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N-Acetyl-L-Cysteine supports healthy levels of glutathione, a molecule utilized by all cells for protection against free-radical damage and attacks from foreign compounds.

CAUTION: Those who supplement with NAC should drink 6 to 8 glasses of water daily in order to prevent cysteine renal stones. Cysteine renal stones are rare but do occur.

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When Drugs Become Dietary Supplements

Politicians pretend to know how to make healthcare affordable. The realities tell a different story.

I used to pay $340 for an FDA-approved drug called Cerefolin® that contained:

- **5-MTHF** (L-methylfolate) 5,635 mcg
- **Vitamin B12** (cyanocobalamin) 1,000 mcg
- **Vitamin B6** (pyridoxine) 50 mg
- **Vitamin B2** (riboflavin) 5 mg

I needed this prescription drug to reduce homocysteine blood levels. My insurance company refused to pay the outlandish price, so I had to cover it myself.

Move forward a few years and the superior 5-MTHF form of folate became available as a dietary supplement. You can now obtain better homocysteine-reducing formulas for less than $20 that provide:

- **5-MTHF** (L-methylfolate) 5,000 mcg
- **Vitamin B12** (methylcobalamin) 1,000 mcg
- **Vitamin B6** (pyridoxal-5-phosphate) 100 mg
- **Vitamin B2** (riboflavin) 25 mg

5-MTHF is the activated form of folate that supports methylation in your DNA. The chart on this page shows the processes required to convert folic acid into active 5-MTHF.

Pyridoxal-5-phosphate is the biologically active form of vitamin B6. Methylcobalamin is one of the most active forms of vitamin B12.

To enlighten politicians about slashing high drug costs, tell them to reduce the FDA’s authority and let the public access low-cost generic brands of all off-patent drugs—including nutrients that should not require a doctor’s prescription.
In youth, all our body systems are expected to function well all the time. This changes with aging.

An underlying culprit of degenerative aging is disrupted methylation. Optimal methylation enables youthful reactions to occur throughout the body, including in our brain, heart, and critical liver detoxification systems.

Methylation controls genes that must precisely turn “on” and “off” in order to maintain cellular health. Distorted DNA methylation is involved in a host of age-related disorders.

The good news is that nutrients most of you take, including activated B vitamins like 5-methyltetrahydrofolate (5-MTHF), vitamin D, and magnesium facilitate healthy methylation.2,3

Measures of DNA methylation, called “epigenetic clocks,” are today’s premier predictors of human longevity.

Life Extension® has published many articles about methylation, but readers still find it challenging to understand.

According to research in mice, 20%-40% of age-related changes that are measured by epigenetic clocks can be favorably influenced by lifestyle changes such as calorie restriction.4

Evidence also suggests that, for many people, nutrients such as 5-MTHF and methylcobalamin can favorably influence healthy methylation patterns.

Widespread Methylation Deficits

Methylation is an essential process for internal biochemical reactions. With aging, methylation patterns become disrupted.5

The MTHFR gene is responsible for the activity of the enzyme that enables folate to be converted into the bioactive form (called 5-methyltetrahydrofolate) that facilitates healthy methylation.

Approximately half the population carries a variant of the MTHFR gene that affects the activity of the enzyme, resulting in disrupted DNA methylation.6,7

To fulfill its role in maintaining proper methylation, folate (or folic acid) needs to convert to bioactive 5-MTHF in the body.

Methylation Deficits Cause Excess Homocysteine

Homocysteine is an amino acid that, when elevated, has been associated with circulatory and neurological problems.8 Excess homocysteine creates inflammation of the endothelium (the inner wall of the arteries) which results in increased cardiovascular risks.9

Proper methylation is needed to detoxify homocysteine and reduce high levels of it.

Age-related homocysteine increases are often caused by disrupted methylation.10 One reason for homocysteine buildup is that older people do not convert dietary
folate or folic acid in supplements into biologically active methylated folate (5-MTHF). The solution is to use the 5-MTHF form of folate, which is a low-cost dietary supplement and no longer an outlandishly priced prescription drug.

Methylation Vital for Gene Expression

The 5-MTHF form of folate is necessary for a compound in the body called S-Adenosyl-Methionine (SAMe) to methylate genetic material, including DNA. Methylation is a critical way the transcription (activation) of genes is controlled. Without proper methylation, harmful genes can be overly expressed.

Epigenetic age is an emerging scientific concept that involves analysis of methylation patterns to determine biological age. Epigenetics refers to external modifications that occur in gene expression as a result of what we do to our bodies, as opposed to the genetic code we are born with.

Cigarette smoke, for example, causes deleterious epigenetic changes to our cellular DNA. Vitamin D and omega-3 fatty acids, on the other hand, induce beneficial epigenetic effects. Published research shows that measuring epigenetic age can predict future disease and mortality.

Scientists have invented tests they call epigenetic clocks that have been shown to be accurate predictors of lifespan, healthspan, and all-cause mortality. We expect to discuss more about epigenetic tests in future issues of Life Extension magazine.

The B Vitamin That Became a Drug

Vitamin B6 comes in several forms that have shown varying degrees of beneficial effects. Like folate and B12, vitamin B6 plays a role in reducing levels of homocysteine. It does this via a different detoxification pathway than by methylation. Pyridoxal-5-phosphate is the biologically active form of B6 that is obtainable today.

Pyridoxamine may be a better form of vitamin B6 that is currently unobtainable. In 1999, a pharmaceutical company filed an application with the FDA to investigate pyridoxamine’s ability to treat diabetic nephropathy (kidney disease). In 2005, the same company asked the FDA to remove pyridoxamine as a supplement. Eleven years later pyridoxamine is not approved either as drug or supplement.

Fortunately, consumers have access to low-cost pyridoxal-5-phosphate, which many believe to have comparable benefits to the pyridoxamine form of vitamin B6 the FDA claims is a “drug.”

Consumers Won the Big War

For many decades, the FDA tried to convert low-cost dietary supplements into prescription drugs. This was done at the behest of pharmaceutical companies who stood to make a fortune charging consumers outlandish drug prices for what are low-cost nutrients.
**What is Methylation?**

Genes are stretches of DNA that determine our traits, from hair and eye color to susceptibility to certain diseases and even lifespan potential.

Genes can also be active or inactive. The science of epigenetics studies how and why genes are expressed, or not.21

One of the main “switches” that modulates the way genes are expressed is methylation, which occurs when methyl groups are added to our genetic material.22

**SAMe (S-Adenosyl-Methionine)** is a nutrient found naturally in the body that serves as the primary methyl donor. That means it’s involved in practically all methylation reactions.22-25

If we don’t have enough of it, the body cannot methylate properly. That can lead to excessive oxidative stress, chronic inflammation, tissue damage, and disease.26,27

B vitamins and SAMe offer a way to maintain healthy methylation.

---

Research has found that taurine can promote new cell formation in the area of the brain associated with learning and memory.

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Life Extension® first introduced SAMe in 1997. Since then, researchers around the world have continued to discover its impressive benefits.

While SAMe is largely known for mood support, it has also shown benefits for the liver and joints.

A study by Harvard Medical School and Massachusetts General Hospital cited the impressive benefits of SAMe for mood elevation.¹

A report published in Germany showed that SAMe may help maintain healthy neurological function. This impressive report found that SAMe:²

- Increased **glutathione** levels by 50% and glutathione enzyme activity by 115%,
- Decreased a measurement of **free radical** activity by 46%, and
- Inhibited **lipid peroxidation** by 55% in culture.

In addition to these findings, SAMe also improves brain cell **methylation**, thereby facilitating youthful **DNA enzymatic actions**.

For full product description and to order SAMe, call 1-800-544-4440 or visit www.LifeExtension.com

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

(SAMe is also available in boxes containing 30 200 mg tablets. Price is $18.75. If you buy four, the price is reduced to $16.50 per box. Item #02175).

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**References**
Nutrients Strengthen the Immune System Against Viral Infections

A review published in the Archives of Physiology and Biochemistry found evidence for nutrients including protein, vitamins, minerals, and fatty acids, that strengthen the human immune system against viral infections.*

Fifty-one articles were reviewed, which focused on the effects of nutrients in immunity and viral infections. They included reports of randomized trials, case-control studies, in vivo studies, and randomized-trial meta-analyses.

These studies identified protein, omega-3 fatty acids, vitamins A, B1, B6, B12, C, D and E, iron, selenium, and zinc as having a role in strengthening the immune system and supporting immune function.

Among the mechanisms discussed are:

- The role of amino acids in the immune system’s antiviral actions,
- Vitamin A’s involvement in maintaining mucosal integrity,
- Vitamin C’s anti-inflammatory effect in sepsis,
- Vitamin D-associated reduction of viral replication rates and inflammatory cytokine levels,
- Vitamin E’s ability to help maintain T-cell membrane integrity, and
- Zinc’s ability to impair viral replication.

Editor’s Note: In some of the studies, nutrient supplementation was associated with improved health status of infected individuals. “Supplementation with some nutrients may support the body’s natural defense system by enhancing the immunity, epithelial barriers, cellular immunity, and antibody production,” the review’s authors wrote.

Probiotic Supplementation Can Help Improve Depressive Symptoms

People who have symptoms of depression may benefit from supplementation with probiotics with or without prebiotics, according to a systematic review published in the journal *BMJ Nutrition Prevention & Health.*

For their review, the researchers selected seven studies that enrolled a total of 361 men and women. The studies examined the effects of at least one probiotic bacteria strain on anxiety or depression.

“Every study demonstrated a significant, quantitatively evident, decrease/improvement of symptoms and/or biochemically relevant measures of anxiety and/or depression for probiotic or combined prebiotic–probiotic use,” the authors reported.

The authors concluded that the effects of prebiotic and probiotic therapy against depression and anxiety warrant further investigation in larger populations.

**Editor’s Note:** Probiotics are helpful bacteria residing in the intestinal tract that help in digestion and other aspects of health. Prebiotics are nutrients that support the growth of these microorganisms.

Garlic May Benefit Rheumatoid Arthritis Patients

Results from a trial reported in *Phytotherapy Research* revealed improvements in pain, inflammation, tender joint count, disease activity score and fatigue among rheumatoid arthritis patients who were supplemented with 1,000 mg of garlic daily, compared to patients who received a placebo.*

The trial included 70 women with active rheumatoid arthritis who received 500 mg garlic powder tablets twice per day (equivalent to 2.5 grams fresh garlic) or a placebo for eight weeks.

At the beginning and end of the study, clinical symptoms and fatigue were assessed and biomarkers of inflammation including erythrocyte sedimentation rate, C-reactive protein (CRP), and tumor necrosis factor-alpha (TNF-a) were measured.

At the trial’s conclusion, serum CRP and TNF-a were significantly reduced among participants who received garlic in comparison with the placebo group, indicating decreased inflammation. Pain intensity, tender joint count, fatigue, and disease activity scores all improved in association with treatment compared to the placebo.

*Editor’s Note:* The authors observed that garlic is rich in bioactive compounds that include allicin and diallyl sulfide, which have been found, in several studies, to have anti-inflammatory effects. Other studies have reported pain-relieving and anti-fatigue benefits in association with garlic intake. Additionally, garlic may help protect against joint cartilage destruction.

Passive stretching could improve heart health by boosting blood flow, according to a study published in the *Journal of Physiology.*

Unlike active stretching, passive stretching involves using an external force, such as gravity or another person, to help achieve a deeper stretch.

For this study, 39 people were divided into two groups: one that performed leg stretches five times a week for 12 weeks, and one that did no stretching.

The researchers found that stretching helped to increase blood flow and dilation—and decreased stiffness—in the arteries in the upper arm and lower leg.

According to one of the study’s authors, “This new application of stretching is especially relevant in the current pandemic period of increased confinement to our homes, where the possibility of performing beneficial training to improve and prevent heart disease, stroke, and other conditions is limited.”

Editor’s Note: This study indicates that stretching could potentially represent a drug-free way to improve vascular health and reduce disease risk, as changes in blood flow due to an impaired vascular system are characteristics of diseases such as heart disease, stroke, and diabetes.

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Patented turmeric extract (500 mg) results in 45 times greater bioavailability of free curcuminoids.

Item #02407
500 mg, 60 vegetarian capsules
1 bottle $24 • 4 bottles $22 each

Same 500 mg potency patented turmeric extract with added benefits of ginger and other turmeric actives.

Item #02324
500 mg curcumin + gingerol, 30 softgels
1 bottle $20 • 4 bottles $18 each

For full product description and to order Curcumin Elite™ or Advanced Curcumin Elite™, 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.
Caution: Consult your health care provider before taking this product if you are being treated for a medical condition (especially autoimmune or depressive disorders). This product is not intended for children, pregnant or lactating women, or women trying to become pregnant. Do not consume alcohol, drive or operate machinery after taking this product.

Healthy sleep is one of the best ways to feel revitalized and maintain optimal health.

While many people find melatonin helps improve sleep, others take it nightly for its immune protection effects.

Individual doses range from 300 mcg to 10 mg taken 30-60 minutes before going to sleep.

For full product description and to order any of these premium-grade Melatonin supplements, call 1-800-544-4440 or visit www.LifeExtension.com
FLORASSIST® formula provides clinically-studied ingredients that have been shown to:

- Promote relaxation
- Enhance mood
- Reduce perceived stress

Two probiotic strains enhance signaling between the digestive tract and brain to support positive mood.

This probiotic blend also contains standardized saffron that has been shown to significantly improve mood and promote relaxation.

Contains milk, soybeans.

For full product description and to order FLORASSIST® Mood Improve, 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.
Garlic supports healthy immune function

Science has shown that garlic, rich in allicin, supports immune function on multiple fronts, for example:¹,²

- Promotes healthy immune cell function
- Supports immune T cells and immunoglobulin production
- Promotes protective macrophages
- Maintains cellular detoxification
- Modulates cytokine production

Easy-to-take Optimized Garlic is standardized to contain 10,000 ppm of allicin potential.

References

For full product description and to order Optimized Garlic, 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.
**Astaxanthin** is a carotenoid that benefits the brain, heart, skin, and immune system.

Found naturally in seafood and algae, as little as 50% of **astaxanthin** is normally absorbed in the bloodstream.¹,²

**Life Extension** combines 4 mg of **astaxanthin** with a blend of four different **phospholipids**, which has been shown to enhance carotenoid absorption by several-fold.³

References

For full product description and to order **Astaxanthin 4 mg with Phospholipids**, call 1-800-544-4440 or visit www.LifeExtension.com

Item #01923 • 30 softgels
1 bottle $12
4 bottles $10.50 each

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.
Americans suffer from over one billion colds each year, an average of more than three per person.\(^1\)

The flu is less common but far more severe, killing tens of thousands of Americans annually.

Here’s the good news: In the early stages of a cold or flu, it is still possible to change the course of the illness.

Three immune-supporting nutrients bolster your body’s defenses, helping to reduce both the severity and duration of the illness.

In human studies:

- **Zinc** lozenges reduce the duration of colds by up to 44% and the severity of symptoms by as much as 50% when initiated soon after symptoms first appear,\(^2\)

- **Elderberry** extract resolves upper respiratory symptoms up to four days earlier than a placebo,\(^3\) and

- **Vitamin C** can reduce the duration of colds by 9.4% overall—and by 18% in children.\(^4\)

Zinc, elderberry, vitamin C and other interventions may reduce the impact of cold or flu, helping you recover and get back on your feet faster.
The Dangers of Cold and Flu

The common cold and the flu are two of the most frequent causes of acute illness, with no effective medical treatments to cure them.

More than one billion cases of cold, a viral infection of the nose and throat, occur in the U.S. each year, typically lasting a week to 10 days.1,5

Up to 20% of Americans contract the flu each year, a more severe viral infection that can lead to serious complications like pneumonia.1

Annual flu vaccines can protect only against two or three strains of flu virus each season, and they do not protect against colds.

Three Nutrients That Help

Three nutrients have been shown to improve outcomes from cold and flu infections:

- Zinc,
- Elderberry, and
- Vitamin C.

Each has been shown, in clinical trials, to reduce the severity and/or duration of these common infections.

Zinc Shortens Colds

Zinc is a mineral required for the proper function of hundreds of enzymes in the body.

It can reduce the spread of viruses that cause colds in a number of different ways.

In order to cause disease, viruses must recognize, bind to, and then enter a host cell.

Zinc appears to coat the receptors that viruses use to bind to cells, preventing them from entering cells.6

If they can’t enter the cells, viruses can’t replicate out of control.

A number of trials have evaluated whether these antiviral effects are clinically effective.

An analysis of human studies showed that, when started after the first sign of cold symptoms, taking 80 mg to 92 mg of dissolve-in-the-mouth zinc in divided doses every few hours reduces the duration of symptoms by 25% to 44%.2

In most cases, the severity of symptoms was also reduced, by up to 40% to 50%.

Elderberry Fights Viruses

Elderberries are small, dark purple berries. They’re packed with anthocyanins, pigments responsible for their color, which have antioxidant, anti-inflammatory, and antiviral properties.3,7

Elderberries have long been used in traditional medicine to treat fevers, infection, and a variety of other ailments. Research has found that they help ward off viral respiratory tract infections such as colds and flu.3

Scientists determined that elderberry and its extracts have direct antiviral effects in cell cultures.8

In one study, healthy cells were incubated with the H1N1 virus, the virulent form of flu that caused the 1918 Spanish flu pandemic and another outbreak in 2009. Elderberry reduced the number of cells that became infected with the virus.

This happened in a dose-dependent manner, meaning that at low doses the elderberry slightly reduced the number of infected cells (by about 20%). At higher doses it prevented nearly 100% of the cells from becoming infected.
By helping to neutralize excess free radicals, vitamin C helps limit the oxidative damage that occurs and reduces the severity of illness.

Vitamin C defends against infection in several ways. For one, it helps to enhance the immune response to viral infections and reduce the severity and/or duration of illness.9

Human studies indicate that vitamin C may be effective in treating viral respiratory tract infections. One large analysis that looked at close to 10,000 cases of the common cold found that vitamin C reduced the duration of colds by 9.4% overall.4

When researchers evaluated adults and children separately, they found that the duration of colds was shortened by 8% in adults and 18% in children.

Vitamin C Boosts Immunity

Vitamin C has long been considered an important nutrient to boost immunity and defend against infection by viruses and other pathogens.

Viral infections often lead to an increased production of free radicals, which inflict additional inflammatory damage and increase disease severity.

These experimental findings have carried over to human studies. A recent analysis of randomized clinical trials found that elderberry extract intake significantly reduced the duration of illness in people sick with flu or cold infections.3

In one of these studies, people suffering from upper respiratory symptoms who used elderberry extract had their symptoms resolve four days earlier than those taking a placebo.3

Boosting Immunity to Fight Colds and Flu

- **Cold** and **flu** viruses are two of the most common causes of acute respiratory illness.

- Three nutrients—**zinc**, **elderberry**, and **vitamin C**—have been shown to enhance the immune response to viral infections and reduce the severity and/or duration of illness.

- Taken for a short course at the first signs of symptoms, a blend of these nutrients may help people recover faster when illness does set in.

WHAT YOU NEED TO KNOW

**Boosting Immunity to Fight Colds and Flu**

- **Cold** and **flu** viruses are two of the most common causes of acute respiratory illness.

- Three nutrients—**zinc**, **elderberry**, and **vitamin C**—have been shown to enhance the immune response to viral infections and reduce the severity and/or duration of illness.

- Taken for a short course at the first signs of symptoms, a blend of these nutrients may help people recover faster when illness does set in.
Numerous studies using varying dosage regimens have assessed the effects of vitamin C in the context of common colds. Some studies show reductions in common cold incidence\textsuperscript{10-12} or duration of illness,\textsuperscript{4,13,14} while others have concluded that vitamin C supplementation has no or minimal effect.\textsuperscript{15-17} Some evidence suggests greater potential for benefit with higher vitamin C doses and if supplementation is started rapidly after symptom onset.\textsuperscript{18,19}

**Summary**

The common **cold** and the **flu** are two of the most frequent **viral illnesses**.

Research has found that **zinc**, **elderberry**, and **vitamin C** help support the immune system and can reduce the **severity** and **duration** of illness.

Each has been found to have immune-response-bolstering properties when taken at the first sign of symptoms of cold or flu. •

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

**References**

**Add AMPK TO YOUR HEALTH ROUTINE**

AMPK is an enzyme in the body that signals cells to burn fat for energy.

Over time, AMPK levels decline and can cause accumulation of abdominal fat.

**AMPK Metabolic Activator:**
- Revitalizes youthful AMPK activity
- Encourages the use of abdominal fat for energy
- Promotes healthy cellular metabolism

Item #02207 • 30 vegetarian tablets
1 bottle $28.50 | 4 bottles $24 each

For full product description and to order **AMPK Metabolic Activator**, call 1-800-544-4440 or visit LifeExtension.com

This supplement should be taken in conjunction with a healthy diet and regular exercise program. Individual results are not guaranteed, and results may vary. Actiponin® is a trademark of TG Biotech Co., Ltd.

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RESTORE BALANCE DURING STRESS

**Stress** disrupts multiple biochemical pathways.

**Adrenal Energy Formula** contains **four botanical adaptogens**, shown to modulate different stress-related changes.

- **Ashwagandha** supports muscle strength\(^1\) and increases oxygen consumption.\(^2\)
- **Bacopa** enhances cognitive performance and mood.\(^3\)
- **Cordyceps** promotes endurance\(^4\) and enhanced immune function.\(^5\)
- **Holy basil** supports balanced levels of neurotransmitters\(^6\) and enhances mood.\(^7\)

**Item # 01630 • 120 vegetarian capsules**
1 bottle $34.50 • 4 bottles $31.50 each

To order **Adrenal Energy Formula**, call **1-800-544-4440** or visit [www.LifeExtension.com](http://www.LifeExtension.com)

**References**

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Under the Weather?

Bounce Back Fast!

5 Day Elderberry Immune
provides black elderberry extract, a blast of zinc, and vitamin C to support healthy immune response.

Simply chew one of these berry-flavored, vegetarian tablets 8 times throughout the day for 5 days.

Quick immune fortification, just when you need it most.

Item #02411 • 40 vegetarian chewable tablets
1 bottle $13.50 • 4 bottles $12 each

Caution: Supplemental zinc can inhibit the absorption and availability of copper. If more than 50 mg of supplemental zinc is to be taken daily for more than four weeks, 2 mg of supplemental copper should also be taken to reduce the risk of copper deficiency.

For full product description and to order 5 Day Elderberry Immune, call 1-800-544-4440 or visit www.LifeExtension.com

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Humans don’t manufacture vitamin C internally, so it must be obtained through dietary sources or supplements.

Vitamin C is water soluble and needs to be constantly replenished.*

A highly absorbable form of quercetin complements vitamin C’s activity in the body.

Each tablet provides 1,000 mg of vitamin C and 15 mg of Bio-Quercetin Phytosome.

Item #02227 • 250 vegetarian tablets
1 bottle $22.50 • 4 bottles $20 each

For full product description and to order Vitamin C and Bio-Quercetin Phytosome, call 1-800-544-4440 or visit www.LifeExtension.com


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Elderberry + Vitamin C

Immune Support

Standardized **elderberry** extract helps support immune function.

**Vitamin C** promotes signaling proteins called **interferons** that further support immunity.

One daily serving (2 capsules) of **Black Elderberry + Vitamin C** provides a potent **720 mg** of **black elderberry** extract together with **200 mg** of **vitamin C**.

For full product description and to order **Black Elderberry + Vitamin C**, call 1-800-544-4440 or visit www.LifeExtension.com

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LITHIUM, ALZHEIMER’S, and Other Dementias

BY T.R. SHANTHA, MD, PHD, FACA
There is a mineral that may help prevent and slow the progression of Alzheimer’s and other forms of dementia: lithium.

In large doses, lithium has been used for years as a medication to treat bipolar disorder and depression.

In much smaller microdoses of around 300-1,000 mcg, it has shown benefits in Alzheimer’s patients.

As a physician, I advise anyone over the age of 60, or anyone with mild cognitive impairment, to start taking microdoses of oral lithium.

It’s safe, passes easily through the blood-brain barrier, and has been shown to increase production of neurons in the brain.

Lithium holds promise in protecting against neurodegeneration and in promoting longevity.
Where Lithium Comes From

Lithium is a mineral present in nearly all rocks and natural water sources.

Today, people get small amounts from natural spring water, grains, vegetables, eggs, and milk.

The World Health Organization considers lithium a nutritionally essential trace element, alongside zinc, iodine, and others.

Lower Rates of Dementia

Doctors have long used high doses of lithium to treat bipolar disorder and depression.

Scientists noticed that bipolar patients receiving lithium had lower rates of cognitive decline than patients on other medications.¹ That got them interested in whether lithium could be used to treat neurodegenerative disorders.

To test this observation, researchers compared the rates of Alzheimer’s disease in 66 elderly bipolar patients using chronic lithium therapy with 48 similar patients who were not prescribed this mineral.

In patients receiving lithium, just 5% had Alzheimer’s, compared with 33% in the non-lithium group.²

Two studies in Denmark confirmed similar results. Investigators surveyed the records of over 21,000 patients who had received lithium treatment and found that it was associated with a reduced rate of Alzheimer’s and other forms of dementia.³,⁴

And in 2018, researchers studying lithium levels in different regions of Texas discovered that rates of death from Alzheimer’s disease were higher in areas with low levels of lithium in the water.⁵

This finding indicates that high lithium drug doses may not be needed to confer neuroprotection.

Based on findings from a 2020 study of Alzheimer’s disease in rats, scientists from McGill University have suggested that microdoses of lithium could slow the progression of Alzheimer’s in its initial stages and even improve cognition.⁶

How Lithium Protects the Brain

Experimental and clinical studies offer evidence of the many ways that lithium exerts neuroprotective effects.

Microdoses of lithium may help maintain the length of telomeres, protective caps on the ends of chromosomes.⁷,⁸ Telomere length has been linked to increased longevity and to warding off diseases, including Alzheimer’s.
Research shows that lithium promotes the synthesis and release of two vital proteins, brain-derived neurotrophic factor (BDNF) and neurotrophin-3. These are both neurotrophic factors, which means they stimulate the growth, development, and repair of brain cells. This may explain why patients on lithium have a significantly higher volume of gray matter, the layer of the brain containing nerve cell bodies.

One study directly demonstrated that damaged nerve cells exposed to lithium respond with increases in the number and length of dendrites, the parts of neurons that receive signals from other neurons.

Lithium reduces levels of an enzyme called glycogen synthase kinase-3 (GSK-3). This enzyme is involved in the production of neurofibrillary tangles, which lead to the damaging plaques found in the brains of patients with Alzheimer’s.

Lithium also reduces oxidative stress and inflammation, providing additional neuroprotection.

Human Studies

A placebo-controlled trial was conducted on people with a form of mild cognitive impairment that made it difficult to learn or recall new information. The study found that low-dose lithium was associated with lower concentrations of abnormal tau proteins in cerebrospinal fluid.

Lithium improved performance on multiple cognitive scales, suggesting that it may slow the progression of cognitive and functional deficits.

In another human study, just 300 mcg of lithium daily significantly decreased cognitive decline in Alzheimer’s patients compared to a placebo.

In a third study, the cognitive function of patients with early-stage dementia who took lithium remained more stable than in those individuals who took a placebo.

I believe that every patient with signs and symptoms of dementia should be on microdoses of oral lithium. Further experimentation in large-scale clinical trials is still required to assess the true ability of lithium to treat or prevent dementia and cognitive decline.
Summary

The mineral lithium has benefits in the brain.

It has long been used to treat mood disorders, and there is evidence that its neuroprotective properties can help prevent and slow the progression of Alzheimer’s and other forms of dementia.

Studies show that lithium stimulates the growth of neurons, inhibits the development of neurofibrillary tangles seen in the brains of Alzheimer’s patients, maintains and increases the length of protective telomeres, and much more.

Every person above the age of 60 or 65, or anyone with signs of dementia, could benefit from microdoses of oral lithium to promote brain health and protect cognitive function.

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

References

Research shows zinc deficiency is common in aging populations—and may contribute to the decline of immune function.1

Zinc supports and activates:

• **Natural killer** cell function2
• A healthy inflammatory response3
• **Thymic** function needed to make immune T-cells.

Life Extension® combines the superior bioavailability of **zinc monomethionine**4 with **zinc citrate** to provide 50 mg of these absorbable zins in a single capsule.

For full product description and to order **Zinc Caps**, call 1-800-544-4440 or visit www.LifeExtension.com

OptiZinc® is a registered trademark of InterHealth Nutritionals, Inc.

**CAUTION:** Supplemental zinc can inhibit the absorption and availability of copper. If more than 50 mg of supplemental zinc is to be taken daily for more than four weeks, 2 mg of supplemental copper should also be taken to reduce the risk of copper deficiency.

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References

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Once-Daily HEALTH BOOSTER

NOW WITH TOCOTRIENOLS!

- **Mixed tocotrienols** to support arterial health, cellular apoptosis, and normal lipid profiles.

- **Broad-spectrum Vitamin K** with four vitamin K2 subtypes (MK-4, MK-6, MK-7, MK-9) plus vitamin K1 to keep calcium in bones and out of arteries.

- **Macuguard®** including zeaxanthin, lutein, and meso-zeaxanthin to support macular density.

- **Lycopene** to maintain healthy cell division.

- **Chlorophyllin** to protect against environmental DNA damage.

- **Saffron** to support visual health.

The same nutrients sold separately would cost 2-3 times more money!

For full product description and to order Once-Daily Health Booster, call 1-800-544-4440 or visit www.LifeExtension.com

Caution: If you are taking warfarin (Coumadin®) or related medications, consult with your healthcare provider before taking this product.

Lyc-O-Mato® is a registered trademark of Lycored, Corp. LuteinPlus® and Mz® are registered trademarks of NutriProducts LTD., UK, licensed under U.S. patent 8,623,428.

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LITHIUM

The Brain & Body Element

In areas where lithium is naturally abundant in the drinking water, people tend to live longer, healthier lives.1-3

Lithium is a low-cost mineral that supports cognition, neural function, and healthy aging.3-5

References

For full product description and to order Lithium, call 1-800-544-4440 or visit www.LifeExtension.com

LITHIUM
(1,000 mcg of lithium per tiny cap)
Item # 02403 • 100 vegetarian capsules

1 bottle $12 • 4 bottles $10.50 each

Each bottle lasts 100 days.

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Pomegranate Complete combines extracts from the whole fruit, flower, and seed oil to support system-wide health. These pomegranate plant compounds help promote a healthy inflammatory response and combat age-related metabolic changes.

For full product description and to order Pomegranate Complete, call 1-800-544-4440 or visit www.LifeExtension.com

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Maintain Youthful

HOMOCYSTEINE

LEVELS

FOR BRAIN, HEART, AND HEARING HEALTH

Homocysteine Resist supports healthy levels of homocysteine, an unfavorable amino acid that can increase with normal aging.

Just one daily capsule of Homocysteine Resist provides:

- 5-MTHF (activated folate) 8,500 mcg*
- Methylcobalamin (activated vitamin B12) 1,000 mcg
- Pyridoxal 5'-phosphate (activated vitamin B6) 100 mg
- Riboflavin (vitamin B2) 25 mg

*DEF (Dietary Folate Equivalents)

CAUTION: Do not use this product if treated with methotrexate, fluorouracil, phenytoin, phenobarbital, primidone, or levodopa prior to consultation with your healthcare provider.

For full product description and to order Homocysteine Resist, 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.
Oral Collagen Improves Skin and Joint Health

Collagen makes up about one-third of all protein in the body.\(^1\)

In the skin and joints, collagen provides structural support, strength, and resiliency.

In youth, damaged collagen is continually repaired and replaced.

But with age, the body’s ability to replenish collagen stores declines by about 1.5% each year.\(^2\)

This loss of collagen is a major contributor to skin aging and loss of joint function.

Whole collagen is a large, complex protein that cannot be easily digested or absorbed into the body.

But scientists have discovered that partially broken-down collagen—known as hydrolyzed collagen—is highly absorbable.

Consumed orally, hydrolyzed collagen stimulates the production of new collagen in the skin and joints.\(^3-5\)
What Is Collagen?

There are connective tissues throughout the body, in the skin, bone, cartilage, tendons, ligaments, and more. They give structure, strength, and support to tissues.

All connective tissues have protein fibers within them that influence the mechanics and strength of that tissue. Collagen makes up a large proportion of these fibers.

In humans, most of the collagen is present in three forms:

- **Type I collagen** is especially prevalent in the skin, where it makes up over 80% of all collagen. This collagen is the reinforcement structure of connective tissues. It has great tensile strength, resisting stretching and tearing. It is also prevalent in bone, tendons, and ligaments.

- **Type II collagen** is primarily found in cartilage, the connective tissue that protects the bones at the joints.

- **Type III collagen** is found in skin, cartilage, blood vessels, and throughout many other soft tissues.

Collagen is produced primarily by connective tissue cells called fibroblasts and by cartilage cells called chondrocytes.

But they produce less collagen as we age, gradually declining at a rate of about 1.5% per year.

In the skin, this loss of collagen has immediate, visible effects. Skin loses elasticity and strength, leading to sagging, fine lines, and wrinkles.

In joints, age-related changes in the collagen structure means articular cartilage no longer functions effectively. This contributes, in part, to the joint stiffness and the movement limitations characteristic of patients with osteoarthritis.

How Oral Collagen Works

Whole collagen is difficult to digest and too large to be absorbed into the body.

But scientists have found that if the collagen is prepared in such a way that it is already broken into fragments, as much as 95% of it can be absorbed and distributed to tissues throughout the body.

Collagen formulated in this manner is known as hydrolyzed collagen. Once these collagen pieces reach the skin or cartilage, they stimulate repair and rejuvenation of tissues.

Researchers have identified at least two different mechanisms by which this happens:

- Collagen fragments directly activate fibroblasts and chondrocytes, stimulating them to increase their production of collagen and other connective tissue components.

- Immune system cells recognize the collagen fragments and activate a process that stimulates fibroblasts, further energizing their production of collagen and other connective-tissue proteins.

In skin, this improves age-related skin changes, increasing skin hydration and elasticity while reducing fine lines, wrinkles, and dryness.

In joints, chondrocytes are stimulated to repair and replace damaged collagen, leading to less pain and greater mobility.

Healthier, Younger-Looking Skin

Many clinical trials have assessed the ability of oral collagen to improve skin health and appearance. In just the last two years, a number of reviews have summarized their findings.

The vast majority of published studies have found that skin appearance and markers of skin health are improved after oral intake of collagen.

Collectively, these studies show that collagen intake results in:

- Improved skin hydration,

- Improved skin elasticity (the ability to stretch and bounce back without sagging),

- Improved skin texture and condition, and

- Reduction of lines and wrinkles, including crow’s feet.

Oral collagen also benefits the nails, improving flexibility and texture.

One joint Korean and Japanese study published in the journal Nutrients evaluated the use of hydrolyzed collagen peptides (short chains of amino acids that provide the building blocks for collagen) in adult women.

Subjects were randomized to receive either the collagen or a placebo. After six weeks, measurements of skin hydration in the collagen group were 7.23-fold greater than the placebo group.
By week 12, the visual improvement in skin wrinkles was 10.5-fold greater in the collagen group than in the placebo group. Skin elasticity also improved significantly in the collagen group.

Other similar studies have shown comparable findings.\(^2\,7\,10\)

Several studies have evaluated collagen intake for skin conditions, including dryness, cellulite, and skin ulcers (open sores that don’t heal properly).\(^10\)

For all these conditions, oral hydrolyzed collagen has a positive impact. It accelerates skin healing, improves skin hydration, reverses signs of skin aging, and reduces cellulite.

**Collagen and Joint Health**

**Joints** are structures where two or more bones meet. **Cartilage** keeps joints like the knee, elbow, fingers, shoulder, and hip working through a full range of motion without pain. This lubricated, rubber-like tissue lines the ends of the bones, cushioning them so that they can glide over each other smoothly without damaging each other.

With wear and tear, **joint cartilage** breaks down. Over time, it becomes thin, rough, and cracked, and can even erode completely, leaving bone on bone.

This condition is referred to as **osteoarthritis**, the most common form of arthritis. It results in inflammation, pain, and significant reduction in the range of motion of joints.

Osteoarthritis is a major source of chronic pain and disability in older adults. Knee osteoarthritis is the most common condition leading to surgical joint replacement.\(^13\)

**Collagen** is vital to the structure and health of cartilage, along with other supportive structures around joints, such as ligaments and tendons.

**Hydrolyzed collagen** has been shown to protect cartilage and repair it in an animal model of osteoarthritis, and to improve measures of osteoarthritis severity and quality of life in a clinical trial.\(^14\,15\)

In a mouse model of osteoarthritis, hydrolyzed collagen increased total cartilage area, increased the number of chondrocytes producing cartilage, and increased the **extracellular matrix**, which can be thought of as the scaffolding for surrounding tissues.

All of these benefits led to preserved cartilage volume and function.\(^14\) At the same time, it was associated with a reduction in signs of painful **inflammation** in the joint.

**WHAT YOU NEED TO KNOW**

**Collagen for Healthy Skin and Strong Joints**

- **Collagen** is the most prevalent protein in the body.
- Collagen lends strength and resilience to many tissues, including the skin and joints.
- With age, collagen production drops. In skin, this contributes to dryness and wrinkles. In joints, this leads to dysfunction and, over time, osteoarthritis.
- Oral collagen that has been partially broken down, known as **hydrolyzed collagen**, is easily absorbed into the body and distributed to tissues.
- Human studies have found that hydrolyzed collagen improves markers of skin aging and health, improving hydration and elasticity while reducing fine lines and wrinkles.
- Collagen has also been found to stimulate cartilage repair in joints, improving range of motion and reducing pain.
Collagen has also been tested in human subjects. A randomized, controlled trial evaluated the use of collagen peptides in patients suffering from osteoarthritis. Subjects receiving placebo had no change in the severity of their symptoms, including pain. But those receiving collagen had significant reduction in pain.

Individuals taking collagen also had improvements in other symptoms, like stiffness, physical function, and quality of life.

**Summary**

Collagen is the most prominent protein in the body. It gives form and strength to various tissues, including the skin and joints.

Collagen production declines with advancing age. In the skin, that leads to dryness and wrinkles. In joints, it causes a breakdown in cartilage that can result in arthritis.

A partially broken-down collagen, known as hydrolyzed collagen, is highly absorbable and can reach the skin and joints. There, it stimulates collagen production and improves the overall health and youthfulness of these tissues.

Clinical trials have demonstrated that intake of hydrolyzed collagen results in younger-looking skin, improving hydration and reducing wrinkles, while protecting joints and improving their function.

References

CoQ10

When Your Energy Matters Most

When every second counts, you need to make sure energy levels are up for any task. Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™ can help.

Formulated with a highly-absorbable form of CoQ10 and a patented delivery system, our best-selling CoQ10 formula promotes your heart health and your body’s youthful cellular energy production, so you can get the job done.

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Selenium is common to the world’s longest-living people.

Selenium promotes the body’s production of glutathione, a potent cellular antioxidant. It also encourages healthy cell division, thyroid health, and immune function.

To ensure you get enough, we’ve combined three complementary forms of this mineral with vitamin E for additional antioxidant protection. Super Selenium Complex. **Share a longer life.**

**Item #01778 • 100 vegetarian capsules**

- 1 bottle $10.50 • 4 bottles $9 each

Each bottle provides a supply that lasts more than three months.

For full product description and to order **Super Selenium Complex**, call 1-800-544-4440 or visit www.LifeExtension.com

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Collagen Peptides for Skin & Joints provides several types of hydrolyzed collagen peptides, which are highly absorbable.

**Hydrolyzed collagen:**

- Stimulates increased production of collagen in the body
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1 jar $27 • 4 jars $24 each

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Working from the inside out, **Hair, Skin & Nails Collagen Plus Formula** is an oral supplement with nutrients shown to benefit the hair, skin, and nails to keep them looking vibrant and healthy. Rejuvenating nutrients include:

- **VERISOL® Bioactive Collagen Peptides®**—Stimulates the formation of new collagen and elastin to promote skin suppleness and elasticity
- **Cynatine® HNS Plus**—Provides solubilized keratin, zinc, B vitamins, biotin, and copper to boost production of keratin for strong hair, skin, and nails
- **Biotin**—Supports nail strength and integrity
- **Silicon**—For the formation of collagen and keratin molecules

For full product description and to order **Hair, Skin & Nails Collagen Plus Formula**, call [1-800-544-4440](tel:1-800-544-4440) or visit [www.LifeExtension.com](http://www.LifeExtension.com).

**References**

**Caution:** Individuals with inborn errors of copper metabolism (e.g. Wilson's disease) should avoid daily, chronic use of this product.

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**Revive Worn-out Hair, Skin, and Nails from Within**

The quickest way to betray your age is with a tired appearance …

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Wrinkling, dryness, and loss of firmness are outward signs of normal aging.

One reason is loss of ceramides that are required for skin to retain its moisture and youthful suppleness.

**Skin Restoring Ceramides** contains wheat-derived ceramide lipids in an oral capsule that hydrate the skin and smooth the appearance of fine lines and wrinkles.

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**Restore Smoother, Youthful-Looking Skin from the Inside Out**

Wrinkling, dryness, and loss of firmness are outward signs of normal aging.

One reason is loss of [ceramides](#) that are required for skin to retain its [moisture](#) and youthful suppleness.

**Skin Restoring Ceramides** contains wheat-derived ceramide lipids in an [oral](#) capsule that [hydrate](#) the skin and smooth the appearance of fine lines and wrinkles.

---

**Item #02096 • 30 liquid vegetarian capsules**

1 bottle $18.75

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For full product description and to order [Skin Restoring Ceramides](#), call 1-800-544-4440 or visit [www.LifeExtension.com](http://www.LifeExtension.com)

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Preserve MUSCLE and Improve Body Composition

BY MICHAEL DOWNEY

Americans are on a constant quest to improve body composition while increasing lean muscle.

It’s why we diet, jog, and hit the gym.

Now research has shown that there’s a compound that can help.

Beta-hydroxy-beta-methylbutyrate, better known as HMB, has been shown to improve muscle strength and quality in adults of all ages.¹,²

It stimulates protein synthesis and prevents muscle breakdown.¹

It even shows benefits in those who are practicing intermittent fasting while working out.³

HMB may help adults of any age achieve and maintain a healthier body composition.
Fat Vs. Muscle Mass

Having an ideal body composition isn’t just about looking good.

The ratio of fat versus lean mass in the body can be an excellent indicator of overall health.4

According to the Director of PEAK Health and Wellness at the University of Utah, maintaining a healthy body composition:4

- Decreases the risk of cardiovascular disease, diabetes, and osteoporosis,
- Lowers the risk of metabolic syndromes,
- Maintains cognitive function and decreases stress,
- Boosts energy, and
- Enhances the ability to perform daily activities.

Being overweight and even aging itself are associated with a body composition of too much stored fat and not enough lean muscle mass.5

Body composition is influenced by our genetics, metabolism, or environment.6

As a result, researchers have been investigating ways to improve body composition.6

HMB Preserves Muscle

HMB (or beta-hydroxy-beta-methylbutyrate) is a compound formed naturally when your body breaks down the amino acid leucine.7

It’s been shown to help prevent sarcopenia,8 the age-related loss of muscle mass.

Scientists have demonstrated that HMB works by exerting pro-anabolic (muscle-building) and anti-catabolic (breakdown-preventing) properties.9-14

With age, HMB levels drop, a decline that correlates with diminished lean muscle mass and strength.15

A wealth of evidence has shown that HMB can protect, and even restore, lean muscle mass in older people.2,14,16-18

This led scientists to investigate whether HMB could protect or restore lean muscle mass in younger people—and whether it would work in those who are overweight or following muscle-decreasing fasting routines.

HMB in Overweight People

As of 2016, over 650 million adults worldwide suffered from obesity. This amounted to 13% of the world’s adult population at that time.19

Scientists designed a clinical trial to investigate the effects of HMB on muscle strength in overweight, sedentary women, aged 20 to 45. No exercise training was involved.1
The study was the most rigorous type: randomized, placebo-controlled, and double-blind (in which neither the subjects nor the researchers know who’s receiving the placebo or treatment).

Thirty-five women completed the study. All had a BMI (body mass index) between 25 and 29.9 kg/m², considered **overweight**.

They were randomly divided into two groups. One was given 2.5 grams of HMB daily in two divided doses, while the other received a **placebo**.

After six weeks, the results showed that taking HMB **increased muscle strength** in these women. Without any resistance training, they were able to lift heavier weights (with both arms and legs) than those in the placebo group.

The study also concluded that HMB had a positive impact on various measures of **body composition**, including weight, waist and abdomen circumferences, and skin sagginess.

### HMB During Fasting

Another team of scientists investigated how HMB would affect muscle mass in people trying a form of **intermittent fasting** known as **time-restricted feeding**.

So scientists set up a randomized, placebo-controlled, double-blind study to test whether taking HMB **could prevent this loss in those practicing this form of intermittent fasting**.

The research team recruited healthy female volunteers between 18 and 30 years old. All subjects were required to have previously participated in regular resistance training for at least one year.

These **young, active women** were divided into three groups:

- The **control** group took a placebo and maintained a normal eating schedule.

- A **second** group took a placebo and followed a time-restricted eating schedule, which permitted eating **only** between noon and 8 p.m.

- A **third** group took 3 grams of HMB daily and followed the same time-restricted eating schedule as group two.

All groups participated in a resistance training program for three nonconsecutive days each week.

### Improve Body Composition with HMB and Vitamin D

- Maintaining a healthy body composition is vital for overall health.

- HMB (beta-hydroxy-beta-methylbutyrate), a compound formed when the amino acid leucine breaks down, has previously been shown to prevent muscle-wasting in older people.

- New studies show that HMB preserves and increases lean muscle mass in adults of **all ages**. It also works in the overweight and in those on intermittent fasting programs.

- **Vitamin D** has also been shown to produce significantly greater muscle strength and performance.

- A **combination** of HMB and vitamin D could be a smart choice for anyone interested in maintaining optimal muscle mass and strength and achieving a healthy body composition.
After **eight weeks**, the researchers found in a subgroup analysis and compared to baseline that:3

- The **control** group had an average **2% increase** in body fat mass,

- **Group two** had an average **4% decrease** in body fat mass, and

- **Group three**, the time-restricted eating group that took HMB, had an average **7% decrease in body fat mass**.

- The greatest increases in **fat-free mass** also occurred in the HMB participants, who had a shift to a **healthier body composition**.3

**Vitamin D Supports Muscle Strength**

Like HMB, vitamin D also helps improve **muscle strength and performance**.20,21

Scientists conducted a study involving 160 menopausal women, aged 50-65, who all had a history of falling.22 Falling is associated with inadequate muscle mass, in addition to a lack of coordination and balance.23

The women were randomly assigned to receive either a placebo or **1,000 IU of vitamin D** daily.

After nine months, the vitamin D group experienced a **25.3% increase** in leg muscle strength.

Other investigators conducted a meta-analysis of 30 randomized, controlled trials, involving more than 5,600 people, to evaluate the effects of vitamin D on muscle performance.20

The analysis showed that **vitamin D** had a significant positive effect on overall muscle strength.20

Participants who had the **lowest** vitamin D levels at the beginning of the study (below **12 ng/mL**) and those who were relatively **older** saw the greatest benefits from vitamin D supplementation.20
Vitamin D has been shown to boost muscle performance and strength as well. Vitamin D and HMB can help improve body composition, preserve and increase muscle mass, and promote strength.

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

References


Arterial Protect can help stabilize endothelial plaque and promote healthy blood flow throughout the body.*

Just one capsule a day provides the patented French Maritime pine bark extract along with standardized Centella asiatica extract.

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Reference

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ArthroMax® Advanced with NT2 Collagen™ & AprèsFlex® is a multinutrient formula that supports healthy joint function.

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Glucosamine sulfate 2KCI (derived from non-GMO corn) 1,500 mg
AprèsFlex® Indian frankincense extract (Boswellia serrata) [std. to 20% AKBA®] 100 mg
NT2 Collagen™ standardized cartilage 40 mg
Total Collagen 10 mg
Boron (calcium fructoborate as patented FruiteX-B® OsteoBoron®) 1.5 mg

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Δ 3-O-acetyl-l-keto-B-boswellic acid.

Just Two capsules a day provide:

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Promote Healthy **Muscle Strength** at any Age

**STAY STRONG & YOUNG**

**Muscle Strength & Restore Formula** provides ingredients that can enhance **muscle strength** while helping **reduce** loss of muscle mass that occurs with normal aging. It contains:

- **HMB** (Beta-hydroxy beta-methylbutyrate): increases and preserves muscle mass in adults of all ages.
- **Vitamin D3** (1,000 IU): supports muscle strength and performance.

Mix one scoop with approximately **8 oz.** of cold water or other beverage, preferably a protein shake, and drink once daily or as recommended by a health practitioner.

---

**Item #02221 • About 30 servings**
- 94.2 g (3.32 oz) Container
- 1 container $27
- 4 containers $24 each

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Uses of CalHMB and Vitamin D are licensed under
U.S. Patent Nos. 8,422,280, 9,259,430, 9,539,224 and 9,707,241.

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**Wellness Code® Muscle Strength & Restore Formula**,
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**CAUTION:** Individuals consuming more than 50 mcg (2000 IU)/day of vitamin D (from diet and supplements) should periodically obtain a serum 25-hydroxy vitamin D measurement. Do not exceed 10000 IU per day unless recommended by your doctor. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

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Whey protein, packed with vital amino acids promotes glutathione synthesis.

Glutathione plays an important role in supporting immune balance in the body.1-3

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References

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A premium isolate for greater strength and exercise performance. Item #02246 Vanilla+
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Ultra Prostate Formula can help:

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- Encourage healthy inflammatory response
- Help inhibit PSA activity

"Thanks, Ultra Prostate Formula."

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**B VITAMINS:**
More VITAL Than Previously Believed

BY CHANCELLOR FALOON

**B vitamins** are often thought of as *energy* vitamins. People tend to look for them in drinks and nutrient bars for a mental or physical energy boost.

Few realize the crucial roles that B vitamins play in the body.

Research has shown that **B vitamins** are necessary for:

- DNA/RNA synthesis and repair,
- Proper immune function,
- Neurotransmitter synthesis, and
- Healthy DNA methylation.

Adults with a **low** B-vitamin status are at increased risk for developing age-related disorders, **particularly** cognitive and cardiovascular disease.¹
Skin Benefits of Boosting NAD⁺

Vitamin B3 exists in several forms that can convert into \textit{nicotinamide adenine dinucleotide} (NAD⁺) in the body.\textsuperscript{7,8} NAD⁺ is a cofactor for life-sustaining reactions in the body, and has garnered a reputation worldwide for its potential longevity benefits.\textsuperscript{9}

Studies have also shown that vitamin B3 in the form of \textit{nicotinamide} has the potential to treat a variety of dermatological conditions, including skin cancer.\textsuperscript{10,11} One clinical trial included 386 individuals with a history of at least two non-melanoma skin cancers in the previous five years. They were randomly assigned to receive 500 mg of \textit{nicotinamide} \textit{twice daily} or a placebo. At 12 months, the rate of non-melanoma skin cancers was reduced by 23% in those receiving nicotinamide, compared to those who got the placebo.\textsuperscript{11}

It has been suggested that nicotinamide’s role in skin cancer may be related in part to its ability to promote NAD⁺ synthesis, thereby enhancing DNA repair. NAD⁺ is involved in the synthesis of ATP, the cellular energy currency that is much needed during energy-dependent cellular processes, including DNA repair.\textsuperscript{10}

Vitamin B1 and the Brain

The first B vitamin identified was \textit{vitamin B1}.\textsuperscript{2} \textit{Thiamine}—another name for vitamin B1—is an important cofactor in the production of energy in the body, making it especially important in the brain.\textsuperscript{2}

Research over the past century has shown that vitamin B1 deficiency, known as beriberi, is associated with several neurological problems.\textsuperscript{3}

In humans, there are similarities between the memory deficits seen in thiamine deficiency and Alzheimer’s disease.\textsuperscript{4}

A fat-soluble form of vitamin B1 called \textit{benfotiamine} also shows potential benefits for the brain.\textsuperscript{5}

In a 2018 study, researchers tested the impact of \textit{benfotiamine} on a mouse model of Alzheimer’s disease.\textsuperscript{6}

The researchers observed that mice given \textit{benfotiamine} had:\textsuperscript{6}

- Decreased numbers of neurofibrillary tangles.
- Significant preservation of motor neurons.
- Less inflammation and mitochondrial dysfunction.
- Significantly increased lifespan and improved behavior.
Vitamin B6 and Parkinson’s Disease

Parkinson’s disease is a disorder characterized by the loss of dopaminergic neurons in a part of the brain called the substantia nigra, and by the presence of Lewy bodies.12,13

Studies have tested the effect of dietary intake of vitamin B6 in Parkinson’s disease. The main reason for this interest is largely the association between Parkinson’s and elevated homocysteine.14

Vitamin B6 is important to properly metabolize homocysteine and prevent its dangerous buildup in the body.15

One meta-analysis suggests that higher dietary intake of vitamin B6 may be associated with a 35% reduced risk of getting Parkinson’s disease, compared to those with low intake.14

The B Vitamin that Became a Drug

In a large prospective cohort study, the group with the highest levels of vitamin B6 at the time of kidney cancer diagnosis had a three-fold reduction in renal cell carcinoma mortality compared to the group with lowest levels.16

Vitamin B6 comes in several forms, including pyridoxal-5-phosphate and pyridoxamine.

The FDA accepted a petition filed by a drug company to remove pyridoxamine from the market so that it could be transformed into a prescription drug. This has caused pyridoxamine to be largely unavailable.

Pyridoxamine and pyridoxal-5-phosphate forms of B6 may provide similar benefits, but two clinical trials in the past decade have shown noteworthy results from pyridoxamine.

In a study of schizophrenic patients, high-dose pyridoxamine, as an add-on treatment, resulted in improvements in psychological symptoms.17

In a 24-week, double-blind, placebo-controlled trial, pyridoxamine supplementation significantly reduced pain scores and inflammatory markers in osteoarthritis patients.18

WHAT YOU NEED TO KNOW

B Vitamins Play Crucial Roles in the Body

- B vitamins are necessary for DNA repair and synthesis, proper immune function, neurotransmitter synthesis, and healthy DNA methylation.
- Low B-vitamin status increases the risk for age-related disorders, particularly cardiovascular and cognitive disease.
- Vitamin B1 is an important cofactor in the production of energy, making it especially important in the brain.
- Vitamin B3, in the form of nicotinamide, has the potential to treat a variety of dermatological conditions, including skin cancer.
- Folate (5-MTHF) and vitamins B6 (P5P) and B12 (methylcobalmin) are important to properly metabolize homocysteine and prevent its dangerous buildup.
- Aging adults can attain these benefits through regular use of a high-quality multivitamin or a comprehensive B-vitamin complex.
Folate Can Reverse Epigenetic Aging

A common gene variant occurs in approximately 40% of people.

It affects the activity of the enzyme needed to convert vitamin B9 (folate) into its active form: 5-methyltetrahydrofolate (5-MTHF).21

One adverse impact of this methylation deficit is elevated homocysteine blood levels that contribute to atherosclerosis.

Vitamins B6 and B12 work together with the 5-MTHF form of folate in the methylation cycle.

Sufficient levels of these vitamins support the healthy transfer of methyl groups between the molecules, and steps involved in the methylation cycle.

When adequate levels of these vitamins are not present, the methylation cycle is impaired.19

Epigenetic clocks allow scientists to accurately predict future healthspan and lifespan.22,23

A study published in 2018 tested the effect of folate plus vitamin B12 supplementation in measuring changes in epigenetic age in older subjects (65-75). Each subject had different variants of MTHFR genes. Participants supplemented with 400 mcg of folic acid and 500 mcg of vitamin B12 daily.23

After two years, women with a particular MTHFR gene variant showed beneficially reduced epigenetic age. Those with deleterious MTHFR variants should supplement with higher dosages of the 5-MHTF form of folate, which is more effective than folic acid. They should also consider using the methylated form of vitamin B12, called methylcobalamin.

Decreasing Macular Degeneration Risk

A study was done to evaluate the impact of B vitamins on age-related macular degeneration. A combination of folic acid and vitamins B6 and B12 was used in a randomized, placebo-controlled trial in women over age 40 who were at high risk for cardiovascular disease. The study period lasted an average of 7.3 years.24

Compared to the placebo group, the B-vitamin combination decreased the risk of macular degeneration by 34% and decreased the risk of severe macular degeneration by 41%.24

B Complex Fights Insomnia

B vitamins are thought to have anti-depressant effects and play a range of biochemical roles that may help reduce psychological distress.

Although B vitamins are commonly added to caffeine supplements or drinks for a physical energy boost, they do not interfere with sleep. In fact, research suggests they may even help support healthy sleep.

In a recently published clinical trial, 60 people with diagnosed insomnia filled out a questionnaire which quantified the degree of insomnia they had. They were separated into two groups to receive either a placebo or a supplement containing melatonin, vitamins B6, B12, folate, and a form of magnesium. Both groups took their pills one hour before going to bed, for three months.27

When the participants took the questionnaire again at the end of the study, the placebo group had a slight increase in the degree of insomnia, while those who received the combination supplement reported a nearly 30% decrease in their insomnia scores.
The authors of the study suggest that their results support the hypothesis that elevated homocysteine levels may be causally related to age-related macular degeneration.

**Protection Against Surgery-Induced Delirium**

New evidence is showing that B vitamins may diminish a serious side effect of major surgery. In a recent clinical trial, 138 patients with vitamin B12 deficiency undergoing coronary artery bypass surgery were assigned into a control or an experimental group to receive a B-complex solution as part of the surgical procedure.

The researchers wanted to see if the B complex could reduce the incidence of postoperative delirium compared to controls.

Although open heart surgery is a lifesaving procedure, it also commonly causes serious side effects. One of the most frightening potential problems after such major surgeries is postoperative delirium, which is a state characterized by altered consciousness and orientation, and diminished memory, perception, and behavior.

Following surgery, 42% of the patients in the control group experienced postoperative delirium, but only 26% of those in the B-complex group did.

**Enhance Healthy DNA Methylation**

DNA methylation controls the activation of our genes. Without proper DNA methylation, beneficial genes are deactivated while harmful genes can be over-expressed.

Healthy methylation allows gene expression to support youthful cellular functions. DNA methylation influences how your genes are expressed.

Accurate estimates of biological age can be assessed through measurements of DNA methylation patterns in the blood.

This can be done using epigenetic clocks, a technology developed by UCLA researchers to measure DNA methylation patterns that provides an epigenetic or biological age estimate.

“Epigenetics” refers to external modifications that occur in gene expression as result of what we do to our bodies, as opposed to the genetic code we are born with.

Ingesting overcooked food or inhaling cigarette smoke causes deleterious epigenetic changes to DNA. Healthy lifestyles enable beneficial gene expression changes.

Deficits in certain B vitamins can also adversely impact healthy DNA methylation.
Summary

**B vitamins** are essential for multiple cellular functions, including facilitating vital DNA repair.

These benefits can be attained through regular use of a high-quality multivitamin, or taking a comprehensive B-complex supplement, preferably one that uses *activated* forms like 5-MTHF (folate), methylcobalamin (B12), and pyridoxal-5-phosphate (B6).

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

References

2. Fattal-Valevski A. thiamine (vitamin B1).
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ENDOCANNABINOID SYSTEM
Without CBD

The endocannabinoid system promotes healthy balance, regulation, and function of virtually every system in your body.

Endocannabinoid System Booster helps support endocannabinoid function beyond CBD.

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Are you experiencing general fatigue? Do you lack motivation? Well, it’s time to get up off the mat and fight back!

What you’re feeling may be the result of declining NAD⁺ levels, a coenzyme found in every cell in your body. NAD⁺ facilitates ATP production, which your body uses for fuel.

Life Extension®’s best-selling NAD⁺ Cell Regenerator™ can help maintain the youthful levels of NAD⁺ you need to thrive.

For full product description and to order NAD⁺ Cell Regenerator™ or NAD⁺ Cell Regenerator™ and Resveratrol, call 1-800-544-4440 or visit www.LifeExtension.com

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Recent
MASSAGE THERAPY Conferences
BY BEN BEST

Massage therapy can be of benefit for pain, fatigue, anxiety, stiffness, and many other ailments in addition to being relaxing and feeling good.

The opioid crisis (skyrocketing use of legal and illegal opioid drugs), in combination with increasing complaints of chronic pain, has caused many people to give more attention to non-drug therapies.

The preference for drug treatments over other therapies by medical professionals has been a consequence of FDA drug-centered medicine.

Only large drug companies can afford the large, clinical trials that the FDA requires to approve a drug therapy. No one is going to spend hundreds of millions of dollars on clinical trials for unpatentable therapies like massage, yoga, or acupuncture.

Reviews of massage clinical trials often conclude that the evidence is weaker than for drug-based clinical trials because large, well-funded trials have not been conducted for massage.
Massage therapy clinical trials face another disadvantage because the quality of massage treatment is not uniform. Massage therapists have different strengths, skills, and techniques. And there are different types of massage. Swedish (relaxation, stroking) massage can be better therapy for anxiety, deep tissue (more pressure) massage can be better therapy for pain or fatigue, and Thai (stretching) massage can be better therapy for stiffness.

Use of opioid drugs for pain has become such a prominent social issue that the problem created by FDA drug-centered medicine can no longer be ignored. Nor can drug companies facing ever-expanding lawsuits ignore the problem.

This article covers presentations on the scientific value of therapeutic massage given at recent massage conferences.

Opioid Crisis

Robert Kerns, PhD, (Professor of Psychiatry, Neurology and Psychology, Yale University, New Haven, Connecticut) believes that the opioid crisis could have been prevented if massage, exercise, yoga, progressive relaxation, and other forms of non-drug therapy were used for treatment of pain.¹ Use of the prescription opioid drug oxycodone for cancer-related pain increased fourfold between 1997 and 2002. Illicit drug abuse of prescription opioid drugs now exceeds that of the illegal drugs heroin or cocaine.²

Opioid drugs can be beneficial for acute (short term) pain relief but have not proven beneficial for chronic (long term, over six months) pain. Common side effects of opioids include constipation, nausea, and excessive sleepiness.³ Long-term use of opioid drugs also produces tolerance (the patient requires an increase in the amounts of opioids necessary to relieve pain).⁴

Massage can be of benefit for pain, without side effects.⁵ Massage is particularly beneficial for cancer pain.⁶

Pain in Fascia

Helene Langevin, MD (Director, National Center for Complementary and Integrative Health, Bethesda, Maryland) has studied the cause and treatment of inflamed fascia (connective tissue surrounding organs) in chronic-pain conditions. Fascia can be infiltrated with nerves that contribute to the sensation of pain. She has shown an accumulation of additional connective tissue in areas of the back where patients experience lower-back pain.⁷ Dr. Langevin has shown that stretching of connective tissue in the back, which could be done with massage or yoga, may reduce the inflammation and/or fibrosis seen in lower-back-pain subjects.⁸

Dr. Langevin believes a similar kind of inflammation is seen in repetitive-strain injury, as in lower back pain.⁹ Massage therapy can reduce inflammation and neural fibrosis due to repetitive-strain injury.¹⁰ Similarly, a combination of massage and trigger-point therapy...
has been shown to be an effective treatment for carpal tunnel syndrome (a repetitive-strain injury of the wrist). Persons suffering from repetitive-strain injury generally seek help after developing symptoms, but massage therapy to the affected tissues may prevent repetitive-strain injury before it happens.

**Massage for Breast Cancer Survivors**

Jeanne Massingill, LMT (Owner, The Oaks Medical Massage Therapy Clinic, Rocky River, Ohio) has used massage therapy to treat breast cancer survivors. Massage has been shown to relieve pain, anxiety, and improve the overall well-being of women whose breast has been removed due to cancer.

Tendons join muscle to bone, ligaments join bone to bone, but fascia is a thin sheet of connective tissue that surrounds and encases every muscle, nerve, bone, blood vessel and organ in the body, securing and linking them. Manual therapy can reduce fascial tightness and improve blood circulation. Stiffness of fascia has been associated with cancer growth.

Up to 60% of breast cancer surgery survivors experience chronic pain. Myofascial massage is a massage technique that applies pressure and stretching to fascia. Massingill conducted a clinical trial of myofascial massage on patients complaining of chronic pain following breast cancer surgery. Compared to Swedish massage or light touch, patients receiving myofascial massage had less pain, better mobility, and improved general health.

**Cervicogenic Headache**

Til Luchau (Lead Instructor and Director of Advanced Trainings, Lafayette, Colorado) is concerned with treatment for cervicogenic headaches. A cervicogenic headache is a headache resulting from neck pain. An estimated 15%-20% of headaches are cervicogenic. Women have cervicogenic headaches more frequently than men. Massage therapy combined with neck exercises can relieve cervicogenic headache. Benefit has also been reported for manual therapy on trigger points of the muscle running from the back of the skull to the center of the chest (the sternocleidomastoid muscle).

**Low Back Pain**

Kathryn Stewart, BS, LMT (Professor, Family and Community Medicine, University of Kentucky College of Medicine, Lexington, Kentucky) is interested in treatment for lower back pain. Lower back pain is a very common cause of disabilities, which is more frequently seen in persons of lower socioeconomic status.

Stewart is an advocate of evaluating massage therapy for lower back pain by having patients directly seek care from community massage therapists. In one study involving 10 massage sessions, almost half of the patients showed reduced pain after 12 weeks, and 40% continued to show relief at 24 weeks.

**Fibromyalgia**

Julie Goodwin, LMT (Instructor, Massage Therapy Program, Pima Community College, Tucson, Arizona) specializes in massage therapy for patients with fibromyalgia. Fibromyalgia is characterized by widespread pain, which can lead to sleep difficulties and general fatigue. There is a wide range of prevalence estimates, some as high as 12%, in which females are about three times more likely to have the condition than males. Systematic reviews of a variety of massage techniques show treatment of over five weeks to reduce pain, anxiety, and depression. All massage techniques improved health-related quality of life.
Massage for Athletes

Lee Stang, LMT (Owner, Bridges To Health Therapeutic Massage Center, Hendersonville, North Carolina) gives massage therapy to athletes. Massage has been shown to improve blood vessel function after exercise-induced muscle injury.29 Triathlon athletes who received massage therapy after completion of a competition reported better recovery from pain and fatigue.30 Massage has been used to relieve travel fatigue in athletes who have spent many hours confined to airplane seats across many time zones.31

In a well-controlled experiment, muscle samples were taken from both legs of healthy young males who had received massage on only one randomly selected leg after exercise. The massaged leg showed reduced inflammation and increased formation of energy-producing mitochondria cellular components, compared to the unmassaged leg.32

Manual Lymphatic Drainage

Judy Stahl, MA (Founder, Prescott Center for Massage Therapy, Prescott, Arizona) has expertise in the type of massage known as manual lymphatic drainage (MLD). Lymph is a watery fluid containing waste products that flows from body tissues to lymph nodes, and then to the heart, independent of the blood circulatory system. Lymph is weakly propelled by muscle contraction, so it moves much more slowly than blood. Lymph nodes break down debris in the lymph before the lymph is returned to the circulatory system (returned to the heart).33

The brain has an independent lymphatic system known as the glymphatic system. The glymphatic system is most active during sleep, which is part of the reason why sleep deprivation reduces mental function.34

MLD massage is used to compensate for insufficient fluid flow in the lymphatic system. Orthopedic (bone or muscle) injuries often result in impaired lymph flow, which can be improved by MLD.35 Application of MLD prior to surgery for varicose veins can improve the outcome.36 Cellulite has also been shown to be reduced by MLD.37

Breast cancer surgery often removes lymph nodes and damages the lymphatic system. Up to 49% of women whose breast has been removed experience lymphatic swelling.38 MLD has been shown to reduce lymphatic swelling following breast cancer treatment.39

Massage for Anxiety

Mark Hyman Rapaport, MD (Chairman, Department of Psychiatry and Behavioral Sciences, Emory University School of Medicine, Atlanta, Georgia) is interested in the effectiveness of Swedish massage therapy to reduce anxiety or fatigue. Studies by earlier researchers have shown that massage can reduce anxiety.40 A study of patients randomized to receive or not receive massage after cardiovascular surgery showed reduced pain, anxiety, and tension in the massaged patients.41

Dr. Rapaport has shown that six weeks of Swedish massage can significantly reduce fatigue in cancer treatment survivors when compared to light touch.42 Measuring blood and saliva samples of persons who had received either 45 minutes of light touch or Swedish massage twice weekly for five weeks, Dr. Rapaport found an increase in the social-binding hormone oxytocin, and a decrease in the stress hormone cortisol.43

Generalized anxiety disorder is a condition characterized by uncontrollably excessive worry. Dr. Rapaport conducted a clinical trial in which general-anxiety-disorder patients were randomly assigned to receive either Swedish massage or light touch twice weekly for six weeks. Compared to light touch, the patients receiving Swedish massage showed a significant reduction in worry beginning at the end of the third week, based on questionnaires they completed.44

Concluding Remarks

Massage is not simply a self-indulgence, but it can be a valuable therapy for many conditions. Although studies proving the benefits of massage are often small, in size and funding, side effects are rare. Physicians should be encouraged to try massage therapy before trying drugs.

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


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The Side Dish Bible

1,001 Perfect Recipes for Every Vegetable, Rice, Grain, and Bean Dish You’ll Ever Need

The main dish is typically the focus of our meals. But a tasty side dish can enhance—and sometimes even outshine—even the most delectable main attraction.

Yet many home cooks find themselves in a side dish rut—often resorting to the same rotation of steamed or roasted vegetables time and again.

*The Side Dish Bible*, from America’s Test Kitchen, solves that problem with 1,001 recipes to help you find the perfect complementary dish for any meal.

Steamed broccoli is good—but Steamed Broccoli with Lime-Cumin Dressing sounds even better.

Roasted cauliflower might be tasty—but Braised Cauliflower with Garlic, Ginger, and Soy sounds much better.

If you only have a few ingredients on hand, *The Side Dish Bible* provides dozens of simple, tried-and-true recipes. For a little more adventure, consult the section called “Up Your Vegetable Game” for options such as Roman-Style Stuffed Braised Artichokes or Sautéed Baby Bok Choy with Miso Sauce.

If you prefer beans and lentils, you could try Mashed Fava Beans with Cucumbers, Olives, and Feta, or for a fresh salad, toss together a colorful Cherry Tomato Salad with Basil and Fresh Mozzarella.

With 1,001 recipes, *The Side Dish Bible* covers all the bases—including sections for dinner parties, potlucks, and casseroles, as well as recipes that utilize the grill, slow cooker, or pressure cooker.

Here, *Life Extension®* features four recipes to get you started.

— LAURIE MATHENA
Roasted Zucchini and Eggplant Medley

Serves 8

3 zucchini (about 1 1/2 pounds), quartered lengthwise and sliced crosswise into 3/4-inch-wide pieces
1/4 cup extra-virgin olive oil, divided, plus extra for serving
3/4 teaspoons table salt, divided
2 pinches pepper, divided
1 1/2 pounds eggplant, cut into 1-inch cubes
1 onion, chopped fine
1 tablespoon minced fresh thyme or 1 teaspoon dried
3 garlic cloves, minced
12 ounces cherry tomatoes, quartered
1/4 cup coarsely chopped fresh basil
1 tablespoon lemon juice

1. Adjust oven rack 6 inches from broiler element and heat broiler. Line rimmed baking sheet with aluminum foil and spray with vegetable oil spray.

2. Toss zucchini with 1 tablespoon oil, 1/4 teaspoon salt, and pinch pepper. Spread zucchini in even layer on prepared sheet. Broil zucchini, stirring occasionally, until lightly charred around edges but slightly underdone, 7 to 10 minutes; transfer zucchini to shallow serving dish (or casserole dish). Repeat with eggplant, 1 tablespoon oil, 1/4 teaspoon salt and remaining pinch pepper; transfer to serving dish.

3. Heat remaining 2 tablespoons oil in 12-inch nonstick skillet over medium heat until shimmering. Add onion, thyme, and remaining 1/4 teaspoon salt and cook until lightly browned, about 10 minutes. Stir in garlic and cook until fragrant, about 30 seconds. Off heat, stir in tomatoes. Scatter onion-tomato mixture over broiled vegetables. Cover vegetables and let sit for 10 minutes.

4. Sprinkle with basil, lemon juice, and additional oil before serving. Serve warm or at room temperature.
Chickpea Salad with Carrots, Arugula, and Olives

Serves 4

2 (15-ounce) cans chickpeas, rinsed
1/4 cup extra-virgin olive oil
2 tablespoons lemon juice
3/4 teaspoon table salt
1/2 teaspoon pepper
Pinch cayenne pepper
3 carrots, peeled and shredded
1 ounce (1 cup) baby arugula, chopped
1/2 cup pitted kalamata olives, chopped

1. Microwave chickpeas in medium bowl until hot, about 1 minute 30 seconds. Stir in oil, lemon juice, salt, pepper, and cayenne and let sit for 30 minutes.

2. Add carrots, arugula, and olives and toss to combine. Season with salt and pepper to taste. Serve.

VARIATIONS

Chickpea Salad with Fennel and Arugula
Substitute 1 fennel bulb, stalks discarded, bulb halved, cored, and cut into 1/4-inch pieces, for carrots and olives.

Chickpea Salad with Roasted Red Peppers and Feta
Substitute 1/2 cup drained and chopped jarred roasted red peppers, 1/2 cup crumbled feta cheese, and 1/4 cup chopped fresh parsley for carrots, arugula, and olives.
Sautéd Green Beans with Mushrooms and Dukkah

Serves 4

5 teaspoons extra-virgin olive oil, divided
1 garlic clove, minced
2 tablespoons minced fresh parsley
1 teaspoon grated lemon zest plus 2 teaspoons lemon juice
8 ounces cremini mushrooms, trimmed and sliced thin
3 shallots, halved and sliced thin
1/2 teaspoon table salt
1/8 teaspoon pepper
1 pound green beans, trimmed and cut into 2-inch lengths
1/4 cup water
1/3 cup organic plain low-fat yogurt
2 tablespoons dukkah
(We prefer to use our homemade dukkah (see recipe opposite), but you can substitute store-bought dukkah if you wish.)

1. Combine 1 tablespoon oil, garlic, parsley, and lemon zest in bowl; set aside. Heat 1 teaspoon oil in 12-inch nonstick skillet over medium heat until shimmering. Add mushrooms, shallots, salt, and pepper, cover, and cook until mushrooms have released their liquid, about 5 minutes. Uncover, increase heat to high, and cook, stirring occasionally, until mushrooms are golden, about 8 minutes. Transfer to clean bowl.

2. Heat remaining 1 teaspoon oil in now-empty skillet over medium heat until shimmering. Add green beans mixture and mushrooms and cook until beans are crisp-tender, 1 to 3 minutes. Off heat, stir in lemon juice and season with salt and pepper to taste. Transfer to platter, drizzle with yogurt, and sprinkle with dukkah. Serve.
Parsley-Cucumber Salad
with Feta, Walnuts, and Pomegranate

Serves 4 to 6

3 tablespoons extra-virgin olive oil
1 tablespoon pomegranate molasses
1 tablespoon red wine vinegar
1/4 teaspoon table salt
1/8 teaspoon pepper
Pinch cayenne pepper
3 cups fresh parsley leaves
1 English cucumber, halved length-wise and sliced thin
1 cup walnuts, toasted and chopped coarse, divided
1/2 cup pomegranate seeds, divided
4 ounces feta cheese, sliced thin

Whisk oil, molasses, vinegar, salt, pepper, and cayenne in large bowl until fully incorporated. Add parsley and cucumber and toss to coat. Add half of walnuts and half of pomegranate seeds and toss to combine. Season with salt and pepper to taste. Transfer to platter and top with feta, remaining walnuts, and remaining pomegranate seeds. Serve.

Dukkah

Makes 2 cups
Dukkah is a Mediterranean condiment made from a blend of nuts, seeds, and spices. It makes a flavorful crunchy garnish for vegetables and salads.

1 (15-ounce) can chickpeas, rinsed and patted dry
1 teaspoon extra-virgin olive oil
1/2 cup shelled pistachios, toasted
1/3 cup black sesame seeds, toasted
2 1/2 tablespoons coriander seeds, toasted
1 tablespoon cumin seeds, toasted
2 teaspoons fennel seeds, toasted
1 1/2 teaspoons pepper
1 1/4 teaspoons table salt

Adjust oven rack to middle position and heat oven to 400 degrees. Toss chickpeas with oil and spread in single layer on rimmed baking sheet. Roast until browned and crisp, 40 to 45 minutes, stirring every 5-10 minutes; let cool completely.

Process chickpeas in food processor until coarsely ground, about 10 seconds; transfer to bowl. Pulse pistachios and sesame seeds in now-empty food processor until coarsely ground, about 15 pulses; transfer to bowl with chickpeas. Process coriander, cumin, and fennel seeds in again-empty food processor until finely ground, 2-3 minutes; transfer to bowl with chickpeas. Add pepper and salt and toss until well combined.

(Dukkah can be refrigerated for up to 1 month.)
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Spelt is an ancient grain that was one of the first forms of wheat used to make bread. While it’s been grown in Europe for hundreds of years, it only made its way to the United States about 100 years ago. Because spelt has remained largely unaltered, it is considered to be a healthier option than ordinary wheat.

Spelt has more protein and fat than typical wheat, and it is a good source of fiber, iron, and zinc.

Two large meta-analyses found that having a high intake of whole grains like spelt, compared with a low intake, was associated with:

- 14% reduced risk of stroke\(^1\)
- 12% reduced risk of coronary heart disease\(^2\)

Consuming high-fiber foods like spelt has been shown to lower total and LDL (bad) cholesterol,\(^3\) while increasing HDL (good) cholesterol.\(^4\) And supplementation with fiber has been shown to lower blood pressure.\(^5\)

Because whole grain foods can slow digestion and reduce blood sugar spikes, studies suggest that they can reduce the risk of diabetes. In fact, one study showed that having a high intake of whole grains was associated with a reduced risk of type II diabetes.\(^6\)

Eating spelt could also help with weight management, since high fiber foods can help you feel fuller longer.

Spelt flour can be substituted for wheat flour in recipes, although it does have a nuttier flavor. You can also enjoy whole spelt grains as a side dish, breakfast cereal, or in stews.

Since spelt is a type of wheat, it does contain gluten. This means it should be avoided by anyone with a gluten sensitivity or a condition such as celiac disease.

Be sure to choose whole grain spelt as opposed to refined spelt, which has a high glycemic index and can cause a rapid spike in blood sugar levels.

References
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<th>Product Name</th>
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<tbody>
<tr>
<td>02311</td>
<td>Clearly EPA/DHA Fish Oil</td>
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<tr>
<td>00463</td>
<td>Flaxseed Oil</td>
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<tr>
<td>01937</td>
<td>Mega EPA/DHA</td>
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<tr>
<td>02218</td>
<td>Mega GLA Sesame Lignans</td>
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<tr>
<td>01983</td>
<td>Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans &amp; Olive Extract</td>
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<tr>
<td>01988</td>
<td>Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill &amp; Astaxanthin</td>
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## FISH OIL & OMEGAS

<table>
<thead>
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<tr>
<td>02101</td>
<td>Memory Protect</td>
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<td>00709</td>
<td>Migra-Eeze™</td>
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<tr>
<td>01603</td>
<td>Neuro-Mag® Magnesium L-Threonate Caps</td>
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<tr>
<td>02032</td>
<td>Neuro-Mag® Magnesium L-Threonate Powder</td>
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<tr>
<td>00888</td>
<td>Optimized Ashwagandha</td>
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<tr>
<td>01676</td>
<td>PS (Phosphatidylserine) Caps</td>
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<tr>
<td>02406</td>
<td>Quick Brain Nootropic</td>
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<tr>
<td>01327</td>
<td>Vinpocetine</td>
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## DIGESTION SUPPORT

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<tr>
<td>53348</td>
<td>Betaine HCI</td>
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<tr>
<td>54160</td>
<td>Black Vinegar</td>
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<tr>
<td>02412</td>
<td>Bloat Relief</td>
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<tr>
<td>30747</td>
<td>Digest RC®</td>
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<tr>
<td>07136</td>
<td>Effervescent Vitamin C - Magnesium Crystals</td>
</tr>
<tr>
<td>02021</td>
<td>Enhanced Super Digestive Enzymes</td>
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<tr>
<td>02022</td>
<td>Enhanced Super Digestive Enzymes and Probiotics</td>
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<tr>
<td>02033</td>
<td>EsophagCool™</td>
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<td>01737</td>
<td>Esophageal Guardian</td>
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<tr>
<td>01706</td>
<td>Extraordinary Enzymes</td>
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<tr>
<td>02100</td>
<td>Gastro-Ease™</td>
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<td>01122</td>
<td>Ginger Force™</td>
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<tr>
<td>00605</td>
<td>Regimint</td>
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<td>01386</td>
<td>TruFiber®</td>
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## BONE HEALTH

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>01726</td>
<td>Bone Restore</td>
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<tr>
<td>02123</td>
<td>Bone Restore Chewable Tablet</td>
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<tr>
<td>02416</td>
<td>Bone Restore Elite with Super Potent K2</td>
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<tr>
<td>01727</td>
<td>Bone Restore with Vitamin K2</td>
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<tr>
<td>01725</td>
<td>Bone Strength Collagen Formula</td>
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<tr>
<td>00313</td>
<td>Bone-Up™</td>
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<tr>
<td>01963</td>
<td>Calcium Citrate with Vitamin D</td>
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<tr>
<td>01506</td>
<td>Dr. Strum's Intensive Bone Formula</td>
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<td>02417</td>
<td>Mega Vitamin K2</td>
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<td>01476</td>
<td>Strontium Caps</td>
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## BRAIN HEALTH

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<th>Code</th>
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<tr>
<td>01524</td>
<td>Acetyl-L-Carnitine</td>
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<td>01974</td>
<td>Acetyl-L-Carnitine Arginate</td>
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<tr>
<td>01659</td>
<td>Citicolone® (CDP-Choline)</td>
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<tr>
<td>02321</td>
<td>Cognitex® Basics</td>
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<tr>
<td>02396</td>
<td>Cognitex® Elite</td>
</tr>
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<td>02397</td>
<td>Cognitex® Elite Pregnenolone</td>
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<tr>
<td>01540</td>
<td>DMAE Bitartrate (dimethylaminoethanol)</td>
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<tr>
<td>02006</td>
<td>Dopa-Mind™</td>
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<tr>
<td>02212</td>
<td>Focus Tea™</td>
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<tr>
<td>01658</td>
<td>Ginkgo Biloba Certified Extract™</td>
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<tr>
<td>01527</td>
<td>Huperzine A</td>
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<tr>
<td>00020</td>
<td>Lecithin Granules</td>
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PRODUCTS

01982 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 softgels
01985 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 enteric coated softgels
01984 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 enteric coated softgels
01986 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 240 softgels
01812 Provinal® Purified Omega-7
01640 Vegetarian DHA

FOOD
02008 California Estate Extra Virgin Olive Oil
02170 Rainforest Blend Decaf Ground Coffee
02169 Rainforest Blend Ground Coffee
02171 Rainforest Blend Whole Bean Coffee
00438 Stevia™ Organic Liquid Sweetner
00432 Stevia™ Sweetener

GLUCOSE MANAGEMENT
01503 CinSulin® with InSea® and Crominex® 3+
01620 CoffeeGenic® Green Coffee Extract
02122 Glycemic Guard™
00438 Stevia™ Organic Liquid Sweetner
00432 Stevia™ Sweetener

HEART HEALTH
01066 Aspirin (Enteric Coated)
01842 BioActive Folate & Vitamin B12 Caps
01700 Cardio Peak™ with Standardized Hawthorn and Arjuna
02121 Homocysteine Resist
02018 Optimized Carnitine
01949 Super-Absorbable CoQ10 Ubiquinone with d-Limonene • 50 mg, 60 softgels
01951 Super-Absorbable CoQ10 Ubiquinone with d-Limonene • 100 mg, 60 softgels
01929 Super Ubiquinol CoQ10
01427 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 50 mg, 30 softgels
01425 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 100 softgels
01437 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 30 softgels
01426 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 100 mg, 60 softgels
01431 Super Ubiquinol CoQ10 with Enh Mitochondrial Support™ • 200 mg, 30 softgels
01733 Super Ubiquinol CoQ10 with PQQ
01859 TMG Liquid Capsules
00349 TMG Powder

HORMONE BALANCE
00454 DHEA (Dehydroepiandrosterone) • 15 mg, 100 capsules
00335 DHEA (Dehydroepiandrosterone) • 25 mg, 100 capsules
00882 DHEA (Dehydroepiandrosterone) • 50 mg, 60 capsules
00607 DHEA (Dehydroepiandrosterone) • 25 mg, 100 vegetarian dissolve in mouth tablets
01689 DHEA (Dehydroepiandrosterone) • 100 mg, 60 veg capsules
02368 Optimized Broccoli and Cruciferous Blend
00302 Pregnenolone • 50 mg, 100 capsules
00700 Pregnenolone • 100 mg, 100 capsules
01468 Triple Action Cruciferous Vegetable Extract
01469 Triple Action Cruciferous Vegetable Extract with Resveratrol

IMMUNE SUPPORT
02411 5 Day Elderberry Immune
00681 AHCC®
02302 Bio-Quercetin
02410 Black Elderberry + Vitamin C
01961 Enhanced Zinc Lozenges
01704 Immune Modulator with Tinofend®
00955 Immune Protect with PARACTIN®
02005 Immune Senescence Protection Formula™
29727 Kinoko® Gold AHCC
24404 Kinoko® Platinum AHCC
00316 Kyolic® Garlic Formula 102
00789 Kyolic® Reserve
01681 Lactoferrin (Apolactoferrin) Caps
01903 NK Cell Activator™
01394 Optimized Garlic
01309 Optimized Quercetin
01811 Peony Immune
00525 ProBoost Thymic Protein A
01708 Reishi Extract Mushroom Complex
01906 Standardized Cistanche
13685 Ten Mushroom Formula®
01097 Ultra Soy Extract
01561 Zinc Lozenges

INFLAMMATION MANAGEMENT
01639 5-LOX Inhibitor with AprèsFlex®
02324 Advanced Curcumin Elite™ Turmeric Extract, Ginger & Turmerones
01709 Black Cumin Seed Oil
02310 Black Cumin Seed Oil and Curcumin Elite™ Turmeric Extract
00202 Boswellia
02467 Curcumin Elite™ Turmeric Extract • 30 veg capsules
02407 Curcumin Elite™ Turmeric Extract • 60 veg capsules
01804 Cytokine Suppress® with EGCG
02223 Pro-Resolving Mediators
00318 Serraflazyme
01203 Specially-Coated Bromelain
00407 Super Bio-Curcumin® Turmeric Extract
01254 Zyflamend™ Whole Body

JOINT SUPPORT
02404 Arthro-Immune Joint Support
02238 ArthroMax® Advanced NT2 Collagen™ & AprèsFlex®
01617 ArthroMax® with Theaflavins & AprèsFlex®
02138 ArthroMax® Elite
00965 Fast-Acting Joint Formula
00522 Glucosamine/Chondroitin Capsules
01600 Krill Healthy Joint Formula
01050 Krill Oil
00451 MSM (Methylsulfonylmethane)
02231 NT2 Collagen™

KIDNEY & BLADDER SUPPORT
00862 Cran-Max® Cranberry Whole Fruit Concentrate
01424 Optimized Cran-Max® with Ellirose™
01921 Uric Acid Control
01209 Water-Soluble Pumpkin Seed Extract

LIVER HEALTH & DETOXIFICATION
01922 Advanced Milk Thistle • 60 softgels
01925 Advanced Milk Thistle • 120 softgels
02240 Anti-Alcohol Complex
01651 Calcium D-Glucarate
00550 Chlorella
01571 Chlorophyll
01522 Milk Thistle • 60 veg capsules
02402 FLORASSIST® Liver Restore™
01541 Glutathione, Cysteine & C
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<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>01393</td>
<td>HepatoPro</td>
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<td>01608</td>
<td>Liver Efficiency Formula</td>
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<td>01534</td>
<td>N-Acetyl-L-Cysteine</td>
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<td>00342</td>
<td>PectaSol-C® Modified Citrus Pectin Powder</td>
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<td>01080</td>
<td>PectaSol-C® Modified Citrus Pectin Capsules</td>
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<td>01884</td>
<td>Silymarin</td>
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<td>01534</td>
<td>N-Acetyl-L-Cysteine</td>
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<td>PectaSol-C® Modified Citrus Pectin Capsules</td>
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<td>02361</td>
<td>SOD Booster</td>
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**LONGEVITY & WELLNESS**

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<td>01625</td>
<td>AppleWise Polyphenol Extract</td>
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<tr>
<td>02414</td>
<td>Bio-Fisetin</td>
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<td>01214</td>
<td>Blueberry Extract</td>
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<td>01438</td>
<td>Blueberry Extract and Pomegranate</td>
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<td>02270</td>
<td>DNA Protection Formula</td>
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<td>02405</td>
<td>Endocannabinoid System Booster</td>
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<tr>
<td>02119</td>
<td>GEROPROTECT™ Ageless Cell™</td>
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<td>02415</td>
<td>GEROPROTECT™ Autophagy Renew</td>
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<td>02133</td>
<td>GEROPROTECT™ Longevity A.I.™</td>
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<td>02401</td>
<td>GEROPROTECT™ Stem Cell</td>
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<td>02211</td>
<td>Grapeseed Extract</td>
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<td>00954</td>
<td>Mega Green Tea Extract (decaffeinated)</td>
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<tr>
<td>00953</td>
<td>Mega Green Tea Extract (lightly caffeinated)</td>
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<td>01513</td>
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<td>02230</td>
<td>Optimized Resveratrol</td>
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<td>Pycnogenol® French Maritime Pine Bark Extract</td>
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<td>Resveratrol</td>
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<td>RNA (Ribonucleic Acid)</td>
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**MEN'S HEALTH**

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<tr>
<td>02209</td>
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<td>Mega Lycopene Extract</td>
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<td>02306</td>
<td>Men's Bladder Control</td>
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<td>01789</td>
<td>PalmettoGuard® Saw Palmetto with Beta-Sitosterol</td>
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<td>01790</td>
<td>PalmettoGuard® Saw Palmetto/Nettle Root Formula</td>
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<td>01837</td>
<td>Pomi-T™</td>
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<td>01373</td>
<td>Prelox® Enhanced Sex for Men</td>
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<td>01940</td>
<td>Super MiraForte with Standardized Lignans</td>
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<td>01909</td>
<td>Triple Strength ProstaPollen™</td>
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<td>Ultra Prostate Formula</td>
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**MINERALS**

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<tr>
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<td>02107</td>
<td>Extend-Release Magnesium</td>
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<td>30731</td>
<td>Ionic Selenium</td>
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<td>01677</td>
<td>Iron Protein Plus</td>
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<td>01459</td>
<td>Magnesium Caps</td>
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<td>01682</td>
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<td>01328</td>
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<td>01504</td>
<td>Optimized Chromium with Crominex® 3+</td>
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<td>02309</td>
<td>Potassium with Extend-Release Magnesium</td>
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<td>01740</td>
<td>Sea-lodine™</td>
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<td>01879</td>
<td>Se-Methyl L-Selenocysteine</td>
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<td>01778</td>
<td>Super Selenium Complex</td>
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<td>Vanadyl Sulfate</td>
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<td>Zinc Caps</td>
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**MISCELLANEOUS**

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<tr>
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**MOOD & STRESS MANAGEMENT**

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<tbody>
<tr>
<td>02312</td>
<td>Cortisol-Stress Balance</td>
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<td>00987</td>
<td>Enhanced Stress Relief</td>
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<td>01074</td>
<td>5 HTP</td>
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<td>01683</td>
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**MULTIVITAMINS**

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<tr>
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<td>02176</td>
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**NERVE & COMFORT SUPPORT**

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<tbody>
<tr>
<td>02202</td>
<td>ComfortMAX™</td>
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<tr>
<td>02303</td>
<td>PEA Discomfort Relief</td>
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**PERSONAL CARE**

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<tr>
<td>01006</td>
<td>Biosil™ - 5 mg, 30 veg capsules</td>
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<td>01007</td>
<td>Biosil™ - 1 fl oz</td>
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<tr>
<td>00321</td>
<td>Dr. Proctor’s Advanced Hair Formula</td>
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<td>00320</td>
<td>Dr. Proctor’s Shampoo</td>
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<td>02322</td>
<td>Hair, Skin &amp; Nails Collagen Plus Formula</td>
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<td>Life Extension Toothpaste</td>
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<td>00408</td>
<td>Venotone</td>
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<td>Xyliwhite Mouthwash</td>
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<td>Youthful Collagen</td>
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**PET CARE**

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<tr>
<td>01932</td>
<td>Cat Mix</td>
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<td>Dog Mix</td>
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**PROBIOTICS**

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<td>FLORASSIST® Balance</td>
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<td>02125</td>
<td>FLORASSIST® GI with Phage Technology</td>
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<td>01821</td>
<td>FLORASSIST® Heart Health</td>
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<td>02250</td>
<td>FLORASSIST® Mood Improve</td>
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<tr>
<td>02208</td>
<td>FLORASSIST® Immune &amp; Nasal Defense</td>
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<td>02120</td>
<td>FLORASSIST® Oral Hygiene</td>
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<td>02203</td>
<td>FLORASSIST® Prebiotic</td>
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<td>FLORASSIST® Throat Health</td>
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<td>02400</td>
<td>FLORASSIST® Winter Immune Support</td>
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<td>52142</td>
<td>Jarro-Dophilus® for Women</td>
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<tr>
<td>00056</td>
<td>Jarro-Dophilus EPS* - 60 veg capsules</td>
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<td>21201</td>
<td>Jarro-Dophilus EPS* - 120 veg capsules</td>
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<td>01038</td>
<td>Theralac® Probiotics</td>
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<td>01389</td>
<td>TruFlora® Probiotics</td>
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**SKIN CARE**

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<td>Advanced Growth Factor Serum</td>
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<td>Advanced Hyaluronic Acid Serum</td>
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<td>80154</td>
<td>Advanced Lightening Cream</td>
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<td>Advanced Peptide Hand Therapy</td>
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<td>80175</td>
<td>Advanced Probiotic-Fermented Eye Serum</td>
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<td>Advanced Retinol Serum</td>
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<td>Advanced Tripe Peptide Serum</td>
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<td>Advanced Under Eye Serum with Stem Cells</td>
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<td>80137</td>
<td>All-Purpose Soothing Relief Cream</td>
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<td>Amber Self MicroDermabrasion</td>
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<td>Cucumber Hydra Peptide Eye Cream</td>
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<td>Skin Tone Equalizer</td>
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<td>80162</td>
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<td>Vitamin D Lotion</td>
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**SLEEP**

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<td>Bioactive Milk Peptides</td>
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<td>02300</td>
<td>Circadian Sleep</td>
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<td>01551</td>
<td>Enhanced Sleep with Melatonin</td>
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<td>01511</td>
<td>Enhanced Sleep without Melatonin</td>
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<td>02234</td>
<td>Fast-Acting Liquid Melatonin</td>
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<td>01669</td>
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<td>00329</td>
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<td>Melatonin • 3 mg, 60 veg lozenges</td>
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<td>Melatonin IR/XR</td>
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<td>Melatonin 6 Hour Timed Release</td>
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**WEIGHT MANAGEMENT & BODY COMPOSITION**

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<td>7-Keto® DHEA Metabolite • 25 mg, 100 capsules</td>
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<td>7-Keto® DHEA Metabolite • 100 mg, 60 veg capsules</td>
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<td>01807</td>
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<td>DHEA Complete</td>
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<td>Garcinia HCA</td>
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<td>Integra-Lean®</td>
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<td>01908</td>
<td>Mediterranean Trim with Sinetrol™-XPur</td>
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<td>01492</td>
<td>Optimized Irvingia with Phase 3™ Calorie Control Complex</td>
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<td>Optimized Saffron with Satireal®</td>
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<td>00818</td>
<td>Super CLA Blend with Sesame Lignans</td>
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<td>01902</td>
<td>Waist-Line Control™</td>
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**WOMEN’S HEALTH**

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<td>01626</td>
<td>Enhanced Sex for Women 50+</td>
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<td>01894</td>
<td>Estrogen for Women</td>
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<td>01064</td>
<td>Femmenessence MacaPause®</td>
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<td>02204</td>
<td>Menopause 731™</td>
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<td>02319</td>
<td>Prenatal Advantage</td>
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<td>01441</td>
<td>Progesta-Care®</td>
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<td>01649</td>
<td>Super-Absorbable Soy Isoflavones</td>
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*A ginger-like* root extract found in *Male Vascular Sexual Support* promotes *blood flow* and supports *sexual response*.

Each capsule provides **100 mg** of *KaempMax™*, which is super-standardized *Kaempferia parviflora*.

For full product description and to order *Male Vascular Sexual Support*, call 1-800-544-4440 or visit www.LifeExtension.com
Does Your Fish Oil Provide Olive Polyphenols?

**Omega-3s** are widely used to protect heart health.

**Olive oil** also has vascular benefits.

**Super Omega-3** provides **EPA/DHA** from ultra-pure **fish oil** plus standardized **polyphenols** from extra-virgin **olive oil**.

**Item #01982** • 120 softgels

- 1 bottle $24
- 4 bottles $21 each

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7 WHEN DRUGS BECOME DIETARY SUPPLEMENTS
A B-vitamin prescription drug cost $340 until it became a dietary supplement that now costs only $20.

24 IMMUNE SUPPORT FOR QUICK RECOVERY
During cold and flu season, zinc, elderberry, and vitamin C help reduce severity and duration of respiratory illnesses.

34 LITHIUM AND ALZHEIMER'S RISK
Low doses of the mineral lithium may slow progression of Alzheimer's and other neurodegenerative disorders.

44 ORAL COLLAGEN IMPROVES SKIN AND JOINTS
Hydrolyzed collagen boosts internal collagen production, enhancing skin appearance and improving joint function.

54 PRESERVE MUSCLE AND IMPROVE BODY COMPOSITION
Amino-acid-derived HMB improves muscle strength, growth, lean mass, and healthy body composition.

66 SYSTEMIC EFFECTS OF B VITAMINS
B vitamins provide systemic benefits including DNA repair, neurotransmitter synthesis, and healthy methylation.

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