing age. Deficiency of lactase produces a condition known as lactose intolerance, characterized by cramps, bloating, gas, and often diarrhea following consumption of milk products. Lactose intolerance is known to be a significant problem in the elderly, and can lead to insufficient calcium intake, resulting in greater risks of osteoporosis and subsequent fractures. Thus, it is especially important in older adults to be capable of comfortably consuming milk products to help avoid osteoporosis.

Studies show that supplementation with lactase produces a significant reduction in excretion of hydrogen in the breath (a marker of improved lactose digestion), while also significantly reducing symptoms of abdominal cramping, belching, flatulence, bloating, and diarrhea.

Consuming these specific digestive enzymes would provide comprehensive assistance to one's ability to digest foods in a more youthful and tolerant fashion—and would also help relieve discomforts after eating, as well as improve your overall nutritional status.

**Intestinal Microbes**

In addition to having reduced levels of digestive enzymes, another cause of digestive malfunction and after-meal discomfort occurs when the normal microbial populations become imbalanced.

The body relies heavily on the teeming communities of bacteria that live in the large intestine, or colon. Like any community, this group of microbes, collectively known as the intestinal microbiome, functions best when its occupants are richly diverse and respect one another's boundaries. If those properties are not present, symptoms of indigestion may arise.

When colonic bacteria move out of the colon and into the small intestine, a condition called small intestinal bacterial overgrowth, develops. Small intestinal bacterial overgrowth is associated with carbohydrate malabsorption and may also result in intestinal inflammation. This inflammatory response can then cause the normally tight intestinal barrier to leak, permitting bacteria and toxins to enter the bloodstream, where they may contribute to symptoms of food allergy and food sensitivity.
The Five Most Prevalent Digestive Enzymes

Each major food group has a specific type of enzyme responsible for its breakdown. Deficiency in any of these enzymes can lead to a wide range of common intestinal troubles. There are five major digestive enzymes that need to be at healthy levels for the digestion of food without painful or embarrassing side effects. These include amylase, protease, lipase, cellulose, and lactase.

Carbohydrates and starches are digested by the enzyme amylase. A deficiency in amylases causes undigested carbohydrate molecules to pass on to the colon, where gut organisms break them down, literally fermenting them to produce carbon dioxide and water that lead to cramping, flatulence, and diarrhea.41,42,43

Proteins are digested by the protease enzymes. A deficiency in proteases leaves protein molecules or fragments undigested. Again, these pass on to the colon, in this case giving rise to a host of unpleasant-smelling and potentially toxic molecules.44-47 Undigested protein in the colon has also been associated with colon cancer initiation, though the exact mechanisms are still under investigation.48

Fats are digested by the lipase enzymes. A deficiency in lipases leaves long-chain fats undigested. Undigested fats cannot be absorbed anywhere in the body and are typically passed on through the GI tract to produce greasy, fatty stools, cramping, and even malnutrition when fat-soluble vitamins are lost.17

Though several different digestive system organs produce some digestive enzymes, the pancreas makes all three of these essential digestive enzymes.49 Loss of pancreatic function is therefore a common cause of after-meal indigestion and other symptoms. Pancreatic insufficiency was long thought to be found only in patients with disorders of the pancreas itself, such as cystic fibrosis, pancreatitis, or pancreatic tumors. However, it is now recognized as being associated with aging.9,17,50,51 One recent study found pancreatic insufficiency in more than 7% of a large group of patients with general abdominal pain and discomfort.32

Cellulase is the enzyme that breaks down cellulose, the indigestible polysaccharide in dietary fiber.52 Fiber is increasingly recognized as vital for healthy digestion because, though humans cannot break it down, it feeds the beneficial organisms in our colons, which use it to produce beneficial short-chain fatty acids that nourish our colonic cells and help to prevent cancer.53 But, precisely because we cannot digest fiber ourselves, it can produce symptoms of bloating, flatulence, diarrhea, and constipation when broken down by our intestinal tenants.54

Lastly, lactase is the enzyme that breaks down milk sugar (lactose).55 A deficiency in lactase can prevent the body from breaking down lactose, leading to lactose intolerance, which can lead to abdominal cramping, belching, flatulence, diarrhea, and bloating.56
A related condition is intestinal dysbiosis, in which the natural balance of beneficial bacteria living in the gut becomes disturbed. This is a huge and growing area of medical research, as researchers learn that it does not take a true pathogen (disease-causing organism) to produce abdominal symptoms and increase the risk for a host of life-shortening disorders.

In fact, simply having the wrong mix of bacteria in your intestines can set the stage for obesity, cardiovascular disease, and many other chronic, age-associated conditions. Studies show that as many as 73% of people with abdominal complaints have some form of dysbiosis.

In addition to causing GI discomfort and related symptoms, all of these problems can contribute to malnutrition, a serious and growing problem in older adults—one that exacerbates their frailty and vulnerability to falls, fractures, and infections.

Fortunately, supplementing with probiotic bacteria can help alleviate the digestive issues that can occur as a result of microbial imbalance.

### Easing Abdominal Symptoms with Probiotic Bacteria

Beneficial bacteria are essential for maintaining proper balance among the trillions of organisms living in the intestines. Low growth of the “good guys” can lead to overgrowth and imbalance of organisms less directly beneficial (and some directly harmful) to the body’s health.

Studies show that probiotic organisms (which are cultures of living beneficial bacteria) can help reduce abdominal symptoms and promote healthy intestinal function by promoting their own and other beneficial organisms’ growth and suppressing that of less useful bacteria.

The MTCC 5856 strain of Bacillus coagulans (formerly known as Lactobacillus sporogenes) is especially beneficial because it is coated in a tough outer layer that resists digestion in the stomach and small intestine. This allows it to be delivered intact to the large intestine, where it can then “hatch” out to set up new colonies in a sustainable fashion.

It takes an estimated four hours from ingestion to germination in the intestine. However, over time, it is gradually excreted and needs to be replenished with fresh supplementation.

Once established, B. coagulans produces lactic acid, which is a useful chemical that helps suppress the growth of disease-causing bacteria and promotes its own growth. Lactic acid bacteria are commonly used as “starter cultures,” in fermented foods such as yogurt, kimchi, sauerkraut, kefir, sourdough bread, pickles, and many other healthful foods. Furthermore, production of lactic acid is the result of the presence of lactase, the digestive enzyme that breaks down lactose, and is missing in so many adults.

B. coagulans also produces bacteriocins, which are compounds that help maintain a healthy balance of bacteria by limiting the growth of less desirable bacteria.

### Human Studies

The value of this resilient B. coagulans strain of bacteria has been shown in studies of people with gastrointestinal issues, such as chronic constipation, chronic diarrhea, and irritable bowel syndrome.

A study of people with chronic constipation showed that 70% of subjects had improvement in abdominal distension and normalization of stools following supplementation with 300 to 750 million spores of B. coagulans per day for up to 10 days.
A study of patients with acute or chronic diarrhea demonstrated, in a randomized fashion, that probiotic supplementation with either *B. coagulans* or another commonly used organism called *Bifidobacterium longum* produced good relief from symptoms.

**Irritable bowel syndrome (IBS)** is a common and difficult-to-treat condition that can cause diarrhea and constipation, along with significant abdominal discomfort, gas, and bloating. In a multi-center, randomized, double-blind controlled study of IBS patients, daily supplementation with tablets containing 2 billion spores of *B. coagulans* was found to significantly reduce symptom scores, abdominal discomfort scores, stool quality, and physicians’ overall assessment scores. Additionally, the patients receiving the probiotic bacteria showed improvement in bloating, vomiting, diarrhea, abdominal pain, and stool frequency, compared with control subjects.

**Summary**

The digestive tract changes with age. The amounts of digestive enzymes the body produces decline over time, leaving undigested food molecules free to pass into the colon where they ferment and produce noxious gas, bloating, cramping, and diarrhea.

Adding to this challenge, the body’s normally helpful tenants, the microbes living in the colon, become disruptive and imbalanced, potentially invading the small intestine where they can produce inflammation and poor digestion.

In human studies, supplemental digestive enzymes have provided increased digestive comfort and reduction in common symptoms of indigestion. And supplementation with probiotic *B. coagulans* bacteria not only boosts the population of good bacteria, but also results in production of natural bacterial compounds that suppress less beneficial, or even overtly harmful, bacteria. These changes have been demonstrated to improve after-meal comfort while restoring the natural balance of organisms in the intestinal tract.

For those troubled by bloating, cramps, gas, loose stools, or other digestive symptoms following a normal meal, restoring normal enzymes and intestinal microbial population could help alleviate after-meal distress.

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**References**


40. Sivakumar A. A randomized, double blind, parallel group, placebo controlled study to evaluate the safety and efficacy of Lactospore(Bacillus coagulans MTCC 5856) in patients with diarrhea predominant irritable bowel syndrome: Sami Labs Limited; 2014. 2014.


44. Available at: http://goo.gl/XynsXm. ND. Accessed August 6, 2013.


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.

Here are the nutrients contained in a novel rejuvenation formula:

- **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, and a 7% increase in skin elasticity—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.5

- **Silicon**: Silicon is required for the formation of the protein cross-links that hold collagen and keratin molecules in their unique, functional shapes.6

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

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To order Hair, Skin & Nails Rejuvenation Formula with VERISOL®, call 1-800-544-4440 or visit www.LifeExtension.com

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.
Profound shrinkage of synaptic connections between nerve cells is one of the major hallmarks associated with brain aging. Magnesium is a critical factor in controlling synaptic density in the brain.¹

An innovative form of magnesium called Neuro-Mag® has been shown to specifically target multiple areas of the aging brain. In fact, preclinical models show that the magnesium-L-threonate contained in Neuro-Mag® boosted levels of magnesium in spinal fluid by 15% versus no increase from conventional magnesium.² This means that this form of magnesium is passing through the blood-brain barrier for assimilation into the brain.

Comprehensive Cognitive Benefits

Scientists continue to uncover magnesium’s comprehensive benefits for cognitive function.³ Studies using magnesium-L-threonate show this unique form of magnesium maintains the quantity of synaptic connections between brain cells and inhibits the dysregulation of signaling pathways.¹

Neuro-Mag...Capsules Or Powder

The suggested daily dose of three Neuro-Mag® capsules provides 2,000 mg of Magnesium-L-Threonate. While supplying a modest 144 mg of elemental magnesium, its superior absorption into the bloodstream and nervous system make it a preferred choice for maturing individuals to supplement with.

This same brain-health supporting magnesium is also available in a powder called Neuro-Mag® Magnesium-L-Threonate with Calcium and Vitamin D3. In addition to its fresh lemon flavor, the one-scoop-per-day serving supplies the same amount of magnesium as the capsules, plus 500 mg of highly soluble calcium and 1,000 IU of vitamin D3.

References

Magtein™ is a registered trademark of Magceutics, Inc, distributed exclusively by AIDP, Inc. Magtein™ is covered by registered and pending US patents. Neuro-Mag® Magnesium-L-Threonate– Item #01603 Neuro-Mag™ Magnesium-L-Threonate with Calcium and Vitamin D3 Powder Item #01602

Non-GMO

To order Neuro-Mag® Magnesium L-Threonate Capsules or Powder 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.
Normal aging and related health issues can decrease production of digestive enzymes, 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. 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. Probiotics such as *B. coagulans* support digestive health and suppress less beneficial bacteria to improve digestive comfort.

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

References

5. Gastroenterology. 1997 May;112(5):1624-34.

Non GMO. Lactospore® is a registered trademark of Sabinsa Corp.
Regular brushing and flossing is often not enough to achieve optimal oral health. Since the mouth is the major gateway to the body, maintaining good oral hygiene is important for overall health.¹

Researchers have developed an innovative approach to achieving maximum oral health. The beneficial bacteria in FLORASSIST® Oral Hygiene helps inhibit harmful bacteria that develop in the mouth and can affect the health of your teeth and gums. FLORASSIST® Oral Hygiene complements any oral care program.

FLORASSIST® Oral Hygiene contains a unique blend of two powerful oral probiotics:

- The beneficial probiotic strain—*S. salivarius* BLIS M18™
- An additional healthy probiotic—*B. coagulans* GanedenBC30®

FLORASSIST® Oral Hygiene provides healthy bacteria that colonize the mouth and inhibit the growth of problematic mouth bacteria.² This helps create a healthy environment in the oral cavity.

Because FLORASSIST® Oral Hygiene comes in lozenge form, it quickly provides healthy, targeted probiotics to the oral cavity.

Dissolving one lozenge of FLORASSIST® Oral Hygiene in your mouth daily can maximize your oral health by optimizing oral pH, easing inflammation, and supporting healthy bacterial colonization throughout the mouth.³⁴

FLORASSIST® Oral Hygiene
Item #02011 • 30 lozenges

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References

Contains milk.

BLIS M18™ (*S. salivarius*) is the trademark of BLIS Technologies Limited.

GanedenBC30® is a registered trademark of Ganeden Biotech, Inc.
As one ages, lipids in combination with inflammatory cells, cellular waste products, and calcium build up within the walls of the blood vessels to form arterial plaque.

If this plaque becomes unstable, it can rupture, potentially affect the vascular endothelium.

The extracts in Arterial Protect have been documented to support the body’s ability to control plaque formation. This plaque can become unstable, potentially affecting the vascular endothelium.¹

Patented and clinically tested, Arterial Protect is a combination of Pycnogenol® French maritime pine bark extract and Centellicum® Gotu Kola leaf extract.

- Pycnogenol® has been demonstrated in controlled research to improve endothelial function and arterial blood flow.² It also significantly reduces oxidative stress. Additionally, Pycnogenol® is known to help modulate healthy inflammation and to help inhibit platelet aggregation.³

- Gotu Kola has been shown in placebo-controlled studies to result in enhanced stability of arterial plaque.⁴,⁵ Gotu Kola modulates production of collagen, which is found in the composition of the cap holding plaque in place.⁴,⁵ It also supports free radical defense mechanisms and helps promote healthy inflammation levels.

When human volunteers were supplemented with both Pycnogenol® and Gotu Kola—the two ingredients in Arterial Protect—progression of arterial plaque was substantially reduced, and this was associated with a reduction in oxidative stress.¹ For those seeking enhanced arterial protection, take just one vegetarian capsule daily of Arterial Protect to naturally stabilize endothelial plaque and promote healthy blood flow.

References

To order Arterial Protect, call 1-800-544-4440 or visit www.LifeExtension.com

Non-GMO
Pycnogenol® and Centellicum® are registered trademarks of Horphag Research and the use of this product is protected by international patents.

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.
Ultra Natural Prostate formula provides the latest scientifically validated botanical extracts shown to promote healthy prostate function.

No other prostate protection formula provides such a broad array of nutrients to support the multiple factors involved in the health of the aging prostate gland. Ultra Natural Prostate contains:

- **Standardized lignans** provide support for prostate cells against excess estrogen levels.1,3
- **AprèsFlex®** supports normal inhibition of 5- lipoxigenase or 5-LOX, an enzyme associated with undesirable cell division changes.4-6
- **Stinging and Dwarf nettle root extracts** help support prostate cells against excess estrogen levels.6,7
- **Saw Palmetto CO₂ extract** helps support dihydrotestosterone (DHT) activity in the prostate, helps support normal urinary flow, and helps regulate inflammatory reactions in the prostate.8,11
- **Pygeum extract** helps suppress prostaglandin production in the prostate and supports healthy urine flow patterns.8,13
- **Pumpkin seed oil**, enhances the composition of free fatty acids and augments saw palmetto’s benefits.15-17
- **Beta-sitosterol** enhances the protective effects of other botanical extracts and helps improve quality of life.17-19
- **Graminex® Flower Pollen Extract™**, has been shown to help relax the smooth muscles of the urethra and help regulate inflammatory reactions.20-22
- **Boron** has been shown to slow elevation of prostate-specific antigen (PSA).23-25
- **Lycopene** supports efficient cellular communication, helps maintain healthy DNA, regulates hormonal metabolism, and promotes healthy prostate size and structure.26-32
- **Phospholipids** enhance absorption of active compounds.

**References**

29. BJU Int. 2007 Feb;99(3): 427-432.
32. The suggested daily dose of two softgels of Ultra Natural Prostate provides:

**Saw Palmetto CO₂ extract** (fruit)  [providing 272 mg total fatty acids]  320 mg
**Graminex® Flower Pollen Extract™** (from rye)  252 mg
**Stinging and Dwarf nettle extracts** (root)  240 mg
**Beta-Sitosterol**  180 mg
**Phospholipids**  160 mg
**Pygeum extract** (bark)  100 mg
**Pumpkin seed oil**  [providing 170 mg total fatty acids]  200 mg
**AprèsFlex® Indian frankincense** (Boswellia serrata) [providing 14 mg AKBA*]  70 mg
**Proprietary Enterolactone Precursors Blend**  [HMRlignan™ Norway spruce (Picea abies) (knot wood) and Flax (seed) lignin extracts]  20.15 mg
**Lycopene** [from natural tomato extract (fruit)]  10 mg
**Boron** (as Albion® bororganic glycine)  3 mg

* 3-0-acetyl-7,11-keto-8-boswellic acid

To order Ultra Natural Prostate, call 1-800-544-4440 or visit www.LifeExtension.com
AMPK ACTIVATOR

A PARADIGM IN CONTROLLING AGING

Found in every cell, AMPK promotes longevity factors that have been shown to extend lifespan in numerous organisms. Increasing AMPK signaling “turns off” many damaging effects of aging, thus enabling cells to return to their youthful vitality.

Importance Of AMPK

Studies show increased AMPK activity supports reduced fat storage, new mitochondria production, and the promotion of healthy blood glucose and lipids already within normal range.

Gynostemma Pentaphyllum

An extract of the plant Gynostemma pentaphyllum promotes AMPK activation. In one of many studies showing a wide variety of benefits, researchers documented a 1-inch reduction in abdominal circumference in overweight individuals who took 450 mg daily of G. pentaphyllum extract for 12 weeks.

Trans-Tiliroside

Trans-tiliroside, extracted from plants such as rose hips, boosts AMPK activation, but triggers different downstream metabolic benefits than G. pentaphyllum. Among its many benefits, a low equivalent dose of 56 mg daily trans-tiliroside has been shown by researchers in preclinical studies to promote healthy blood glucose levels and body weight already within normal range.

Activate Your AMPK!

Over 7,500 published studies document the role that AMPK plays in protecting critical cellular functions. Those seeking healthy aging should prioritize re-activating their AMPK cellular enzyme.

AMPK Activator provides nutrients shown to significantly boost AMPK activity. The suggested daily dosage of AMPK Activator is to take two capsules with the first meal of the day and one capsule with the second meal. Three capsules provide:

ActivAMP®

Gynostemma pentaphyllum extract 450 mg
Rose hip extract 1,119 mg
Standardized to 5% trans-tiliroside 56 mg

References

Non-GMO
ActivAMP® is a registered trademark of Gencor.

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

To order AMPK Activator, call 1-800-544-4440 or visit www.LifeExtension.com

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

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### Blood Testing: The Ultimate Information

#### Most Popular Panels

<table>
<thead>
<tr>
<th>Panel Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male Life Extension Panel</strong></td>
<td>$269</td>
</tr>
<tr>
<td><strong>Female Life Extension Panel</strong></td>
<td>$239</td>
</tr>
<tr>
<td><strong>Weight Loss Panel-comprehensive</strong></td>
<td>$275</td>
</tr>
<tr>
<td><strong>Male Elite Panel</strong></td>
<td>$758</td>
</tr>
<tr>
<td><strong>Male Hormone Add-on Panel</strong></td>
<td>$120</td>
</tr>
<tr>
<td><strong>Female Hormone Add-on Panel</strong></td>
<td>$125</td>
</tr>
<tr>
<td><strong>Comprehensive Thyroid Panel</strong></td>
<td>$199</td>
</tr>
<tr>
<td><strong>Life Extension Thyroid Panel</strong></td>
<td>$75</td>
</tr>
<tr>
<td><strong>Thyroid Panel with Reverse T3</strong></td>
<td>$84</td>
</tr>
<tr>
<td><strong>Comprehensive Hormone Panel</strong></td>
<td>$299</td>
</tr>
<tr>
<td><strong>The CBC/Chemistry Profile</strong></td>
<td>$39</td>
</tr>
<tr>
<td><strong>Bdellion Panel</strong></td>
<td>$198</td>
</tr>
<tr>
<td><strong>Stress Management Profile</strong></td>
<td>$125</td>
</tr>
<tr>
<td><strong>Healthy Aging Panel-comprehensive</strong></td>
<td>$249</td>
</tr>
<tr>
<td><strong>Healthy Aging Panel-basic</strong></td>
<td>$149</td>
</tr>
<tr>
<td><strong>VAP Test</strong></td>
<td>$90</td>
</tr>
</tbody>
</table>

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**Blood Testing Benefits:**

- **Direct measurements, not estimations:** Direct measurements, not estimations, are provided for total cholesterol, LDL, HDL, VLDL, and cholesterol subclasses.
- **Wide range of tests:** The Ultimate Information provides access to a wide range of tests, including blood pressure, heart rate, and cholesterol levels.
- **High-quality results:** The results are provided in a high-quality format, allowing for easy interpretation.
- **Reasonable prices:** The prices are reasonable, making comprehensive blood testing accessible to a wide range of individuals.
**Other Popular Tests and Panels**

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HORMONES</strong></td>
<td></td>
</tr>
<tr>
<td>DHEA-SULFATE (LC004020)</td>
<td>$61</td>
</tr>
<tr>
<td>This test shows if you are taking the proper amount of DHEA. This test normally costs $100 or more at commercial laboratories.</td>
<td></td>
</tr>
<tr>
<td><strong>MALE BASIC HORMONE PANEL</strong> (LC100012)</td>
<td>$75</td>
</tr>
<tr>
<td>DHEA-S, Estradiol, Free and Total Testosterone, PSA</td>
<td></td>
</tr>
<tr>
<td><strong>FEMALE BASIC HORMONE PANEL</strong> (LC100013)</td>
<td>$75</td>
</tr>
<tr>
<td>DHEA-S, Estradiol, Free and Total Testosterone, Progesterone</td>
<td></td>
</tr>
<tr>
<td><strong>DIHYDROTESTOSTERONE (DHT)</strong> (LC004142)</td>
<td>$50</td>
</tr>
<tr>
<td>Measures serum concentrations of DHT.</td>
<td></td>
</tr>
<tr>
<td><strong>ESTRADIOL</strong> (LC004515)</td>
<td>$33</td>
</tr>
<tr>
<td>For men and women. Determines the proper amount in the body.</td>
<td></td>
</tr>
<tr>
<td><strong>INSULIN FASTING</strong> (LC004333)</td>
<td>$29.90</td>
</tr>
<tr>
<td>Can predict those at risk of diabetes, obesity, heart and other diseases.</td>
<td></td>
</tr>
<tr>
<td><strong>PREGNENOLONE</strong> (LC140707)</td>
<td>$116</td>
</tr>
<tr>
<td>Used to determine ovarian failure, hirsutism, adrenal carcinoma, and Cushings’s syndrome.</td>
<td></td>
</tr>
<tr>
<td><strong>PROGESTERONE</strong> (LC004317)</td>
<td>$55</td>
</tr>
<tr>
<td>Primarily for women. Determines the proper amount in the body.</td>
<td></td>
</tr>
<tr>
<td><strong>SEX HORMONE BINDING GLOBULIN (SHBG)</strong> (LC082016)</td>
<td>$33</td>
</tr>
<tr>
<td>This test is used to monitor SHBG levels which are under the positive control of estrogens and thyroid hormones, and suppressed by androgens.</td>
<td></td>
</tr>
<tr>
<td><strong>GENERAL HEALTH</strong></td>
<td></td>
</tr>
<tr>
<td><strong>VITAMIN D (25OHI)</strong> (LC001958)</td>
<td>$47</td>
</tr>
<tr>
<td>This test is used to rule out vitamin D deficiency as a cause of bone disease. It can also be used to identify hypercalcemia.</td>
<td></td>
</tr>
<tr>
<td><strong>FERRITIN</strong> (LC004586)</td>
<td>$28</td>
</tr>
<tr>
<td>Ferritin levels reflect your body’s iron stores and is also a biomarker for insulin resistance.</td>
<td></td>
</tr>
<tr>
<td><strong>VITAMIN B12/FOLATE</strong> (LC008010)</td>
<td>$39.68</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td><strong>PSA (PROSTATE SPECIFIC ANTIGEN)</strong> (LC013222)</td>
<td>$31</td>
</tr>
<tr>
<td>Screening test for prostate disorders and possible cancer.</td>
<td></td>
</tr>
</tbody>
</table>

**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.*

**With Your Healthy Rewards, you earn LE Dollars back on every purchase you make — including blood tests! See [www.LifeExtension.com/Rewards](http://www.LifeExtension.com/Rewards) for details.**

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NUTRIENT PANEL</strong> (LC100024)</td>
<td>$49</td>
</tr>
<tr>
<td>Vitamin B12, Folate, Vitamin D 25-hydroxy, Vitamin C, Vitamin A, Selenium, Zinc, CoQ10, and RBC Magnesium.</td>
<td></td>
</tr>
<tr>
<td><strong>CHRONIC FATIGUE PROFILE</strong> (LC100005)</td>
<td>$375</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td><strong>ANEMIA PANEL</strong> (LC100006)</td>
<td>$79</td>
</tr>
<tr>
<td>CBC/Chemistry Profile (see description previous page), Ferritin, Total Iron Binding Capacity (TIBC), Vitamin B12, Folate</td>
<td></td>
</tr>
<tr>
<td><strong>AUTOIMMUNE DISEASE SCREEN</strong> (LC100041)</td>
<td>$199</td>
</tr>
<tr>
<td>ANA screen, hs-CRP, TNF, Immunoglobulins, IgA, IgG, IgM</td>
<td></td>
</tr>
<tr>
<td><strong>DIABETES MANAGEMENT PROFILE – COMPREHENSIVE</strong> (LC100040)</td>
<td>$129</td>
</tr>
<tr>
<td>Hemoglobin A1C, Glucose, Insulin, Lipid Panel, Glycolmark</td>
<td></td>
</tr>
<tr>
<td><strong>DIABETES MANAGEMENT PROFILE – BASIC</strong> (LC100039)</td>
<td>$39</td>
</tr>
<tr>
<td>Hemoglobin A1C, Glucose, Insulin</td>
<td></td>
</tr>
</tbody>
</table>

**ADVANCED CARDBIOMARKERS**

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADVANCED OXIDIZED LDL PANEL</strong> (LC100033)</td>
<td>$285</td>
</tr>
<tr>
<td>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-Isoprostanones, Myeloperoxidase, and Oxidized LDL.</td>
<td></td>
</tr>
<tr>
<td><strong>OXIDIZED LDL PANEL</strong> (LC100034)</td>
<td>$175</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td><strong>OXIDIZED LDL</strong> (LC817472)</td>
<td>$75</td>
</tr>
<tr>
<td>OxLDL is a powerful initiator of inflammatory changes in the artery wall, which eventually lead to the formation of plaque.</td>
<td></td>
</tr>
</tbody>
</table>

**ADVANCED CARDIAC BIOMARKERS**

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OXIDIZED LDL</strong> (LC817472)</td>
<td>$75</td>
</tr>
<tr>
<td>OxLDL is a powerful initiator of inflammatory changes in the artery wall, which eventually lead to the formation of plaque.</td>
<td></td>
</tr>
</tbody>
</table>

**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:**

Life Extension 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

**With Your Healthy Rewards, you earn LE Dollars back on every purchase you make — including blood tests! See [www.LifeExtension.com/Rewards](http://www.LifeExtension.com/Rewards) for details.**

*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.**
Products

**Amino Acids**
- Arginine/L-Ornithine Capsules
- Arginine Orinthine Powder
- Branched Chain Amino Acids
- D,L-Phenylalanine Capsules
- L-Aarginine 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 GluSODin®
- Full-Spectrum Pomegranate™
- Natural BP Management
- NitroVasc with CORDIART™
- Pomegranate Extract Capsules

**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 (dimethylethanol)
- Dopamine
- Ginkgo Biloba Certified Extract™
- Huperzine A
- Lechitin Granules
- Migra-Eez™
- Migra-Mag with Brain Shield®
- Neuro-Mag® Magnesium L-Theonate
- Neuro-Mag® Magnesium L-Theonate with Calcium and Vitamin D3
- Optimized Ashwagandha Extract
- Prevagen™
- PS (Phosphatidylserine) Caps
- Super Ginkgo Extract 28/7
- 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
- Camosuoothe with ProPrevent™
- Effervescent Vitamin C - Magnesium Crystals
- Enhanced Super Digestive Enzymes
- Enhanced Super Digestive Enzymes with 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®
- POQ Caps with BioPQQ®
- Rhodiola Extract
- Ribogem™ 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® Oral Support
- MacuGuard® Oral 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
- Proval® 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® and Crominex® 3+ CoffeeGenc™ Green Coffee Extract
- Mega Benfotamine Natural Glucose Absorption Control
- Tri Sugar Shield®

**Heart Health**
- Aspirin (Enteric Coated)
- Cardio Peak™ with Standardized Hawthorn and Arjun
- Fibrinogen Resist™ with Nattokinase
- Folate & Vitamin B12 Caps
- 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
- 26 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
- Lactoferin (apapolactoferin) 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 Supress™ with EGCG
- Nervia®
- Serrafflazyme
- 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®
- Water-Soluble Pumpkin Seed Extract

**Liver Health & Detoxification**
- Anti-Antioxidants with HepatoProtection Complex
- Calcium D-Gluarurate
- Chlorella
- Chlorophyll
- 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 decaffeinated)
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

Men's Health
Mega Lycopene Extract
PalmettoGuard® Saw Palmetto with Beta-Sitosterol
PalmettoGuard® Saw Palmetto/Nettle Root Formula with Beta-Sitosterol
PomeT™
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
X-R Shield

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™

Pet Care
Cat Mix
Dog Mix

Probiotics
BifidoGI Balance
BroccoMax®
FlorAssist® Heart Health Probiotic
FlorAssist® Oral Hygiene
FlorAssist® Probiotic
FlorAssist® Throat Health
Jarro-Dophilus EPS®
Therac-Syn 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 FemBlock® 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
Rejuvenex® Body Lotion
Rejuvenex® Factor Firming Serum
Renewing Eye Cream
Resveratrol Anti-Oxidant Serum
Skin Lightening Serum
Skin Rejuvenation 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 E 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)
DMG (N, N-dimethylglycine)
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
Biotin
Buffered Vitamin C Powder
Complete B-Complex
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)
Panthenol 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
Garonia HCA
HCAActive™ Garcinia Cambogia Extract
Integra-Lean®
Mediterranean Trim with Sinerol™ XPur
Optimized Irvingia with Phase III® 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
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<td>AHCC® (KINOKO® GOLD) • 500 mg, 60 veg caps</td>
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<td>ASHAGANDHA EXTRACT (Optimized) • 60 veg caps</td>
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<td>ASPIRIN • 81 mg, 300 enteral coated tablets</td>
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<td>ASTAXANTHIN WITH PHOSPHOLIPIDS • 4 mg, 30 softgels</td>
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**SUBTOTAL OF COLUMN 1**

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<th>ITEM No.</th>
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<th>YOUR PRICE</th>
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<td>BRAIN SHIELD® GASTRIN® • 300 mg, 60 veg caps</td>
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<td>BRITE EYES III • 2 vials, 5 ml each</td>
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<td>26576</td>
<td>BROCCO MAX® • 60 veg caps</td>
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**SUBTOTAL OF COLUMN 2**

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**
### COSMESES

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<td>Advanced Peptide Hand Therapy  • 4 oz</td>
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<td>Amber Self Microdermabrasion  • 2 oz</td>
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<td>80138</td>
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<td>Anti-Aging Rejuvenating Scalp Serum  • 2 oz</td>
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<td>Anti-Glycation Serum W/Blueberry &amp; Pomegranate Extracts  • 1 oz</td>
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<td>Anti-Redness &amp; Adult Blemish Lotion  • 1 oz</td>
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**OFFER ENDS FEBRUARY 1, 2016**

**To order online visit**: www.LifeExtension.com/SuperSale

**Receive 25% off the retail price of all products.**

**Deduct an additional 10% on all products during Super Sale**
### SUPER SALE SAVINGS ON ALL PRODUCTS

TO ORDER CALL: 1.954.766.8433 or 1.800.544.4440 ■ TO ORDER ONLINE VISIT: www.LifeExtension.com/SuperSale

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<td>DMG • 125 mg, 60 tablets</td>
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<td>01570</td>
<td>DNA PROTECTION FORMULA • 60 veg. caps</td>
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<td>01831</td>
<td>DOX MIX • 100 grams powder</td>
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<td>02006</td>
<td>DOPA-MIND™ • 60 veg. tabs</td>
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<td>00321</td>
<td>DR. PROCTOR’S ADVANCED HAIR FORMULA • 2 oz</td>
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<td>00320</td>
<td>DR. PROCTOR’S HAIR SHAMPOO • 8 oz</td>
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<td>00898</td>
<td>DUAL-ACTION MICRODERMABRATION ADV. EXFOLIATE • 2.4 oz</td>
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<td>ECHINACEA EXTRACT • 250 mg, 60 veg. caps</td>
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<td>ENDOTHelial DEFENSE™w/GLSODIN® • 60 veg. caps</td>
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<td>EPA/DHA (Mega) • 120 softgels</td>
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<td>ESOPHAGEAL GUARDIAN (Berry flavor) • 60 chewable tablets</td>
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<td>EUROPEAN LEG SOLUTION DIOSMIN 95 600 mg, 30 veg. tabs</td>
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<td>EXTRAORDINARY ENZYMES • 60 caps</td>
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<td>EYE PRESSURE SUPPORT W/MIRTGENOL® • 30 veg. caps</td>
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<td>FACE MASTER® PLATINUM • Facial Toning System</td>
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<td>FAST-ACTING JOINT FORMULA • 30 caps</td>
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<td>FAST-C® W/DIHYDROQUERCETIN • 120 veg. tabs</td>
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<td>FIBRINOGEN RESIST™ • 30 veg. caps</td>
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<td>FLORASSIST® HEART HEALTH PROBIOTIC • 60 veg. caps</td>
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<td>FLORASSIST® ORAL HYGIENE • 30 lozenges</td>
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<td>FLORASSIST® PROBIOTIC • 30 liquid veg. caps</td>
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<td>FLORASSIST® THROAT HEALTH • 30 lozenges</td>
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<td>FOLATE (Optimized) • 5,000 mcg, 30 veg. tablets</td>
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<td>FORSKOLIN • 10 mg, 60 veg. caps</td>
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<td>FUCOIDAN W/MARITECH® 925 (Optimized) • 60 veg. caps</td>
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<td>GAMMA E TOCOTEROL W/SESAME LIGNANS • 60 softgels</td>
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<td>GARLIC (Optimized) • 200 veg. caps</td>
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<tr>
<td>01122</td>
<td>GINGER FORCE® • 60 liquid caps</td>
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<tr>
<td>01658</td>
<td>GINKGO BILOBA CERTIFIED EXTRACT™ 120 mg, 365 veg. caps</td>
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<td>01648</td>
<td>GINKGO EXTRACT 24/7 (Super) • 120 mg, 100 veg. caps</td>
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<td>00756</td>
<td>GLA WITH SESAME LIGNANS (Mega) • 60 softgels</td>
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**SUBTOTAL OF COLUMN 5**

### DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

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<td>00141</td>
<td>(L)-GLUTAMINE POWDER • 100 grams</td>
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<td>00522</td>
<td>GLUCOSAMINE/CHONDROITIN CAPSULES • 100 caps</td>
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<td>01541</td>
<td>GLUTATHIONE, CYSTEINE &amp; C • 100 veg. caps</td>
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<td>00314</td>
<td>L-GLUTATHIONE (Mega) • 250 mg, 60 caps</td>
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<tr>
<td>01669</td>
<td>GLYCINE • 1,000 mg, 100 veg. caps</td>
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<td>01411</td>
<td>GRAPE SEED EXTRACT W/RESVERATROL &amp; PTEROSTILBENE 100 mg, 60 veg. caps</td>
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<td>01604</td>
<td>GREEN COFFEE EXTRACT COFFEEGENIC® 200 mg, 90 veg. caps</td>
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<td>01620</td>
<td>GREEN COFFEE EXTRACT COFFEEGENIC® 400 mg, 90 veg. caps</td>
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<td>00953</td>
<td>GREEN TEA EXTRACT (Mega) • lightly decaffeinated, 100 veg. caps</td>
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<td>00954</td>
<td>GREEN TEA EXTRACT (Mega) • decaffeinated, 100 veg. caps</td>
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<td>5 HTP • 100 mg, 60 caps</td>
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<td>HAIR, SKIN &amp; NAIL REJUVENATION FORM W/VERISON® 90 tabs</td>
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<td>01738</td>
<td>HCA (Garcinia) • 90 veg. caps</td>
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<td>29754</td>
<td>HCACTIVETM GARCINIA CAMBOGIA EXTRACT • 90 caps</td>
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<tr>
<td>01393</td>
<td>HEPATOPRO • 300 mg, 60 softgels</td>
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<td>01527</td>
<td>HUPERZINE A • 200 mg, 60 veg. caps</td>
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<td>00661</td>
<td>HYDRODERM® • 1 oz</td>
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<tbody>
<tr>
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<td>I26 HYPERIMMUNE EGG • 140 grams powder</td>
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<td>01704</td>
<td>IMMUNE MODULATOR W/TINOFENID® • 60 veg. caps</td>
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<tr>
<td>00955</td>
<td>IMMUNE PROTECT W/PARACTIN® • 30 veg. caps</td>
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<tr>
<td>02005</td>
<td>IMMUNE SENESENCE PROTECTION FORMULATM • 60 veg. caps</td>
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<td>01049</td>
<td>INNERPOWER™ • 530 grams powder</td>
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<td>01674</td>
<td>INOSITOL CAPSULES • 1,000 mg, 360 veg. caps</td>
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<td>01292</td>
<td>INTEGRA-LEAN® AFRICAN MANGO IRVINGIA 150 mg, 60 veg. caps</td>
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<td>IRON PROTEIN PLUS • 300 mg, 100 caps</td>
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<td>01677</td>
<td>IODINE COMPLETE (Advanced) • 12.5 mg, 180 tablets</td>
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<td>IRVINGIA W/PHASE 3® CALORIE CONTROL COMPLEX (Optimized African Mango) • 120 veg. caps</td>
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<thead>
<tr>
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<td>01834</td>
<td>K W/ADVANCED K2 COMPLEX (Super) • 90 softgels</td>
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<td>01600</td>
<td>KRILL HEALTHY JOINT FORMULA • 30 softgels</td>
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<td>01050</td>
<td>KRILL OIL • 60 softgels</td>
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<td>KYOLIC® GARLIC FORMULA 102 • 200 veg. caps</td>
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<td>00214</td>
<td>KYOLIC® GARLIC FORMULA 105 • 200 caps</td>
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<td>KYOLIC® RESERVE • 600 mg, 120 caps</td>
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<td>LIFE EXTENSION MIX® • 315 tablets</td>
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<tr>
<td>02057</td>
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**SUBTOTAL OF COLUMN 6**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS
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<th>Item No.</th>
<th>Product Description</th>
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<th>4 Unit Each</th>
<th>10 Unit Each</th>
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<td>02066</td>
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**SUBTOTAL OF COLUMN 7**

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

**DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE**

**SUPER SALE 2015-2016**
## SUPER SALE SAVINGS ON ALL PRODUCTS

TO ORDER CALL: 1.954.766.8433 or 1.800.544.4440 ■ TO ORDER ONLINE VISIT: www.LifeExtension.com/SuperSale

<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>PRODUCT</th>
<th>YOUR PRICE</th>
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<td></td>
<td>Retail Each</td>
<td>1 Unit Each</td>
</tr>
<tr>
<td>01309</td>
<td>QUERCETIN (optimized) • 250 mg, 60 veg. caps</td>
<td>22.00</td>
<td>16.50</td>
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<td>01303</td>
<td>RED YEAST RICE (Bluebonnet) • 600 mg, 60 veg. caps</td>
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<td>00605</td>
<td>REGIMINT • 60 enteric-coated caps</td>
<td>19.95</td>
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<td>REISHI EXTRACT MUSHROOM COMPLEX • 60 veg. caps</td>
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<td>01448</td>
<td>REJUVENEX® BODY LOTION • 6 oz</td>
<td>24.00</td>
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<td>REJUVENEX® FACTOR FIRMING SERUM • 1.7 oz</td>
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<td>REJUVENIGHT® (Ultra) • 2 oz</td>
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<td>(D) RIBOSE TABLETS • 100 veg. tabs</td>
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<td>RICH REWARDS® BREAKFAST GROUND COFFEE • 12 oz bag</td>
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<td>RICH REWARDST® DECAFENATED ROAST GROUND COFFEE 12 oz bag</td>
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<td>R-LIPOIC ACID (Super) • 240 mg, 60 veg. caps</td>
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<td>RNA CAPSULES • 500 mg, 100 caps</td>
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**SUBTOTAL OF COLUMN 9**

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<td>SEA-IODINE™ • 1,000 mcg, 60 veg. caps</td>
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<td>SELENIUM • 2 fl. oz dropper</td>
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<td>SERRAFLAZYME® • 100 tablets</td>
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<td>SILYMARIN • 100 mg, 50 veg. caps</td>
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<td>SINUS CLEANSE • 4 oz bottle</td>
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<td>SKIN RESTORING PHYTOCERAMIDES w/LIPOWHEAT® 30 veg. liquid caps</td>
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<td>SODIUM® w/OLISODIN® &amp; WOLFBERRY • 90 veg. caps</td>
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<td>SOLARSHIELD® SUNGLASSES • Smoke color</td>
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<td>SOY EXTRACT (Ultra) • 150 veg. caps</td>
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<td>STEVIA® (Better) • 100 packets, 1 gram each</td>
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<td>STEVIA® ORGANIC LIQUID SWEETENER (Better) • 2 oz</td>
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<td>SUPER ABSORBABLE SOY ISOFLAVONES • 60 veg. caps</td>
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<td>SUPER SELENIUM COMPLEX • 200 mcg, 100 veg. caps</td>
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**SUBTOTAL OF COLUMN 10**

DEDUCT AN ADDITIONAL 10% ON ALL PRODUCTS DURING SUPER SALE

RECEIVE 25% OFF THE RETAIL PRICE OF ALL PRODUCTS

---

**TO ORDER CALL: 1.954.766.8433 or 1.800.544.4440 ■ TO ORDER ONLINE VISIT: www.LifeExtension.com/SuperSale**
### Item No. | Product | Retail Each $ | 1 Unit QTY | 4 Unit QTY | 10 Unit QTY | 10 Unit QTY |
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### Books

- **33880** OUTSTANDING HEALTH: THE 6 ESSENTIAL KEYS TO MAXIMIZE YOUR ENERGY AND WELL BEING by Michael Gaitzer, MD & Larry Trivieri Jr. • 2015
- **33878** TESTOSTERONE REPLACEMENT THERAPY by Dr. John Crisler • 2015
- **33877** THE TRUTH ABOUT MEN AND SEX by Abraham Morgentaler, MD, FACS • 2015
- **33876** TOL.SICK • by Suzanne Somers • 2015
- **33875** DOCTORED: THE DISILLUSIONMENT OF AN AMERICAN PHYSICIAN by Sandeep Jauhar • 2015
- **33874** MISSING MICROBES by Martin J. Blaser, MD • 2014
- **33873** EATING ON THE WILD SIDE by Dr. John Crisler • 2015

---

**Important Notes:**

- These products are not 25% off retail price.
- **Due to license restrictions, this product is not for sale to customers outside of the USA.**
- **Due to license restrictions, this product is not for sale to Canada.**
- **Due to license restrictions, this product is not for sale to customers outside of the USA and Canada.**

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**Not sure exactly which supplements you need?**

**Talk to a Health Advisor toll-free at 1-800-226-2370**
## ORDER SUBTOTALS

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## ORDER TOTALS

| SUBTOTAL OF COLUMNS 1 - 12 |   |

### SUPER SALE DEDUCT 10% (Subtotal x 10%)

Ends 02/01/16

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<td>UPS OVERNIGHT add $11, UPS 2nd DAY AIR add $7, For Puerto Rico, US Virgin Islands, add $7, Canada UPS EXPRESS Flat rate $17.50, UK Flat rate $25 USD, ALL OTHER INTERNATIONAL AIR WILL BE ADDED.</td>
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<td>SHIPPING (MUST BE IN U.S. DOLLARS)</td>
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### GRAND TOTAL

| PLEASE MAIL TO: Life Extension P.O. Box 407198 • Ft. Lauderdale, Florida 33340-7198 Or Call Toll Free 1-800-544-4440 • Fax: 866-728-1050 |

---

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Because You Deserve More

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And earn even more benefits when you upgrade to Your Healthy Rewards Premier!

For $49.95, you get an immediate $50 LE Dollar enrollment bonus, double LE Dollars (4%) back on purchases, complimentary CHOICE unlimited standard shipping service†, and more. Your Healthy Rewards Premier is the ultimate way to earn LE Dollars and enjoy exclusive Premier-only perks! At the annual rate of just $49.95 US/$59.95 International, Premier pays for itself.

Learn more about YOUR HEALTHY REWARDS

Call toll-free 1-888-224-8239

www.LifeExtension.com/Rewards

* You earn LE Dollars on all your Life Extension purchases (except shipping fees, CHOICE and Premier program fees, Life Extension Magazine® subscriptions, or any purchases made with LE Dollars or gift card). Redeem LE Dollars for any purchase such as products, labs, sale items, and shipping fees at the rate of 1 LE Dollar being equal to $1 U.S Dollar at checkout. LE Dollars may not be redeemed for Premier program fees, CHOICE program fees, Life Extension Magazine® subscriptions, or to purchase Gift Cards. LE Dollars have no cash value and are not redeemable for cash, transferable, or assignable for any reason.

† CHOICE Standard pre-paid shipping offers unlimited shipping to any mailing address within the 50 U.S. states, excluding U.S. territories. CHOICE also gives you discounts on non-standard shipping, shipping outside of the United States, and expedited shipping costs. CHOICE pre-paid unlimited shipping excludes blood test products and gift cards. This offer is not available to international customers serviced by distributors of Life Extension products.

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**BILL TO ADDRESS**

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**SHIP TO ADDRESS**

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Prices subject to change without notice. Please notify Life Extension of any address change.
Maintaining healthy testosterone levels is one of the most important steps you can take to regain your health and improve your performance. With research showing that by the time a man is 70 years old, he may produce 60% less testosterone than he did at age 40, the time is now to add Life Extension®’s Super Miraforte with Standardized Lignans to your supplement regimen.

Low Testosterone Levels May Lead to:

- Reduced Sex Drive
- Less Energy
- Cloudy Thinking
- Weight Gain
- Cardiovascular Issues

Each daily dose of Super Miraforte with Standardized Lignans contains the following testosterone supporting ingredients:

- Chrysin 1,500 mg
- Bioperine® 15 mg
- Muira puama 850 mg
- Nettle root 282 mg
- Chelated elemental zinc 15 mg
- Maca 320 mg
- HMRlignan™ 33.4 mg
- Norway Spruce lignan extract

Caution: If you are taking any medication, use only under physician supervision. Men with existing prostate cancer may not be able to use this product. Elevations in free testosterone can unmask an occult (hidden) prostate cancer. Anyone with this concern should have a baseline PSA prior to using this product and a follow-up PSA test 60 days later. If a significant elevation of PSA is found, discontinue this product and advise physician. Do not take more than 15 mg per day of Bioperine®.

Published studies have shown the critical importance of lipoic acid in supporting healthy mitochondrial function.

Unlike other forms of lipoic acid, Super R-Lipoic Acid is more bioavailable, stable, and potent, achieving 10-30 times higher peak blood levels than pure R-lipoic acid. This unique sodium-R-lipoate can help you reach peak plasma concentrations within just 10-20 minutes of supplementation.

Super R-Lipoic Acid provides more of the active “R” form of lipoic acid than any other supplement.

To order Super R-Lipoic Acid, call 1-800-544-4440 or visit www.LifeExtension.com

Preserve Youthful

CELLULAR ENERGY

with Next-Generation

LIPOIC ACID

Suggested dose is one to two capsules daily.

Non-GMO

References

CAUTION: If you are taking glucose-lowering medication, consult your health care provider before taking this product.

Bio-Enhanced® is a registered trademark of Geronova Research, Inc.

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.
Used medicinally for over 4,000 years, curcumin benefits almost every organ in the body. The challenge is that most curcumin supplements are poorly absorbed into the bloodstream and are not well retained in the body.

Life Extension offers two curcumin supplements that utilize a patented, bio-enhanced preparation that can reach up to 7 times higher concentrations in the blood than standard curcumin.

Studies comparing standard curcumin to Super Bio-Curcumin® and Advanced Bio-Curcumin® with Ginger & Turmerones found:

- Nearly 2 times the support for immune health,
- Nearly twice the support for healthy inflammatory response, and
- Approximately double the free-radical fighting support.

Life Extension® offers the choice of two super-absorbing curcumin formulas that require only one capsule a day dosing:

Super Bio-Curcumin® provides optimal potency of highly absorbable curcumin.

OR

Advanced Bio-Curcumin® with Ginger & Turmerones provides the following additional nutrients for those seeking more comprehensive support for prolonged functional inflammatory responses:

- Ginger to complement curcumin’s health benefits,
- Turmerones to increase the amount of curcumin inside cells, and
- Phospholipids to further enhance absorption.

Highly Absorbable CURCUMIN

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

References

To order Super Bio-Curcumin® or Advanced Bio-Curcumin® with Ginger & Turmerones, 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.
WHAT’S INSIDE

Annual Super Sale begins November 16, 2015

BOOST BRAIN DOPAMINE LEVELS
Dopamine is the brain’s “feel-good” neurotransmitter. Youthful dopamine levels protect cognition and enhance longevity. Scientists have discovered a wild green oat extract that helps preserve dopamine, resulting in improvements in neurologic function and cerebral circulation.

PURGE HARMFUL SENILE CELLS
As cells age, they become tired and dysfunctional, which can reduce life span by fostering inflammation and organ malfunction. Research demonstrates that the low-cost nutrient quercetin can selectively remove old cells without harm to normal, youthful cells.

ARE YOU SUFFERING FROM SUBOPTIMAL THYROID FUNCTION?
Maturing women and men often experience vague symptoms that include fatigue, weight gain, feeling cold, depression, and dry skin that is often caused by suboptimal thyroid function. Learn about natural ways to boost thyroid activity to help restore youthful hormone balance.

WHY DIGESTIVE ENZYMES ARE SO POPULAR
Over-the-counter drugs may provide temporary relief of after-meal gas, bloating, and incomplete digestion, but they do not solve the underlying problem. Proper use of digestive enzymes and probiotics can enable older adults to maintain digestive health with less abdominal stress and greater retention of nutrients.