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November 2026

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Neck Pain Relief

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Neck pain affects more than **200 million** people worldwide. An effective solution is to engage in pain-relieving physical activities (and avoid underlying causes). An ayurvedic **botanical** combination can be part of a complementary approach.

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Low vitamin D linked to higher cardiovascular risk in hyperuricemia; creatine benefits more than muscle; probiotics reduced gastrointestinal side effects of chemotherapy; higher systolic blood pressure with higher HbA1c strongly linked to heart disease risk.



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* *Br J Pharmacol.* 2004 Mar;141(5):825-30.

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Global Rise of Neck Pain

BY WILLIAM FALLOON



Low **back pain** is the leading cause of world-wide disability, but **neck pain** ranks fourth.¹

Global neck pain burden is forecasted to increase by more than **30%** in the next three decades.²



Although the causes of neck pain vary, several common risk factors have been associated with an increased risk, including:

- Insufficient physical activity³ and obesity,⁴
- Improper physical activity/poor form/improper posture,^{5,6}
- Prolonged use of digital devices such as smartphones,⁷ laptops, or tablets,⁷ and
- Psychological stress.⁸

Women are more likely to be affected, a difference that may be related to biological differences in musculoskeletal development and pain perception.^{2,9,10}

Many still attempt to treat their neck pain with massages and NSAIDs, which do not produce meaningful improvements in the long run.^{11,12}

For most individuals, the primary recommendation is to engage in proper **physical activity**.

A review of randomized controlled trials evaluating different types of physical activity found that strength training, motor control training (subset of physical therapy), and yoga/Pilates/Tai Chi/Qigong produced significant improvements in neck pain compared with no treatment.

The preliminary conclusion was that none of these exercise interventions were superior to the other.¹³



These different exercise strategies can influence neck stability in distinct ways by:

- 1) Targeting deep cervical muscles,
- 2) Strengthening superficial neck and shoulder girdle muscles, and
- 3) Improving stabilization/muscular endurance during arm movements that place load on the neck.

As a result, no single exercise intervention is universally effective.¹⁴

An article on page 52 describes a new approach of utilizing a combination of ayurvedic, anti-inflammatory botanicals — *Curcuma longa* and *Boswellia serrata* — that resulted in clinical reductions in neck pain, stiffness, and neck-related disability.¹⁵

This botanical combination may represent a complementary approach to a multi-faceted strategy of alleviating neck pain.

For longer life,



William Faloon, Co-Founder
Life Extension

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* When combined with a regular resistance training/exercise program.

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2. *Nutrients*. 2023 Aug 29;15(17):3769.
3. *Nutrients*. 2024;16(12):1961.

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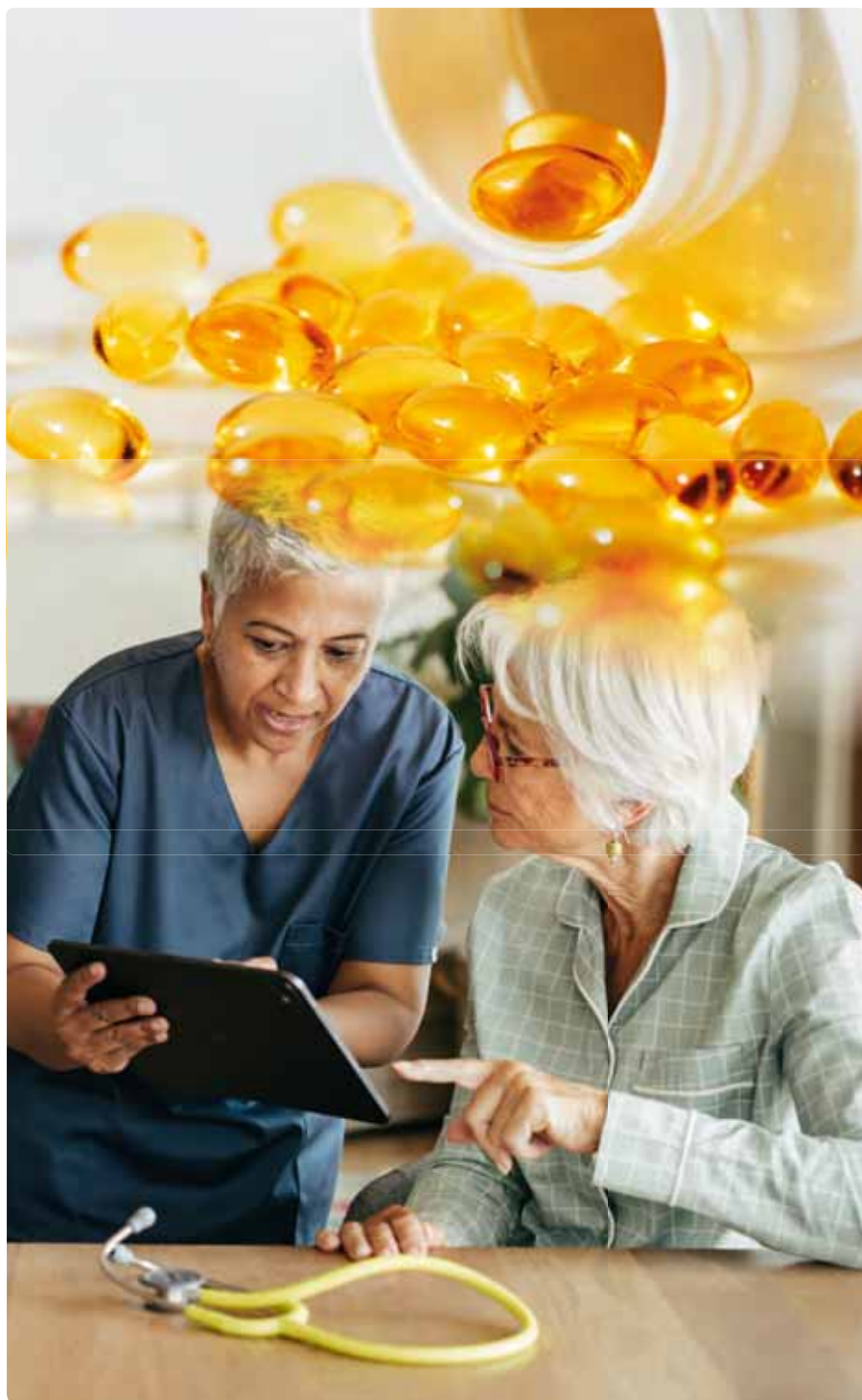
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In the News



Low Vitamin D Linked to Higher Heart Disease Risk in Hyperuricemia

Hyperuricemia, a condition of excess **uric acid** in the blood, is known to contribute to gout and kidney stones, and it is also an independent risk factor for cardiovascular disease. Low vitamin D levels have also been linked to increased cardiovascular risk.

In patients with hyperuricemia, vitamin D deficiency was associated with a higher prevalence of cardiovascular disease and greater coronary artery narrowing, according to a study published in *PLoS One*.*

To analyze this association, researchers examined data from 483 hospitalized patients.

Patients with vitamin D deficiency (**<12ng/mL**) had a higher prevalence of cardiovascular disease and more severe coronary artery narrowing than those with sufficient vitamin D (**>20+ng/mL**).

Overall, *higher* vitamin D status was independently associated with reduced risk of **cardiovascular** disease in these patients, while older age was associated with increased cardiovascular risk.

Editor's note: Because of this study's observational design, it cannot establish direct cause and effect.

*PLoS One. 2026; 21(4):e0346141.

Creatine Benefits More Than Muscle

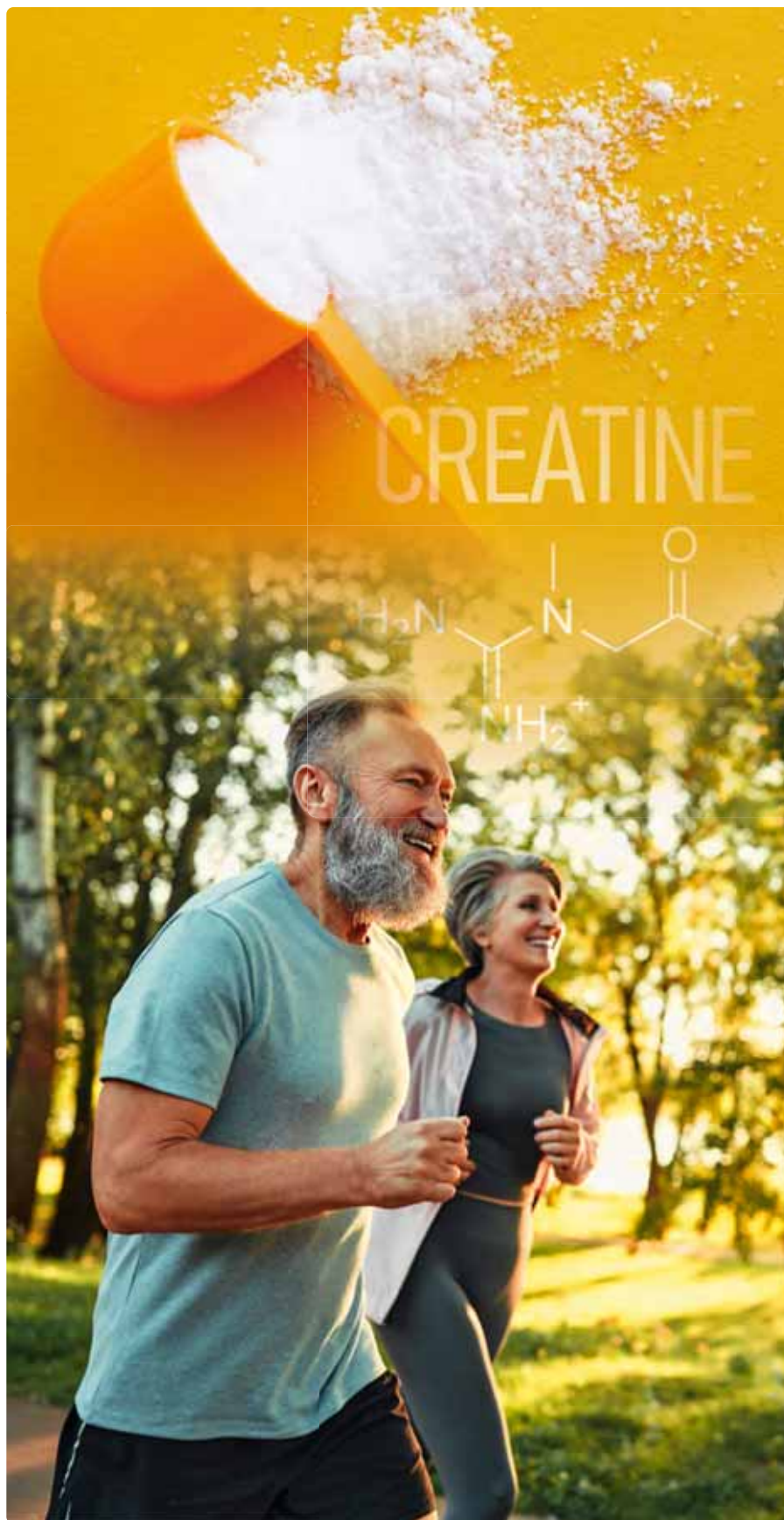
A crossover trial involving 14 physically active men found that a week of creatine monohydrate supplementation resulted in improvements in physical output during high-intensity intermittent exercise, and less muscle soreness, in addition to improving subjective sleep quality and cognitive performance.*

The trial included 14 men who received either **20 grams** of creatine or a placebo daily for one week. This was followed by a two-week washout during which neither treatment was given. The men were then switched to the opposite treatment for an additional week.

Compared with the placebo, creatine supplementation was associated with improved sleep quality and an earlier bedtime. Participants also demonstrated significantly greater total distance and best distance during a high-intensity, intermittent sprint test along with markedly lower muscle soreness. Cognitive performance also significantly improved.

Editor's Note: "Clinicians and sports nutritionists could consider incorporating creatine monohydrate supplementation into recovery strategies for athletes facing sleep disturbances and cognitive performance challenges," the authors concluded.

* *Nutrients*. 2025 Dec 7;17(24):3831.





Probiotics May Reduce Chemotherapy-Related Complications

Chemotherapy-induced gastrointestinal toxicity poses a major challenge in leukemia care, often reducing quality of life and causing treatment interruptions. A systematic review and meta-analysis suggests that probiotics may help lessen these complications.*

The analysis included eight randomized controlled trials involving 753 leukemia patients undergoing chemotherapy, comparing probiotic use to conventional care.

Patients receiving probiotics experienced significant reductions in nausea, diarrhea, bloating, vomiting, and indigestion, compared to those receiving conventional care.

Additionally, probiotic use was associated with improvements in inflammatory markers such as procalcitonin and TNF- α , which suggests a systemic benefit beyond symptom relief.

Editor's note: These results suggest probiotics may reduce gastrointestinal side effects of chemotherapy, possibly by modulating the gut microbiome.

* *Nutr Clin Pract.* 2026 Feb;41(1):62-73.

Combined A1c and Systolic Blood Pressure Levels Strongly Predict Heart Disease Risk

A study published in *Frontiers in Endocrinology* found that individuals with both higher systolic blood pressure and elevated hemoglobin A1c (HbA1c) levels had a higher risk of cardiovascular disease.*

The long-term study followed over 16,000 participants for 9-12 years.

The researchers developed a combined measure—the **hemoglobin A1c-systolic blood pressure index (HSI)**—to capture glucose and blood pressure status together.

Their findings showed that *higher HSI* at baseline and over time was strongly linked to increased cardiovascular risk. Overall, HSI predicted cardiovascular disease risk better than HbA1c or systolic blood pressure alone.

Editor's note: Previous research had shown that HbA1c and high blood pressure are both major drivers of cardiovascular disease. HSI, which combines both HbA1c and systolic blood pressure, could be a valuable tool for integrated cardiometabolic risk assessment, although more research is needed.

* *Front Endocrinol (Lausanne)*. 2026 Feb 18;17:1718936.



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References: 1. *Antioxidants (Basel)*. 2021 Jun 3;10(6):906. 2. *Int J Mol Sci*. 2024 Jun 20;25(12):6765. 3. *Int J Mol Sci*. 2023 Jan 30;24(3):2585. 4. Data on File. Manuscript in prep: 2025.
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References 1. *Oxid Med Cell Longev.* 2017;2017:1716701. 2. *Ochsner J.* 2018 Spring;18(1):81-7.

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Optimizing **GARLIC'S** Cardiovascular Benefits



BY MARSHA MCCULLOCH, MS, RD

People frequently use dietary supplements to support cardiovascular health.¹

This is understandable since cardiovascular disease is the **leading cause of death** globally.²

Beating the odds of cardiovascular disease requires managing the underlying risk factors, such as unhealthy **lipid** levels, elevated **blood pressure**, and high **blood sugar**.^{3,4}

An **aged black garlic** extract was associated with improvements in multiple cardiovascular risk factors. A 12-week clinical study⁵ showed the following reductions:

- **Total cholesterol by 11.8%,**
- **LDL (“bad”) cholesterol by 13%,**
- **Fasting blood sugar by 10%, and**
- **Systolic blood pressure by 5.3%.**

The process used to produce **aged black garlic** greatly *reduces* garlic odor and may improve its tolerability.^{6,7}



Understanding Aged Black Garlic

Garlic is recognized for its strong odor and distinctive taste. To retain its health benefits while minimizing its pungent smell, a variety of garlic formulations have been developed.^{6,8}

Allicin, a bioactive compound in garlic, has traditionally been valued and studied for its potential to support cardiovascular and overall health.⁹

S-allyl-cysteine (SAC), another garlic-derived compound, has been shown to exhibit antioxidant and anti-inflammatory effects that benefit cardiovascular health. It was also shown to help *lower cholesterol*—in part by reducing its synthesis.¹⁰

The S-allyl-cysteine content of fresh garlic is low.¹⁰ However, treating raw garlic with elevated heat and humidity for up to 90 days boosts the **S-allyl-cysteine** content.^{6,10}

The special aging process also increases the concentration of **polyphenols** and other **antioxidants** in the final product.^{7,11}

S-allyl-cysteine is **highly stable** in the bloodstream, giving it time to exert its benefits in the body.^{10,12}

Aged black garlic produces less of the strong odor and bad breath associated with fresh garlic, because the aging process markedly reduces pungent organosulfur compounds.^{13,14}

Scientists have developed a patented process for producing an **aged black garlic** extract with twice the amount of **S-allyl-cysteine** typically found in oral garlic.⁵

With levels standardized to **0.5%**, this extract provides **2.5 mg** of SAC in a single **500 mg** dose.⁵

Improving Blood Lipids

In a **clinical trial**, researchers tested this aged black garlic in healthy adults with borderline cardiovascular risk levels.

While subjects taking a **placebo** had minimal changes from baseline, those who took the extract daily for **12 weeks** had improvements in **blood lipids** compared to baseline, including an:⁵

- **11.8%** reduction in **total cholesterol**,
- **13%** reduction in **LDL** (“bad”) cholesterol,
- **11.5%** increase in protective **HDL** (“good”) cholesterol, and a
- **12.3%** reduction in **triglycerides**.

In addition, the **ratio** of total cholesterol to HDL cholesterol improved from **4.85** to **3.84**,⁵ moving it close to the **optimal** level of **3.5** or less.¹⁵



Garlic That's Better with Age

- **Garlic** has long been used for cardiovascular and overall health support.
- Scientists developed a patented garlic aging process that increases levels of **S-allyl-cysteine (SAC)** while reducing garlic odor and potentially improving tolerability.
- In a 12-week placebo-controlled trial, this aged black garlic extract was associated with reductions in total cholesterol (**11.8%**), LDL cholesterol (**13%**), systolic blood pressure (**5.3%**), and fasting blood sugar (**10%**).
- These findings represent favorable changes in established cardiovascular risk factors.

Antioxidant and Anti-Inflammatory Protection

Oxidative stress and **inflammation** play significant roles in the development of cardiovascular disease.^{16,17}

High levels of **reactive oxygen species** (unstable oxygen molecules), a hallmark of oxidative stress, can damage the inner lining of blood vessels,¹⁸ contributing to **atherosclerosis** (the buildup of plaque in arteries) and high blood pressure.¹⁰

In preclinical research, S-allyl-cysteine has been shown to scavenge reactive oxygen species and help **prevent LDL oxidation**.¹⁰

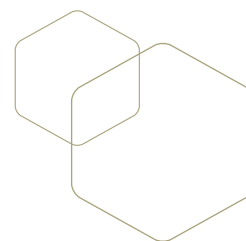
In preclinical cell culture studies—including human cell lines—**S-allyl-cysteine** has been shown to inhibit multiple mediators of cardiovascular inflammation, including unwanted activation of **NF-κB (nuclear factor-kappa B)**.¹⁰



Lowering Blood Pressure

Elevated blood pressure must be treated to avoid the serious and potentially deadly consequences. If not properly managed, high blood pressure dramatically raises the risk of:¹⁹

- Heart attack
- Stroke
- Dementia
- Heart failure
- Kidney disease or failure
- Vision loss
- Sexual dysfunction



Optimal blood pressure targets continue to be debated, but we at **Life Extension** have long argued that, for most people, a systolic blood pressure below 120 mmHg and a diastolic blood pressure below 80 mmHg are ideal.

In the 12-week trial that also measured lipids, taking **aged black garlic** reduced:²¹

- **Systolic** pressure by **5.3% (6.64 mmHg)**, compared to **1.26%** for placebo, and
- **Diastolic** pressure by **6.5% (5.5 mmHg)**, compared to **2.24%** for placebo.

One way garlic's organo-sulfur compounds may promote lower blood pressure is by generating **hydrogen sulfide**, a signaling molecule that relaxes and **widens** blood vessels for better blood flow.^{22,23}

Those with significantly higher blood pressure should be prescribed anti-hypertensive medications, in addition to adjuvant approaches such as weight loss, exercise, and use of nutrients that support vascular health.

Use of **at-home** blood pressure monitors enables people to measure blood pressure throughout the day/night to more effectively achieve optimal safe levels.

Normalizing Blood Sugar

Adults with **type 2 diabetes** have up to **four times** greater risk of cardiovascular disease than those without diabetes.²⁴

The worse a person's blood sugar control, the **more** the risk of cardiovascular disease increases.²⁴

When subjects in the clinical trial described in this article took aged black garlic for 12 weeks, their **fasting blood sugar** dropped by **10%**, compared to just **1.2%** in the placebo group.²¹

The garlic reduced average fasting blood sugar from **99 mg/dL** (near the **prediabetes** level) to **89 mg/dL**, in the optimal range.²⁵

Collectively, these are favorable changes in established cardiovascular risk factors.

Summary

Reducing the risk of heart and blood vessel disease requires addressing multiple cardiometabolic risk factors.

In a 12-week clinical study, a standardized aged black garlic extract was associated with improvements in blood lipids, blood pressure, and fasting blood sugar compared with baseline, representing favorable changes in established cardiovascular risk factors. ■

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

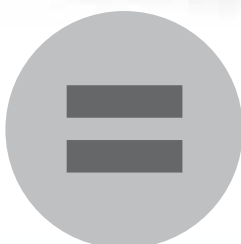
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References: 1. *Nutrients*;14:5235.10.3390/nu14245235. 2. *J Alzheimers Dis.* 2016;49(4):971-90.

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2. *Journal of Functional Foods*. 107(2023):105657.
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4. *OAJCAM*. September 20, 2023;6(1).

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Reclaim Healthier Hair, Skin, and Nails

BY LAURIE MATHENA



It's one thing to grow older. It's another to look older.

Dull, thinning hair; wrinkled, sagging skin; and weak, brittle nails are hallmarks of an aging body. They're also a **warning** that age may have compromised the function and content of important structural proteins like **keratin**,¹ **collagen**,² and **elastin**.³

Scientists have developed highly bioavailable compounds—like solubilized **keratin** and bioactive **collagen peptides**—that can help address damaging structural changes.⁴⁻⁷

Preliminary evidence suggests that these nutrients may support improvements in skin quality, hair thickness, and nail strength, giving you “beauty from within.”

Choose the Best Keratin

Keratin is a key structural component of the hair, nails, and the outer layer of skin.⁸ Aging affects keratin structure, which can contribute to changes in skin strength⁹ and hair structure.¹

Many people turn to keratin supplements, but not all keratin ingredients are created equal. Because natural keratin is difficult to digest, it needs to undergo processing that breaks it into smaller components.¹⁰ Unfortunately, the way it is processed can impact how effectively it works.¹¹

Solubilized keratin is different because it is the result of a specialized process that converts keratin into a form that may be more effectively utilized by the body.

Because natural keratin is water-insoluble and indigestible, processing methods are needed to break it into smaller, bioavailable components.^{10,12} The specific processing method used can significantly impact the digestibility, bioavailability, and nutritive composition of the resulting keratin product.^{10,11}

Two studies in adult women evaluated the benefits of taking **500 mg** of solubilized keratin for **90 days** (along with biotin, zinc, copper, and vitamins B3, B5, and B6). The first evaluated its effect on aspects of skin health,⁴ and the second evaluated the impact on hair and nail health.⁵

The results showed that taking solubilized **keratin** led to the following improvements:^{4,5}

SKIN⁴

- **30.4%** improvement in skin moisture,
- **16.8%** improvement in skin elasticity, and
- **17.9%** improvement in skin smoothness.

HAIR⁵

- **47.1%** subjective improvement in hair appearance,
- **9.2%** increase in hair follicles in the growth phase, and a
- **47%** reduction in the number of hairs that could be removed in a hair-pull test.

NAILS⁵

- **87.5%** of subjects showed improvement in nail breakage tendency, compared with **28.5%** in the placebo group,
- The proportion of subjects with hard nails increased from **37.5%** to **87.5%**,
- The proportion of subjects with natural nail color increased from **79.2%** to **100%**, and
- The proportion of subjects with smooth nails increased from **62.5%** to **100%**.

Improved Collagen Support

Collagen is one of the primary structural proteins of the skin, providing much of its strength and resilience.¹³ It works alongside *elastin*, a protein that allows the skin to stretch and bounce back.¹⁴

Together, these two structural proteins help keep skin firm, strong, and supple.

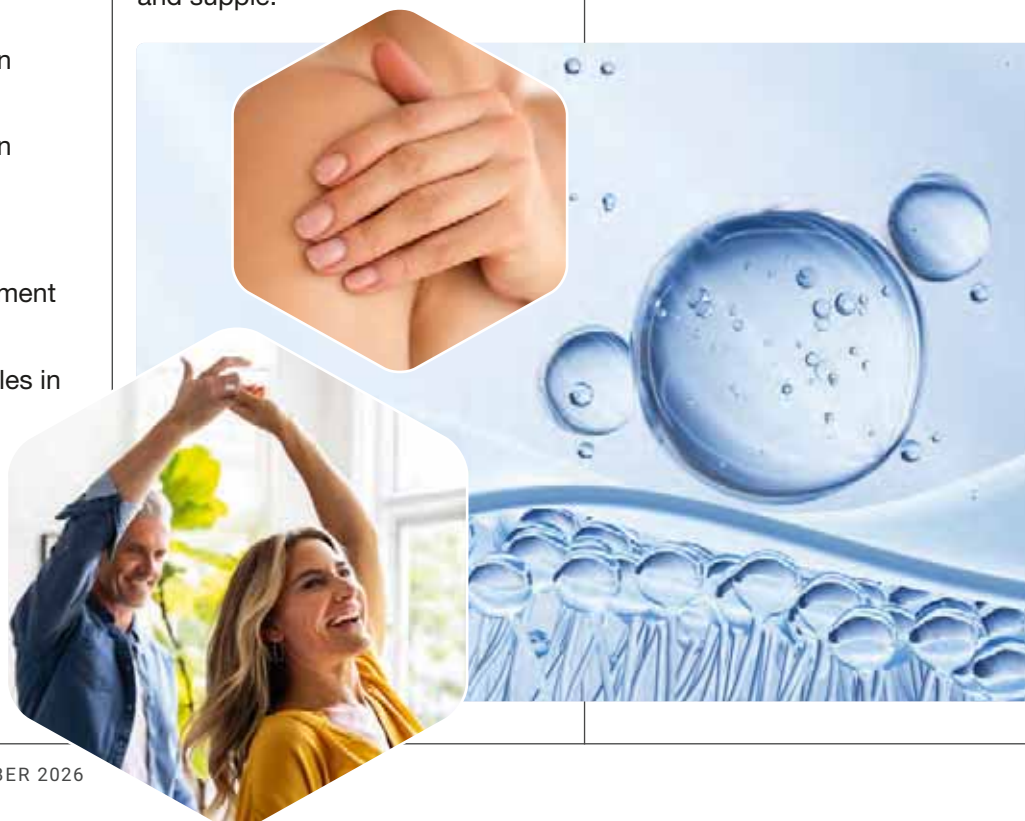
Unfortunately, we lose approximately **1%** of the collagen in our skin every year during adulthood.¹⁵ This decline contributes to wrinkled, sagging skin,^{16,17} as well as age-related changes in hair and nails, including thinning hair and brittle nails.^{18,19}

Bioactive collagen peptides are derived from **collagen** that has been broken down into smaller peptides that are more readily absorbed.²⁰ These peptides help stimulate the production of new collagen and elastin in the skin.⁶

The result may be younger-looking skin and stronger nails.

Two clinical trials evaluated the effects of taking **2.5 grams** of bioactive **collagen peptides** for eight weeks.

One found that supplementation reduced wrinkle volume by **20%**⁶ while the second reported a statistically significant improvement in skin elasticity.⁷ Researchers also observed a **65%** increase in type I procollagen (the precursor to collagen) and an **18%** increase in elastin content.⁶



A separate study showed that taking bioactive collagen peptides for six months led to a statistically significant decrease in thigh skin waviness and cellulite scores in normal-weight women.²¹

And in a 24-week open-label study, collagen peptide supplementation increased nail growth by **12%** and reduced the frequency of broken nails by **42%**.²²

Two Supportive Nutrients

Two additional nutrients that can help combat visible signs of aging include biotin and silicon.

Biotin is a B vitamin that can help improve nail strength in patients with brittle nails. A review of clinical trials determined that taking biotin improves the firmness, hardness, and thickness of brittle nails.²³

Silicon is a bioactive beneficial trace element that supports collagen formation in connective tissue.²⁴ A review of studies suggests that silicon may help improve skin strength and elasticity, and that higher silicon content has been associated with reduced hair loss and increased hair brightness.²⁵

Summary

With age, a decline in the function and content of key structural proteins like keratin, collagen, and elastin results in visible signs of aging in hair, skin, and nails.

Taking **solubilized keratin** and **bioactive collagen peptides** can help replenish these structural proteins, while **biotin** and **silicon** help to complement these *rejuvenation* effects.

Together, these compounds may help combat the visible signs of aging by reducing wrinkles, increasing skin moisture and elasticity, and improving the growth and strength of hair and nails. •

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

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1. Phytother Res: PTR. 2015;29(8):1123-30.

2. Avicenna J Phytomedicine. 2022;12(3):257-68.

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Gina

VERIFIED BUYER



"This supplement
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Gregory

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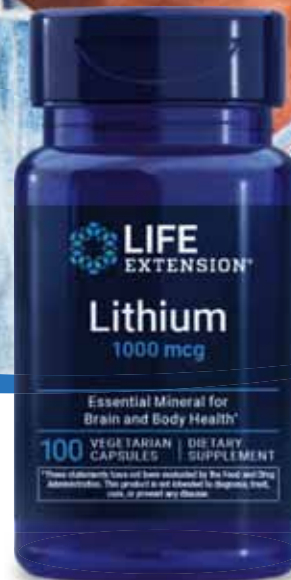
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* European Journal of Nutrition. 2011;50(5):387-389.



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- **Biotin**—Supports nail strength and integrity²
- **Silicon**—For the formation of collagen and keratin molecules³



Item #02322

120 tablets

1 bottle **\$24.75**

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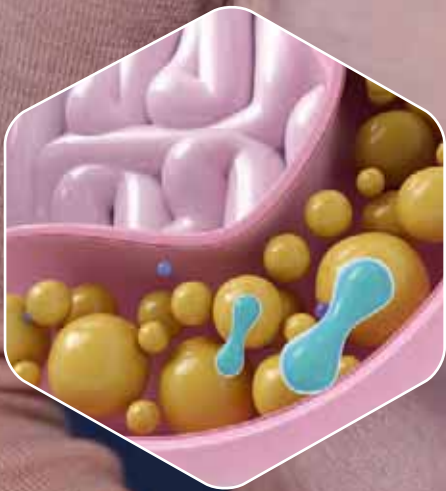
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Caution: Individuals with inborn errors of copper metabolism (e.g. Wilson's disease) should avoid daily, chronic use of this product.

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BY MARSHA MCCULLOCH, MS, RD

Improve Digestion and Ease Discomfort

Bloating. Gas. Diarrhea. Constipation.

Gastrointestinal diseases cost the United States billions in annual health care expenditures, with antacids, laxatives, and antidiarrheals among the most commonly used over-the-counter remedies.¹

These agents help manage symptoms, but many are used chronically without ever addressing the underlying disorder.

Prolonged use of acid-suppressing therapy in particular is associated with significant alterations in the **gut microbiome**.^{2,3}

An underappreciated cause of digestive dysfunction is the deficiency of **digestive enzymes**.^{4,5}

Digestive enzymes break down food so that nutrients become bioaccessible and available for absorption.^{6,7}

Combining an oral **digestive enzyme blend** with a **probiotic** may support digestive function and may help reduce symptoms such as gas, bloating, and indigestion.^{8,9}

Understanding Digestive Enzymes

Digestive enzymes help break down food in the gastrointestinal tract, which promotes nutrient absorption.¹⁰

They are made by the salivary and lingual glands, the stomach, the pancreas, and the lining of the small intestine.¹⁰ Some gut microbes also produce enzymes that extend digestion, especially in the colon.^{11,12}

With **age**, our secretion of digestive enzymes decreases.¹³ The diversity of beneficial microbes in the colon also declines with **age**.^{14,15}

Deficiencies of digestive enzymes can lead to gut symptoms, including **bloating**, **gas**, and **diarrhea**.⁵

Disaccharidase deficiency, which affects enzymes such as lactase, sucrase, and maltase, has been identified in approximately **40%** of adults with chronic unexplained gas, bloating, and related abdominal symptoms.⁴ It occurs when the small intestine does not have enough of these enzymes to break down sugars properly.

When enzyme activity is inadequate, carbohydrates, fats, and proteins are poorly digested and absorbed, which can also reduce uptake of fat-soluble vitamins and other nutrients.¹⁶

Taking **oral digestive enzymes** before meals supports digestive efficiency and comfort.^{9,17} Different types of foods—dairy, fats, fiber and proteins—require different digestive enzymes to break them down.¹⁰



Protein Digestion

Proteases are enzymes that break down protein.¹⁸

As we age, protein digestion and absorption decline, partly because of reduced secretion of digestive enzymes.¹⁹ **Pepsin**, one of the body's main proteases, is about **40% lower** in older adults.²⁰

The following oral proteases can help with protein digestion:

- **Microbial protease**, produced through fermentation, has been shown in laboratory studies to break down a broad range of animal and plant proteins.^{21,22} Certain microbial acid proteases remain active and continue to digest protein even in acidic conditions (around **pH 3.0**), similar to the acidic environment of the human stomach.^{23,24}
- **Bromelain**, a protease from pineapple stem and pulp, supports protein digestion in laboratory and animal studies.²⁵

In **human** trials, healthy adults who took a blend of microbial **proteases** with a little less than an ounce of pea or whey protein absorbed more essential amino acids into the blood than with **placebo**.^{26,27}

Being able to properly digest amino acids from dietary protein is important for maintaining muscle mass and physical function with age.^{28,29}

Breaking Down Fat

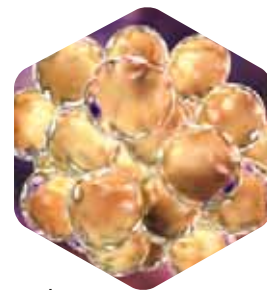
Lipases break down fat into free fatty acids and other molecules that the body can absorb.^{30,31}

In laboratory studies, **microbial-derived** lipases are more stable and

can work under harsher conditions than lipases from plants or animals.³¹

One widely used **microbial lipase**, from *Candida rugosa*, preclinically has been shown to break down a broad range of fats.³²

An animal study found that **C. rugosa lipase** increased levels of certain beneficial gut bacteria.³³



Help Digesting Dairy

Difficulty digesting **lactose**, the main carbohydrate in dairy products, can cause diarrhea, abdominal pain, bloating, and gas.³⁴

To digest lactose, the body requires lactase, an enzyme produced by the small intestinal lining.³⁴

Globally, about **70%** of adults have reduced lactase activity in adulthood, meaning only roughly **30%** retain the ability to fully digest lactose.³⁵

In placebo-controlled trials, oral lactase taken with lactose reduced abdominal pain, bloating, and flatulence in people with lactase deficiency.^{36,37}

Fiber Digestion Support

Plant foods often contain large amounts of **fiber**, which is indigestible by human enzymes.³⁸

Gut microbes ferment these undigested carbohydrates, and the gas they generate can cause **bloating** and other **digestive discomfort**.³⁹

Specific oral enzymes can break down some of these fermentable carbohydrates before they reach the gut bacteria in the colon.⁴⁰

- **Cellulase** breaks down cellulose, the main structural component of plant cell walls.⁴¹ Whole grains are a major source of cellulose.⁴²
- **Hemicellulase** breaks down hemicellulose, a common fiber in vegetables, fruits, beans, and nuts.⁴³
- **Pectinase** breaks down pectin, which is found in most plant foods, especially apples, pears, and citrus fruits.⁴⁴
- **Xylanase** targets xylan, another fiber found in plant cell walls.^{42,45}
- **Alpha-galactosidase** breaks down galacto-oligosaccharides (GOS), fibers abundant in beans, soy, and cruciferous vegetables like cabbage and broccoli.⁴⁶⁻⁴⁸

In a randomized, placebo-controlled trial, adults with IBS (irritable bowel syndrome) ate a diet high in **galacto-oligosaccharides (GOS)**—a fermentable fiber found mainly in legumes and beans—for three days.



Enzymes Maximize Digestion and Nutrition

- The body's production of **digestive enzymes** declines with age, as does the gut's diversity of microbes that support digestion.
- Poor digestion can result in **gastrointestinal symptoms** like gas, bloating, diarrhea, constipation, and abdominal pain. It can also limit nutrient absorption.
- A blend of **oral digestive enzymes** helps break down dairy, fiber, fat, and proteins and may support digestion.
- Additionally, a probiotic strain, ***Bacillus coagulans* MTCC 5856**, has been clinically shown to reduce gas, bloating, and indigestion.
- A **combination** of digestive enzymes and *B. coagulans* may support digestion and ease gastrointestinal discomfort.

Taking **alpha-galactosidase** with these foods significantly reduced bloating and overall digestive symptoms compared with placebo.⁴⁹

In addition to minimizing digestive discomfort, pre-clinical evidence suggests that improving *enzymatic* breakdown of plant foods may also help release nutrients bound within fiber.⁷

Digestion-Supporting Probiotic

One specific **probiotic** has been demonstrated to promote better digestive health.

Bacillus coagulans MTCC 5856 is a probiotic strain that produces **lactic acid**. Production of lactic acid may help create conditions that are less favorable for the growth of certain potentially harmful microbes.⁵⁰ The strain has demonstrated resistance to gastric acid in vitro and survives through the upper digestive tract.⁸

In a four-week trial, researchers tested **B. coagulans MTCC 5856** in healthy adults who reported **abdominal discomfort, gas, and bloating** at least once a week.⁸

By week four, the **probiotic** group's indigestion score—which combines bloating, gas, distension, and belching—dropped by about **66%**, while the **placebo** group showed no significant change. Within that score, the individual symptoms improved to a similar degree:⁸

- ~**67%** decrease in **bloating** (abdominal distension),
- ~**66%** decrease in **gas (flatus)**, and a
- ~**65%** overall decrease in **indigestion symptoms**.

In a separate 90-day trial in patients with diarrhea-predominant irritable bowel syndrome, the same strain at two billion colony forming units (CFU) per day added to standard care significantly reduced bloating, vomiting, diarrhea, abdominal pain, and stool frequency versus placebo.⁵¹

In a 28-day study in healthy adults, the strain was safe and preserved overall microbiome balance, with modest increases in several beneficial bacteria.⁸

Combining **B. coagulans MTCC 5856** with **oral digestive enzymes** may provide complementary support for digestive comfort.



Summary

Gastrointestinal symptoms may result from problems digesting food properly.

Oral digestive enzymes derived from plants and microbes help break down dairy, protein, fats and certain plant fibers and may support digestive comfort.

The probiotic **B. coagulans MTCC 5856** is clinically shown to help reduce bloating, gas, and indigestion. Combining it with digestive enzymes may help support digestive comfort. ■

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

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The Energizing Impact of **NAD⁺** Cell Regenerator

If you experience general fatigue, it may be due to the decline of NAD⁺, an important coenzyme found in every cell.

NAD⁺ facilitates the production of ATP, which your body uses for fuel.

The **NAD⁺ Cell Regenerator™** formula provides nicotinamide riboside to help maintain healthy levels of NAD⁺.

NAD⁺ Cell Regenerator™ and Resveratrol Elite™

Nicotinamide riboside (300 mg), bioavailable resveratrol and other cell-energizing nutrients in one capsule.

Item #02348 | 30 vegetarian capsules
1 bottle **\$45** | 4 bottles \$38.50 each

NAD⁺ Cell Regenerator™

300 mg of nicotinamide riboside per capsule.

Item #02344 | 30 vegetarian capsules
1 bottle **\$40.50** | 4 bottles \$36 each

NIAGEN® is a registered trademark of ChromaDex, Inc., Patents see: www.ChromaDexPatents.com
NAD⁺ Cell Regenerator™ has met ConsumerLab.com standards for ingredient and product quality for Nicotinamide Riboside in independent testing. More information at www.consumerlab.com.



For full product description and to order **NAD⁺ Cell Regenerator™** or **NAD⁺ Cell Regenerator™ and Resveratrol 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.



HORMONE *Harmony*

Healthy Hormonal
Balance



Estrogen Balance Elite contains a proprietary seed extract of the herb fenugreek to promote healthy hormonal balance.

In clinical studies, fenugreek seed extract has been shown to help: ^{1,2}

- ✓ Relieve hormone related discomforts like hot flashes and night sweats.
- ✓ Promote healthy hormone balance.
- ✓ Encourage healthy mood, sleep and overall well-being.

This plant-based product also includes Red Clover, Chaste Tree, and Black Cohosh for women's overall quality of life.

Item #02534 | 60 vegetarian tablets
1 bottle \$15.75 | 4 bottles \$14.25 each

This product
does NOT
contain
estrogen.

CAUTION: Consult with your healthcare practitioner if you have, or have a history of, estrogen-dependent tumors.

References

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

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COMPREHENSIVE EYE HEALTH FORMULA

MACUGUARD® OCULAR SUPPORT PROVIDES:

- **Lutein, zeaxanthin, and meso-zeaxanthin** to help maintain structural integrity of the **macula** and **retina**.¹⁻⁵
- **Saffron** to help support **vision** as demonstrated by doctors' eye exams.¹
- **Alpha-carotene** to further help support **macular density**.¹



MacuGuard® Ocular Support
with Saffron

Item #01992 • 60 softgels
1 bottle \$18 • 4 bottles \$17 each



MacuGuard® Ocular Support
with Saffron + Astaxanthin

Item #01993 • 60 softgels
1 bottle \$32.25 • 4 bottles \$29 each

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Each bottle lasts for two months.

MacuGuard® Ocular Support is available with or without astaxanthin.

For full product description and to order either
of these **MACUGUARD®** formulas, call **1-800-544-4440**
or visit **www.LifeExtension.com**

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Olive Polyphenols + Fish Oil + Sesame



**2,400 mg
EPA/DHA
in four softgels**
Plus Standardized
Olive Extract and
Sesame Lignans

Item #01982*

120 softgels

1 bottle **\$29.25**

4 bottles \$27.50 each

Contains sesame.



**2,520 mg
EPA/DHA
in four softgels**
with Standardized
Olive Extract,
Sesame Lignans, Krill
and Astaxanthin

Item #01988

120 softgels

1 bottle **\$39.75**

4 bottles \$36 each

Contains crustacean
shellfish (krill), sesame.

= SUPER OMEGA-3

Fish oil is a popular supplement people use to boost **omega-3** levels in the **heart, brain, eyes**, and other tissues.

Super Omega-3 provides healthy components of the Mediterranean diet including highly purified **fish oil**, **sesame lignans**, and standardized **olive extract**.

Super Omega-3 is also available with added **krill** and **astaxanthin**.

For full product description and to order **Super Omega-3**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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

* The IFOS™ product certification is a registered trademark of SGS Nutrasource. This product has been tested to verify quality and purity per the IFOS™ standard.



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DIGESTIVE UPSETS?

RELIEF
from
**After-Meal
Bloating**

Bloat Relief helps relieve occasional discomfort, such as gas and **bloating** following a meal.

Scientists have combined four **plant extracts**:

- **Ginger root**
- **Artichoke leaf**
- **Fennel seed oil**
- **Curcumin**

For maximum benefit, take **one** softgel **twice daily** before your heaviest meals.



Item #02412 | 60 softgels
1 bottle **\$27.75** | 4 bottles \$25 each

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

Prodigest® is a registered trademark of Indena S.p.A., Italy.



"Use this all the
time-keeps my
stomach happy."

Carol
VERIFIED BUYER



Munch

Uncomfortable after eating?

Digestive enzymes are specialized proteins that help you break down the foods you eat.*

Enhanced Super Digestive Enzymes combines 10 vegetarian-friendly enzymes to help you break down hard-to-digest foods and encourage a healthy gastrointestinal balance...so you can feel good after you eat!

* Curr Drug Metab. 2016;17(2):187-93.

Crunch Digest Your Lunch

(Or breakfast, or dinner...)

Item #02021

60 vegetarian capsules

1 bottle **\$17.25**

2 bottles \$16.50 each



For full product description and to order
Enhanced Super Digestive Enzymes, 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.



Relief for NECK PAIN





FENUGREEK

BOSWELLIA
SERRATA

BY MARSHA MCCULLOCH, MS, RD

Neck pain is remarkably common.¹

High-income North America has the highest disability burden from **neck pain** of any world region, along with the largest national increase in neck pain **disability**.²

When it strikes, everyday activities like getting dressed, working, driving, reading, or sleeping can become unexpectedly difficult.³

While many people turn to painkillers, heat pads, or massage, the management of chronic neck pain remains challenging, and no single therapy has demonstrated consistent long-term benefit.⁴

This has pushed scientists to look deeper, investigating plant-based compounds that target the **inflammatory** mechanisms underlying neck discomfort.

A recent clinical trial in adults with moderate spondylitis (arthritis of the spine) found that a **bioavailability-enhanced** blend of **turmeric** and ***Boswellia serrata***:⁵

- Reduced **neck disability** by **53%**, and
- Relieved pain and stiffness by **70%**.

This botanical combination may represent an emerging approach to managing inflammation associated with neck discomfort.

Risk Factors for Neck Pain

Neck pain affects more than **200 million** people worldwide at any given time.¹

Common risk factors for neck discomfort include:

- **Older age**, with prevalence peaking in middle age and in the 45 to 74-year range,^{6,7}
- **Female sex**,^{7,8}
- **Insufficient physical activity**,⁹ and obesity,¹⁰
- **Improper physical activity/poor form**,^{11,12}
- **Prolonged screen-based device use**, particularly mobile phones and computers,¹³
- **Sedentary behavior and prolonged sitting**, with risk increasing as daily duration rises,¹³
- Sustained **neck flexion** and **poor sitting posture**,⁸
- **Prior neck or low back pain**, and **previous neck or shoulder trauma** such as whip-lash,^{8,14}
- **Psychological strain**, including anxiety and stress,^{8,15}
- **Neuromusculoskeletal disorders**, including osteoarthritis,⁶ and
- **Autoimmune diseases**, such as rheumatoid arthritis and **ankylosing spondylitis** (arthritis of the spine).⁶

Approximately **30% to 50%** of patients with cervical pain continue to report symptoms at one-year follow-up, despite most patients' symptoms resolving or significantly improving by that time.¹⁶

Curcumin's Role in Reducing Inflammation

Turmeric, a plant in the ginger family, is used in traditional Chinese and Indian medicine for joint **pain** and **inflammation**.^{17,18}

Turmeric supplies **curcumin** and related **curcuminoids**. These compounds help reduce oxidative stress and inflammation, including by inhibiting **NF-kB** (nuclear factor-kappa B), a protein complex associated with harmful chronic inflammation.¹⁸

Curcumin, as shown in preclinical studies, may also inhibit the activation of **NLRP3 inflammasome**, a key inflammation-triggering complex that promotes **pain**.^{17,18}

But not all turmeric extracts are the same. Because curcumin and the curcuminoids are poorly water-soluble and unstable in the gastrointestinal tract, how the extract is **formulated** largely determines how much is **absorbed** and how much of it is **bioavailable** to reach the tissues that need it the most.¹⁸

Boswellia Calms Inflammation

Boswellia serrata is an ancient tree native to India, the Middle East, and Africa.^{19,20}

Boswellia resin has been used for centuries in traditional health practices to ease **pain** and calm **inflammation**.¹⁹⁻²¹

The health properties of Boswellia are primarily attributed to **boswellic acids**, potent **anti-inflammatory** compounds.^{19,21}

Among the boswellic acids, **AKBA** (acetyl-11-keto-beta-boswellic acid) shows the strongest inhibitory activity against **5-LOX** (5-lipoxygenase), a key enzyme driving inflammation in soft tissues and joints.^{5,21}

As with curcumin and curcuminoids, a challenge with Boswellia extract and AKBA is poor **absorption** in the intestinal tract and **bioavailability** in tissues.²²





What You
Need
To Know

Maximizing Bioavailability

To optimize the **bioavailability** of oral curcuminoids and boswellic acids, scientists turned to **fenugreek**, an herb with seeds rich in the fiber **galactomannan**.^{23,24}

In the presence of water, galactomannan forms a stable gel. This gel slows the movement of intestinal material, promoting **sustained release** of its contents.²⁵

Based on this functionality, scientists combined **turmeric** and **Boswellia** extracts in a **fenugreek fiber matrix** and tested the absorption.

In healthy volunteers, this proprietary fenugreek-based formulation led to a **25-fold increase** in **curcuminoid** bioavailability and a **7-fold increase** in **AKBA** bioavailability, compared to standard curcuminoids and boswellic acids.²⁵

Easing Neck Pain and Stiffness

In a **clinical trial** published in **2025**, 93 adults with a history of mild to moderate spondylitis (spinal arthritis) were given either the **bioavailable curcuminoids-Boswellia combination**, Boswellia alone, or a placebo.⁵

Most participants (**69%**) identified **neck pain** as their primary concern at the start of the trial.

Powerful Plant-Based Neck Support

- America has the highest disability burden from neck pain of any world region. Many people use painkillers, heat pads, or massage, but management of chronic neck pain remains challenging.
- **Turmeric** and **Boswellia serrata** contain compounds with anti-inflammatory activity, but absorption of their active constituents is limited.
- In healthy volunteers, a fenugreek-based formulation increased curcuminoid bioavailability 25-fold and AKBA bioavailability 7-fold compared with standard preparations.
- After 28 days in a clinical trial, participants receiving the combination reported average reductions of **53%** in neck disability and relieved pain by **70%**.

The **combination** formula included **16.2%** total boswellic acids, **9.5%** AKBA, and **34.3%** curcuminoids.

All subjects responded to a standardized **musculoskeletal** questionnaire and a separate **neck discomfort** questionnaire before the study began, after 14 days, and after 28 days.

Both treatment groups reported improvements during the study, but the **curcuminoids-Boswellia combination** produced consistently superior outcomes. These findings suggest the combination may have provided greater benefit than Boswellia alone under the conditions of this study.

After just **two weeks**, compared with baseline, those who took **400 mg** of the bioavailable **curcuminoids-Boswellia combination** daily reported on average, a:⁵

- **22%** reduction in **neck, hip, and back pain**,
- **46%** reduction in **morning stiffness**, and
- **32%** reduction in overall **neck disability**.

After **28 days**, the **curcuminoids-Boswellia** group had, on average:

- **76%** reduction in **neck, hip, and back pain**,
- **70%** reduction in **morning stiffness**,
- **53%** reduction in overall **neck disability**,
- **56%** improvement in **reading** difficulty,
- **56%** improvement in **driving** difficulty, and
- **51%** improvement in **work** difficulty.

Compared with baseline and placebo, the combination also reduced inflammatory markers, lowering **NLRP3 inflammasome** by **39%** and **IL-1B** (interleukin-1 beta) by **59%**.

NLRP3 activation is associated with the release of inflammatory mediators involved in pain signaling.

Participants were permitted to use over-the-counter **pain medicine** as needed during the study. Use dropped in both treatment groups but increased in the **placebo** group, suggesting a reduced need for rescue pain medication among participants receiving the active interventions.⁵



Summary

Neck pain affects millions, and its lingering discomfort takes a toll on their quality of life.

In a clinical trial, daily intake of a bioavailability-enhanced **turmeric** and **Boswellia serrata** extract blend was associated with reductions in pain, stiffness, and neck disability measures after two weeks, with larger improvements reported after four weeks. ■

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

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Ultra Memory & Recall™ formula is an advanced **memory support formula**, containing standardized botanical extracts of **Boswellia**, **chebulic myrobalan**, and **green oat**.

In clinical trials:

- A proprietary blend of **Boswellia** and **chebulic myrobalan** extracts substantially promoted numerous forms of memory, including short-term, long-term, recognition, episodic, and visual memory speed and accuracy—as well as learning and executive function.¹
- A proprietary **green oat extract** supported visual-spatial working memory, as well as encouraging multitasking speed.²

ONE daily vegetarian capsule of **Ultra Memory & Recall™** formula can support your learning, retention, and *retrieval*—with some results possible in as little as **15 days!**¹



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1
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GMO
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Item #02560
30 vegetarian capsules
1 bottle **\$24**
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References: 1. *Front Nutr.* 2025 Dec 8;12:1695341. 2. *Nutrients.* 2020 May 29;12(6):1598.

Great Hair!

Oral Formula Promotes
Hair Growth and Fullness



Item #02538
30 softgels
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Just one **Hair Growth for Men** softgel
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References: 1. *J Cosmo Tricho.* 2023;9(3):207. 2. *Clin Cosmet Investig Dermatol.* 2023 Nov 11;16:3251-3266.
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A plant-derived formula that *supports*
the normal growth cycle for **healthy hair**.

In a clinical trial, a proprietary blend of
black rice (*Oryza sativa*) and **prickly pear**
(*Opuntia ficus indica*) flower extracts
helped to:¹

- **Support hair health**
- **Promote hair fullness and density**

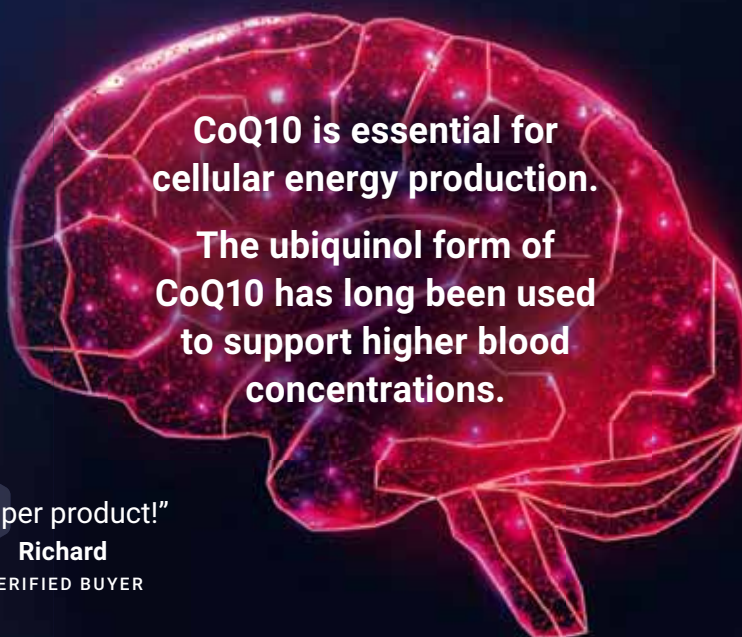
This formula also features a standardized **saw
palmetto** oil extract that in a 4-month clinical
trial demonstrated support for:²

- **Fuller hair with more density**
- **Reduced hair shedding**
- **Healthy hair appearance**

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Spring Back

INTO ACTION

Don't let lower back discomfort and occasional stiffness sideline you.

Embrace your back's range of motion and flexibility.

Lower Back Relief is a blend of **five-leaf chaste tree** and **ginger** extracts along with **white willow bark** extract.

In a clinical trial, **79%** of participants taking a **five-leaf chaste tree + ginger** extract formula reported a meaningful change in lower back comfort compared to **36%** in the **placebo** group, with benefits seen in as little as seven days.¹

In a separate clinical trial, **white willow bark extract** helped alleviate lower back discomfort.²



Item #02529

60 vegetarian capsules

1 bottle **\$22.50**

4 bottles \$20 each



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

References: 1. *J Back Musculoskeletal Rehabil.* 2024;37(2):487-502. 2. *Am J Med.* 2000 Jul;109(1):9-14. Muvz is a trademark of Enovate Biolife, a part of OmniActive
CAUTION: If you are sensitive to aspirin or salicylates, or use salicylate products or anticoagulants/antiplatelets, consult your healthcare provider before use.

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SHRUG OFF NECK DISCOMFORT

Occasional **neck** discomfort and morning stiffness can wear us down.

In a placebo-controlled **human** trial, the **Neck Relief** blend helped relieve occasional morning stiffness by an average of **70%** and occasional neck discomfort by an average of **53%** in just 28 days.¹

Neck Relief contains **turmeric** and ***Boswellia serrata***, two plant extracts that were found to support a healthy inflammatory response to support occasional neck discomfort.¹

These nutrients are combined with fenugreek to boost **bioavailability**.

It delivered up to a **25-fold** increase in **curcuminoid** bioavailability and up to a **7-fold** increase in bioavailability of **AKBA**, a major boswellic acid.²

NEW



GLUTEN
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1
DAILY

Item #02566 | 30 vegetarian capsules

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References 1. *Front Pharmacol.* 2025;16:1577429. 2. *J Funct Foods.* 2021;79:104405.

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The Power of BROCCOLI

BY STAN RICHARDS

The health benefits of **broccoli** have been known for decades.^{1,2}

Higher intake of **broccoli** and other **cruciferous vegetables** including cabbage, kale, Brussels sprouts, and cauliflower has been associated with a *lower* risk of cardiovascular disease,^{3,4} and certain cancers.^{3,5,6} These vegetables may also help protect against neurodegenerative disorders.⁷

Some studies suggest that **cruciferous vegetables** may help support blood sugar control.^{8,9}

Research indicates that many of these benefits are due to a specific compound called **sulforaphane**.^{1,10}

Broccoli stores **sulforaphane** in an inactive precursor form called **glucoraphanin**.

Glucoraphanin is converted into active **sulforaphane** when the vegetable is chopped or chewed and exposed to the enzyme **myrosinase**, which is also present in broccoli.²

In preclinical studies, sulforaphane has demonstrated a range of health-promoting activities, including protection of the **heart** and **brain**,¹¹ support for healthy **blood sugar levels**,^{12,13} and other beneficial biological activities.



Defending Cells

Sulforaphane works in many different ways to protect cells and tissues.^{1,14}

One of its most crucial functions is to activate **Nrf2**, a protein that regulates hundreds of genes involved in cellular defense mechanisms, including antioxidant response and detoxification.^{15,16}

Nrf2 also activates **detoxification enzymes** that protect against multiple disease mechanisms,¹⁷ even neutralizing toxins that can cause the kind of cellular damage that contributes to chronic diseases.^{18,19}

Sulforaphane also reduces harmful chronic inflammation by inhibiting **NF-κB (nuclear factor-kappa B)**, a cellular complex that drives production of pro-inflammatory compounds.²⁰ This kind of inflammation is a driver of nearly all age-related chronic diseases.²¹

Together, these actions may help support healthy aging.

Potential Role In Cancer Research and Potential Anti-Cancer Effects

In preclinical studies, sulforaphane has acted against **cancer** cells and slowed tumor growth by switching on tumor-suppressing genes, promoting the death of cancer cells.^{22,23}

Reviews of observational studies have found that individuals who eat more cruciferous vegetables such as broccoli have a lower risk of many different cancers, including breast, prostate, colorectal, lung, gastric, and bladder cancers.^{3,24,25}

Early human research is limited but encouraging. One clinical trial of men with prostate cancer who were being closely monitored found that eating a broccoli soup rich in glucoraphanin for one year was associated with changes in genes involved in cancer-related and inflammatory pathways. The effects were greater among those who consumed more soup.²⁶

A systematic review of randomized controlled trials found that sulforaphane may have beneficial effects in patients with pancreatic cancer.²⁷

For now, sulforaphane remains a promising area for continued scientific study.

Other Benefits

There is growing evidence that **sulforaphane** has multiple additional health benefits.

For instance, in preclinical studies sulforaphane has shown an ability to both cross the blood-brain barrier while also preserving its integrity.¹¹ Other preclinical studies have explored its potential to treat **neuro-degenerative** diseases.^{11,28}

SULFORAPHANE

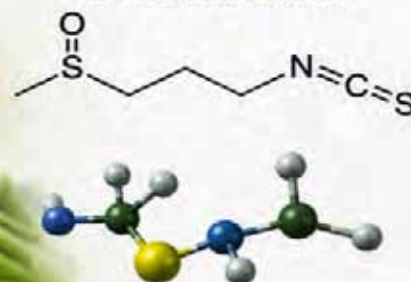
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- ✓ Cellular defense and anti-inflammatory activity
- ✓ May help protect brain health and support cognitive function
- ✓ May support healthy blood sugar control



THE COMPOUND
IN CRUCIFEROUS
VEGETABLES
SULFORAPHANE



In preclinical studies, sulforaphane has demonstrated a range of health-promoting activities, protecting the heart and brain, lowering blood sugar, and more.

In animal models of **Alzheimer's**, sulforaphane has been associated with improvements in memory and cognitive function. In models of **Parkinson's**, it has been associated with improved motor function and protection against neuronal degeneration.²⁸

Sulforaphane has also shown potential benefits for **cardiovascular** and **metabolic disease**.

Studies in animal models have found that sulforaphane may help improve lipid levels,^{29,30} reduce obesity,^{29,31} and slow the progression of atherosclerosis,³⁵ all actions that may help support cardiovascular health.

In preclinical studies, sulforaphane improved fasting blood glucose and insulin sensitivity.³²⁻³⁴

In a **human trial**, concentrated broccoli extract was associated with reductions in fasting **blood glucose** and **hemoglobin A1c (HbA1c)**, a marker of long-term glucose control, in obese patients with type 2 diabetes.³⁵

These findings reinforce sulforaphane's potential for managing a range of chronic conditions.

How People Obtain Sulforaphane

Broccoli and other cruciferous vegetables don't actually contain sulforaphane. Instead, they contain a sulforaphane *precursor* called **glucoraphanin** and an enzyme called **myrosinase**, which *converts* glucoraphanin into **sulforaphane**.²

Cooking broccoli, as most people do, *inactivates* myrosinase, dramatically reducing sulforaphane formation in the gut.³⁶⁻³⁸

Broccoli sprouts offer the highest natural concentrations of sulforaphane, though studies have used very large, impractical quantities.³⁹

Scientists developed an approach to this problem. They extracted the sulforaphane precursor **glucoraphanin** from broccoli seeds, then combined it with a more robust and stable form of **myrosinase** derived from mustard seeds.⁴⁰

When consumed, the glucoraphanin and myrosinase *mix during digestion*, releasing sulforaphane for absorption in the intestine. This allows active sulforaphane to be absorbed and distributed throughout the body, where it can exert its many benefits.⁴⁰



What You Need To Know

Get the Benefits of Broccoli

- **Broccoli** and other cruciferous vegetables have been associated with a *lower risk* of cardiovascular disease and certain cancers and may also help protect against neurodegenerative disorders.
- Many of these potential benefits have been attributed to **sulforaphane**, a compound obtained from cruciferous vegetables that enhances cellular defense mechanisms.
- When broccoli is cooked, its ability to produce sulforaphane is rapidly lost.
- A formula has been developed that combines glucoraphanin, the precursor to sulforaphane that is found in broccoli, with an enzyme found in mustard seeds. Consuming this combination produces **sulforaphane** in the digestive tract, where it can be rapidly absorbed into the body.
- This formulation is designed to enhance sulforaphane production in the digestive tract and may help support healthy aging.

Summary

Sulforaphane, a compound derived from broccoli and other cruciferous vegetables, has demonstrated beneficial biological activity relevant to cancer, neurodegeneration, cardiovascular disease, and type 2 diabetes in preclinical and early clinical research.

Consuming a precursor called **glucoraphanin** with the enzyme **myrosinase** allows conversion into active **sulforaphane** in the gut, which can then be absorbed into systemic circulation. ■

Most of these mechanisms have been demonstrated in laboratory and animal studies. Human evidence is available for glucose control in type 2 diabetes.³⁷

Mechanisms of Potential Health Benefits of Sulforaphane

Potential Health Benefit	Mechanism of Action
Cardiovascular Health-Related Properties ^{29,30}	• May support healthy lipid metabolism • Reduces inflammation
Potential Neuroprotective Benefits ⁴³	• Reduces oxidative stress • Inhibits inflammation • May support cognitive function
Anti-Cancer Activity ^{1,44}	• Induces detoxification enzymes • Inhibits carcinogen activation • Enhances apoptosis (death) in cancer cells
Potential Anti-Diabetes Activities ^{32,33}	• Reduces fasting blood glucose • May support insulin sensitivity

Optimizing Sulforaphane

Cruciferous vegetables are typically cooked, which inactivates myrosinase, the plant enzyme responsible for converting glucoraphanin into active sulforaphane.³⁸

Scientists have developed an approach to maximize sulforaphane activation and absorption. Glucoraphanin, the precursor to sulforaphane, is extracted from broccoli seeds and combined with myrosinase derived from mustard seed powder.

Mustard plants belong to the same cruciferous family as broccoli, and mustard-seed myrosinase is more heat-resistant than the myrosinase naturally present in broccoli.⁴¹

During digestion, the precursor and enzyme interact to rapidly release sulforaphane in the gut. This process enables sulforaphane to be absorbed efficiently and distributed throughout the body while still in its active form.⁴²



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

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02321	Cognitex® Alpha GPC
02396	Cognitex® Elite
02397	Cognitex® Elite Pregnenolone
01540	DMAE Bitartrate
02006	Dopa-Mind™
02413	Dopamine Advantage
01658	Ginkgo Biloba Certified Extract™
01527	Huperzine A
00020	Lecithin
02101	Memory Protect
00709	Migra-Eeze™
01603	Neuro-Mag® Magnesium L-Threonate Caps
02032	Neuro-Mag® Magnesium L-Threonate Powder
00888	Optimized Ashwagandha
01676	PS (Phosphatidylserine) Caps
02406	Quick Brain Nootropic®
02560	Ultra Memory & Recall™
01327	Vinpocetine

CHOLESTEROL MANAGEMENT

01828	Advanced Lipid Control
01910	CHOL-Support™
00372	Vitamin B3 Niacin Capsules

DIGESTION SUPPORT

02412	Bloat Relief
02514	Easy Fiber
01736	Effervescent Vitamin C - Magnesium Crystals
02021	Enhanced Super Digestive Enzymes
02022	Enhanced Super Digestive Enzymes and Probiotics
02033	EsophaCool™
01737	Esophageal Guardian
02533	Food Sensitivity Relief with Diamine Oxidase
02100	Gastro-Ease™

ENERGY MANAGEMENT

01628C	Adrenal Energy Formula • 60 vegetarian capsules
01630C	Adrenal Energy Formula • 120 vegetarian capsules
00972	D-Ribose Powder
01473	D-Ribose Tablets

- 01900 EnergyGain™
- 01544 Forskolin
- 01805 Ginseng Energy Boost
- 01869 Mitochondrial Basics with PQQ
- 01868 Mitochondrial Energy Optimizer with PQQ
- 01904 NAD⁺ Cell Regenerator™ • 100 mg, 30 veg capsules
- 02344 NAD⁺ Cell Regenerator™ 300 mg, 30 veg capsules
- 02348 NAD⁺ Cell Regenerator™ and Resveratrol Elite™
- 02555 NAD⁺ Cell Support NMN • 30 veg capsules
- 02558 NAD⁺ Cell Support NMN • 90 veg capsules
- 02556 Optimized NAD⁺ NMN w/Resveratrol Elite
30 vegetarian capsules
- 02559 Optimized NAD⁺ NMN w/Resveratrol Elite
90 vegetarian capsules
- 01500 PQQ Caps • 10 mg, 60 vegetarian capsules
- 01647 PQQ Caps • 20 mg, 30 vegetarian capsules
- 00889 Rhodiola Extract
- 02003 Thyroid Support Complex

EYE HEALTH

- 01923 Astaxanthin with Phospholipids
- 02551 Digital Eye Support
- 01514 Eye Pressure Support with Mirtogenol®
- 01992 MacuGuard® Ocular Support with Saffron
- 01993 MacuGuard® Ocular Support with
Saffron & Astaxanthin
- 01873 Standardized European Bilberry Extract
- 01918 Tear Support with MaquiBright®

FISH OIL & OMEGAS

- 01937 Mega EPA/DHA
- 02218 Mega GLA Sesame Lignans
- 01983 Super Omega-3 EPA/DHA Fish Oil,
Sesame Lignans & Olive Extract • 60 softgels
- 01988 Super Omega-3 Plus EPA/DHA Fish Oil,
Sesame Lignans, Olive Extract, Krill & Astaxanthin
- 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

GLUCOSE MANAGEMENT

- 01503 CinSulin® with InSea²® and Crominex® 3+
- 01620 CoffeeGenic® Green Coffee Extract
- 02122 Glycemic Guard™
- 00925 Mega Benfotiamine
- 01803 Tri Sugar Shield®

HEART HEALTH

- 02530 Aged Black Garlic
- 02553 AmpliQ CoQ10™ • 50 mg, 60 vegetarian capsules
- 02554 AmpliQ CoQ10™ • 100 mg, 60 vegetarian capsules
- 01066 Aspirin (Enteric Coated)
- 01842 BioActive Folate & Vitamin B12 Caps
- 02531 Cardio Peak™
- 01949 CoQ10 (Ubiquinone) with d'Limonene • 50 mg,
60 softgels
- 01951 CoQ10 (Ubiquinone) with d'Limonene • 100 mg,
60 softgels
- 02121 Homocysteine Resist
- 02508 Omega-3 Fish Oil Gummy Bites
- 02018 Optimized Carnitine
- 01929 Super Ubiquinol CoQ10
- 01427 Super Ubiquinol CoQ10 with Enh Mitochondrial
Support™ • 50 mg, 30 softgels
- 01425 Super Ubiquinol CoQ10 with Enh Mitochondrial
Support™ • 50 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

- 01468 Cruciferous Vegetable Extract Blend
- 01469 Cruciferous Vegetable Extract Blend and
Resveratrol
- 00454 DHEA • 15 mg, 100 capsules
- 00335 DHEA • 25 mg, 100 capsules
- 00882 DHEA • 50 mg, 60 capsules
- 00607 DHEA • 25 mg, 100 vegetarian dissolve
in mouth tablets
- 01689 DHEA • 100 mg, 60 vegetarian capsules
- 02368 Optimized Broccoli with Myrosinase
- 00302 Pregnenolone • 50 mg, 100 capsules
- 00700 Pregnenolone • 100 mg, 100 capsules

IMMUNE SUPPORT

- 02546 Bee Immune Propolis Capsules
- 02550 Bee Immune Propolis Spray
- 02302 Bio-Quercetin®
- 02433 Echinacea Elite
- 01961 Enhanced Zinc Lozenges
- 02005 Immune Senescence Protection Formula™
- 01681 Lactoferrin (Apolactoferrin) Caps
- 02426 Mushroom Immune with Beta Glucans
- 01903 NK Cell Activator™
- 01394 Optimized Garlic
- 01309 Optimized Quercetin
- 01811 Peony Immune
- 01708 Reishi Extract Mushroom Complex
- 01906 Standardized Cistanche
- 01561 Zinc Lozenges

INFLAMMATION HEALTH SUPPORT

- 01639 Boswellia
- 02324 Advanced Curcumin Elite™
Turmeric Extract, Ginger & Turmerones
- 01709 Black Cumin Seed Oil
- 02310 Black Cumin Seed Oil and Curcumin Elite™
- 02467 Curcumin Elite™ Turmeric Extract
30 vegetarian capsules
- 02407 Curcumin Elite™ Turmeric Extract
60 vegetarian capsules
- 01804 Cytokine Suppress® with EGCG
- 02223 Pro-Resolving Mediators
- 56886 Restore Activ Joint, Muscle & Tissue
- 01203 Specially-Coated Bromelain
- 00407 Super Bio-Curcumin® Turmeric Extract

JOINT SUPPORT

- 02238 ArthroMax® Advanced NT2 Collagen™
& AprèsFlex®
- 00965 Fast-Acting Joint Formula
- 02430 Fast Acting Relief
- 00522 Glucosamine/Chondroitin Capsules
- 02420 Glucosamine Sulfate
- 02424 Joint Mobility
- 01600 Krill Healthy Joint Formula
- 02529 Lower Back Relief
- 00451 MSM (Methylsulfonylmethane)
- 02566 Neck Relief
- 02231 NT2 Collagen™

KIDNEY & BLADDER SUPPORT

- 00862 Cran-Max® Cranberry Whole Fruit Concentrate
- 01424 Optimized Cran-Max®
- 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
- 02240C Anti-Alcohol Complex
- 01651 Calcium D-Glucarate
- 01571 Chlorophyllin
- 02402 FLORASSIST® Liver Restore™
- 02521 Glutathione
- 01541 Glutathione, Cysteine & C
- 01393 HepatoPro
- 01608 Liver Efficiency Formula
- 01522 Milk Thistle • 60 vegetarian capsules
- 01534 N-Acetyl-L-Cysteine
- 01884 Silymarin
- 02361 SOD Booster

LUNG HEALTH

- 02512 Healthy Lungs

MEN'S HEALTH

- 02538 Hair Growth for Men
- 02549 Advanced Male Sexual Support
- 02209 Male Vascular Sexual Support
- 00455 Mega Lycopene Extract

- 02306 Men's Bladder Support
- 01789 PalmettoGuard® Saw Palmetto and Beta-Sitosterol
- 01790 PalmettoGuard® Saw Palmetto/Nettle Root
Formula and Beta-Sitosterol
- 01373 Prelox® Enhanced Sex for Men
- 01940 Super MiraForte with Standardized Lignans
- 02500 Testosterone Elite®
- 01909 Triple Strength ProstaPollen™
- 02029 Ultra Prostate Formula

MINERALS

- 01661 Boron
- 02107 Extend-Release Magnesium
- 01677 Iron Protein Plus
- 02403 Lithium
- 01459 Magnesium Caps
- 01682 Magnesium (Citrate)
- 02535 Magnesium Glycinate
- 01328 Only Trace Minerals
- 01504 Optimized Chromium with Crominex® 3+
- 02309 Potassium with Extend-Release Magnesium
- 01740 Sea-Iodine™
- 01879 Se-Methyl L-Selenocysteine
- 01778 Super Selenium Complex
- 00213 Vanadyl Sulfate
- 01813 Zinc Caps

MISCELLANEOUS

- 00577 Potassium Iodide

MOOD & STRESS MANAGEMENT

- 02519 Ashwagandha Plus
- 02434 Calm-Mag
- 02312 Cortisol-Stress Balance
- 00987 Enhanced Stress Relief
- 02542 GABA
- 01683 L-Theanine
- 02175 SAME (S-Adenosyl-Methionine)
200 mg, 30 enteric coated vegetarian tablets
- 02176 SAME (S-Adenosyl-Methionine)
400 mg, 30 enteric coated vegetarian tablets
- 02174 SAME (S-Adenosyl-Methionine)
400 mg, 60 enteric coated vegetarian tablets
- 02429 Theanine XR™ Stress Relief

MULTIVITAMINS

- 02199 Children's Formula Life Extension Mix™
- 02354 Life Extension Mix™ Capsules
- 02364 Life Extension Mix™ Capsules without Copper
- 02356 Life Extension Mix™ Powder
- 02355 Life Extension Mix™ Tablets
- 02357 Life Extension Mix™ Tablets with Extra Niacin
- 02365 Life Extension Mix™ Tablets without Copper
- 02292 Once-Daily Health Booster • 30 softgels
- 02291 Once-Daily Health Booster • 60 softgels
- 02313 One-Per-Day Tablets
- 02317 Two-Per-Day Capsules • 60 capsules
- 02314 Two-Per-Day Capsules • 120 capsules
- 02316 Two-Per-Day Tablets • 60 tablets
- 02315 Two-Per-Day Tablets • 120 tablets
- 02428 Whole Food Multivitamin

NERVE & COMFORT SUPPORT

- 02202 ComfortMAX™
- 02303 Discomfort Relief
- 02544 Migra-Health®

PERSONAL CARE

- 02322 Hair, Skin & Nails Collagen Plus Formula
- 01278 Life Extension® Toothpaste
- 00408 Venotone

PET CARE

- 01932 Cat Mix
- 01931 Dog Mix

PROBIOTICS

- 01622 Bifido GI Balance
- 02421 FLORASSIST® Probiotic Daily Bowel Regularity
- 02125 FLORASSIST® Probiotic GI with Phage Technology
- 01821 FLORASSIST® Probiotic Heart Health
- 02250 FLORASSIST® Probiotic Mood Improve
- 02120 FLORASSIST® Probiotic Oral Hygiene
- 02203 FLORASSIST® Prebiotic Chewable
- 01825 FLORASSIST® Probiotic Balance
- 02505 FLORASSIST® Probiotic Women's Health
- 02539 FLORASSIST® Probiotic Youthful Gut

SKIN CARE

- 02423 Daily Skin Defense
- 01938 Shade Factor™
- 02129 Skin Care Collection Anti-Aging Serum
- 02130 Skin Care Collection Day Cream
- 02131 Skin Care Collection Night Cream
- 02096 Skin Restoring Ceramides

SLEEP

- 02234 Fast-Acting Liquid Melatonin
- 01669 Glycine
- 01722 L-Tryptophan
- 01668 Melatonin • 300 mcg, 100 vegetarian capsules
- 01083 Melatonin • 500 mcg, 200 vegetarian capsules
- 00329 Melatonin • 1 mg, 60 capsules
- 00330 Melatonin • 3 mg, 60 vegetarian capsules
- 00331 Melatonin • 10 mg, 60 vegetarian capsules
- 00332 Melatonin • 3 mg, 60 vegetarian lozenges
- 02201 Melatonin IR/XR
- 01787 Melatonin 6 Hour Timed Release
300 mcg, 100 vegetarian tablets
- 01788 Melatonin 6 Hour Timed Release
750 mcg, 60 vegetarian tablets
- 01786 Melatonin 6 Hour Timed Release • 3 mg,
60 vegetarian tabs
- 01445 Quiet Sleep Melatonin • 5 mg, 60 veg capsules
- 02502 Rest & Renew
- 02526 Serene Sleep

VITAMINS

- 01533 Ascorbyl Palmitate
- 00920 Benfotiamine with Thiamine
- 01945 BioActive Complete B-Complex
- 00102 Biotin

- 00084 Buffered Vitamin C Powder
- 02229 Fast-C® and Bio-Quercetin®
- 02075 Gamma E Mixed Tocopherol Enhanced with
Sesame Lignans
- 02070 Gamma E Mixed Tocopherol & Tocotrienols
- 01913 High Potency Optimized Folate
- 01674 Inositol Caps
- 02244 Liquid Vitamin D3 • 50 mcg (2000 IU)
- 02232 Liquid Vitamin D3 (Mint) • 50 mcg (2000 IU)
- 01936 Low-Dose Vitamin K2
- 00373 No Flush Niacin
- 01939 Optimized Folate (L-Methylfolate)
- 01217 Pyridoxal 5'-Phosphate Caps
- 01400 Super Absorbable Tocotrienols
- 02334 Super K
- 01863 Super Vitamin E
- 02422 Vegan Vitamin D3
- 02028 Vitamin B5 (Pantothenic Acid)
- 01535 Vitamin B6
- 00361 Vitamin B12 Methylcobalamin
- 01536 Vitamin B12 Methylcobalamin
1 mg, 60 vegetarian lozenges
- 01537 Vitamin B12 Methylcobalamin
5 mg, 60 vegetarian lozenges
- 02228 Vitamin C and Bio-Quercetin®
60 vegetarian tablets
- 02227 Vitamin C and Bio-Quercetin®
250 vegetarian tablets
- 01753 Vitamin D3 • 25 mcg (1000 IU), 90 softgels
- 01751 Vitamin D3 • 25 mcg (1000 IU), 250 softgels
- 01713 Vitamin D3 • 125 mcg (5000 IU), 60 softgels
- 01718 Vitamin D3 • 175 mcg (7000 IU), 60 softgels
- 01758 Vitamin D3 with Sea-Iodine™
- 02040 Vitamins D and K with Sea-Iodine™

WEIGHT MANAGEMENT & BODY COMPOSITION

- 02479 7-Keto® DHEA Metabolite
100 mg, 60 vegetarian capsules
- 02207 AMPK Metabolic Activator
- 02478 DHEA Complete
- 02506C Mediterranean Weight Management
- 01432 Optimized Saffron
- 02511 Thermo Weight Control
- 02509 Waistline Control™

WOMEN'S HEALTH

- 01942 Breast Health Formula
- 02537 Daily PMS Relief
- 02534 Estrogen Balance Elite
- 01894 Estrogen for Women
- 02541 Hair Growth for Women
- 02204 Menopause Relief
- 02319 Prenatal Advantage
- 02536 Sexual Health for Her
- 01649 Soy Isoflavones
- 02513 Women's Bladder Support

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* Int Angiol. 2014 Feb;33(1):20-6.

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IN THIS EDITION OF *LIFE EXTENSION* MAGAZINE®



7 GLOBAL RISE OF SPINAL PAIN

Neck pain affects more than **200 million** people worldwide. Pain-relieving physical techniques and an ayurvedic **botanical** combination can be part of a complementary approach.

20 GARLIC'S CARDIOVASCULAR EFFECTS

Aged black garlic extract *improved* multiple **cardiovascular** markers in a **clinical trial**.



31 HEALTHIER SKIN, HAIR, AND NAILS

Bioactive collagen peptides, **solubilized keratin**, and other nutrients help *restore* **hair, skin, and nails**.

40 EASE DIGESTION DISCOMFORTS

A targeted **probiotic**, *combined* with **oral digestive enzymes**, can *support* **digestive functions**.

52 NECK PAIN RELIEF

A new **clinical study** showed that two **plant** compounds *reduced* **neck pain** and **stiffness** by targeting underlying **inflammatory** mechanisms.



64 POWER OF BROCCOLI

Sulforaphane, a compound in **broccoli** and other cruciferous vegetables provides numerous benefits including *promoting* **detoxification**.

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