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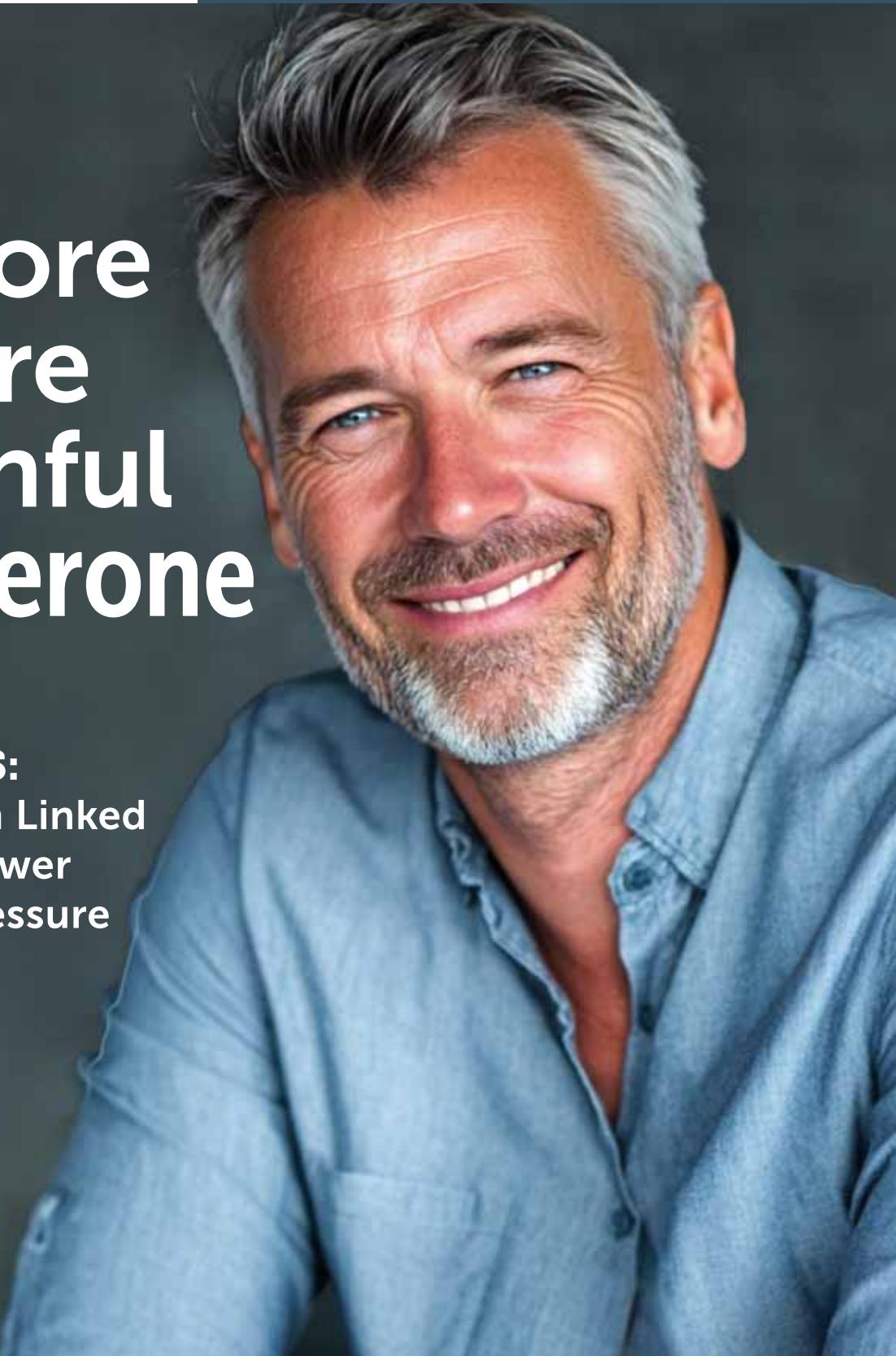
March 2026

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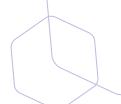
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* *Br J Pharmacol.* 2004 Mar;141(5):825-30.

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ON THE
COVER



Replenish Testosterone Levels

A blend of **cacao seed** extracts and **pomegranate** increased **free testosterone** by 48% in a human study. A separate clinical trial showed a bioavailable form of **luteolin** boosted **free testosterone** by 22%.

REPORTS

30 IMPROVED LUTEOLIN BIOAVAILABILITY

The plant flavonoid **luteolin** can help defend against disorders of **aging**. A new **luteolin** formulation boosted **absorption** by up to **14 times** in a human study.



40 BEE PROPOLIS AND IMMUNE FUNCTION

Bee propolis has **anti-viral**, **anti-bacterial**, and other **immune** properties. A **standardized** propolis extract reduced the risk of upper respiratory infections by **31%** in a clinical trial. A separate **human** study showed that **propolis spray** provided immediate, short-term relief.



50 CONFERENCE REPORT: REVOLUTION AGAINST AGING AND DEATH

Research projects **funded** by **Life Extension®** plus scientific advances made by other groups demonstrate how far **regenerative** technologies have advanced in the last year.



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7 AS WE SEE IT: TESTOSTERONE ON THE RISE

Between 2018 and 2022, testosterone use among U.S. men aged 35-44 increased by **58%**.

Optimal **testosterone** levels may lower the risk of **obesity**, **type 2 diabetes**, and **cardiovascular disease**.

Men can restore **youthful** sex hormone balance, with or without prescription medications.

13 IN THE NEWS

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71 SUPERFOODS: SWEET POTATOES

Although sweet potatoes contain **sugar**, their **anthocyanin** and **fiber** content helps improve **insulin sensitivity** and **glucose metabolism**.



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Testosterone on the Rise



WILLIAM FALOON



A recent analysis of **testosterone drug** use among U.S. **men** found that:

*“Between 2018 and 2022, **testosterone replacement therapy** (TRT) prescriptions in the U.S. rose by 27%.”*

The sharpest increase was observed among men **aged 35–44**, with prescriptions climbing by **58%.**¹

One of the key factors behind this trend is likely the growth of direct-to-consumer **telehealth platforms**, making **testosterone replacement therapy** (TRT) more accessible through online consultations.^{2,3}

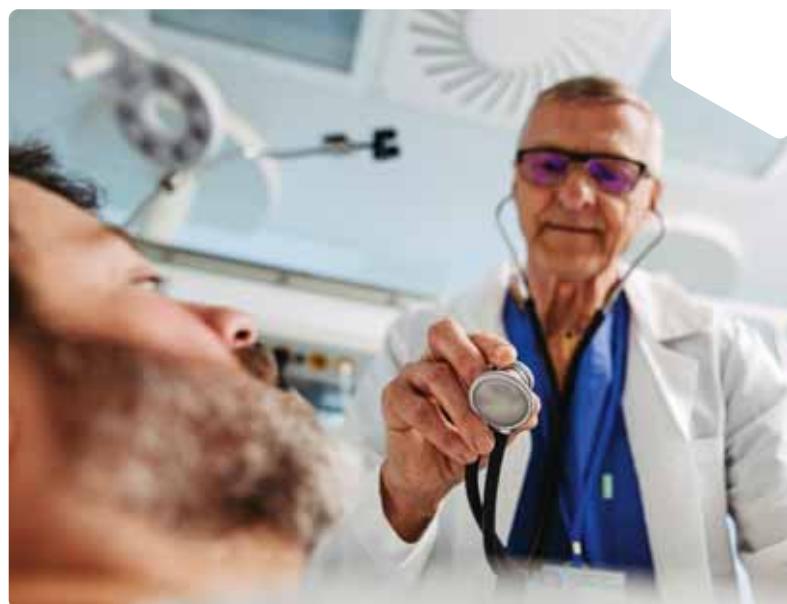
In the mid-1990s, **Life Extension**[®] along with a group of anti-aging physicians pioneered the use of **testosterone** in men who were testosterone deficient (and often **estrogen dominant**).

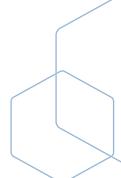
Influential figures are now sounding the alarm on the importance of maintaining optimal testosterone levels⁴ to potentially lower the risk of **obesity**, **type 2 diabetes**, and **cardiovascular disease**.

In men with low testosterone and metabolic dysfunction, restoring testosterone to youthful ranges in some studies has been shown to improve insulin sensitivity and ^{5,6} lean mass,^{5,7} and reduce total cholesterol,⁸ fat mass,⁵ waist circumference,^{7,8} and inflammatory markers.^{5,9}

We are gratified to see the widespread acceptance of this once controversial approach to regress certain aspects of degenerative **aging**.

Men today have several options to restore a more youthful **sex hormone** balance with or without prescription medications.





The Silent Crisis of Low Testosterone

Most men pursue testosterone therapy to restore lost muscle mass or to treat deficient testosterone, a condition known as hypogonadism.

Far fewer recognize the potential **life-threatening consequences** of low testosterone. This oversight may be contributing to a silent but insidious health crisis.

Scientific literature and **Life Extension's** decades-long analysis reveal that **low** testosterone is not merely a quality-of-life issue. It may be a **biological accelerant** of aging and chronic disease.

Low levels of testosterone in men are associated with:

- Memory issues and elevated **Alzheimer's risk** in aging men,¹⁰
- Mood disturbances and **depression**,^{11,12}
- Stubborn belly fat,¹³ and **metabolic dysfunction**,^{14,15}
- Frailty of bones, increasing the risk of **osteoporosis**,¹⁶
- Greater **cardiovascular risk**, including **endothelial dysfunction**,¹⁷ **inflammation**,¹⁷ and **arterial stiffening**.¹⁸

Low **testosterone** is associated with *higher* levels of **pro-inflammatory cytokines** like interleukin-6, as well as **C-reactive protein (CRP)**, markers of chronic inflammation.¹⁹

Testosterone normally helps modulate inflammatory signals,²⁰ which could help explain why when testosterone levels drop, **systemic inflammation** tends to ramp up,^{19,21,22} which sets the stage for multiple diseases.^{17,23}

After age 30, testosterone normally begins a steady **1-2% annual decline**.²⁴ Research suggests that mean testosterone levels today are falling **faster** independent of aging. This is likely due in part to the increased incidence of **obesity**, whereby excess **visceral fat** converts **testosterone** into **estrogen**.²⁵

More men are having **blood tests** to assess their testosterone and estrogen levels and using prescription medications to restore a more youthful balance.

Most are paying between **\$1,200** and **\$2,600** per year for these prescription drugs and medical consultations.⁴

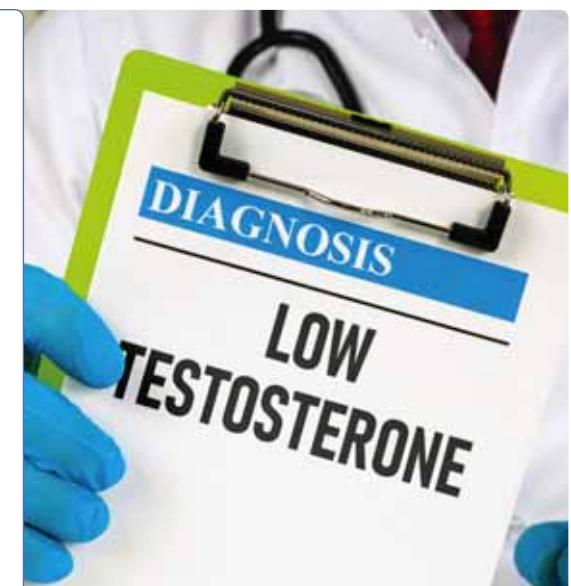
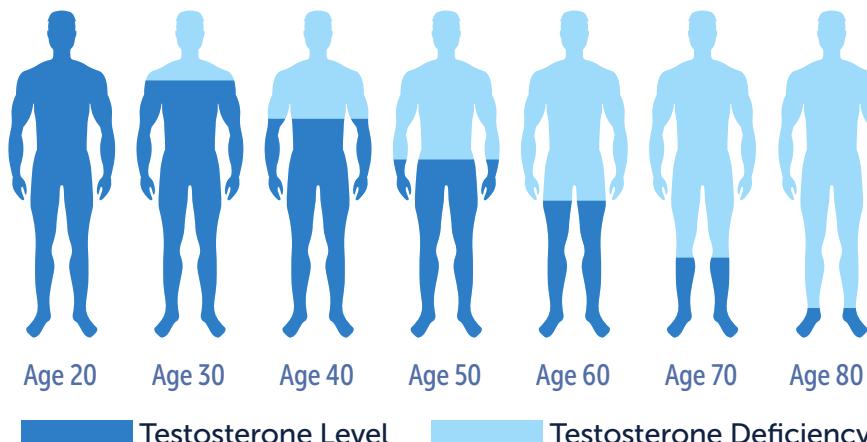
An alternative approach is the use of **botanical extracts** that can enhance levels of **total** and **free testosterone** and support **youthful vigor** and **physical strength**.

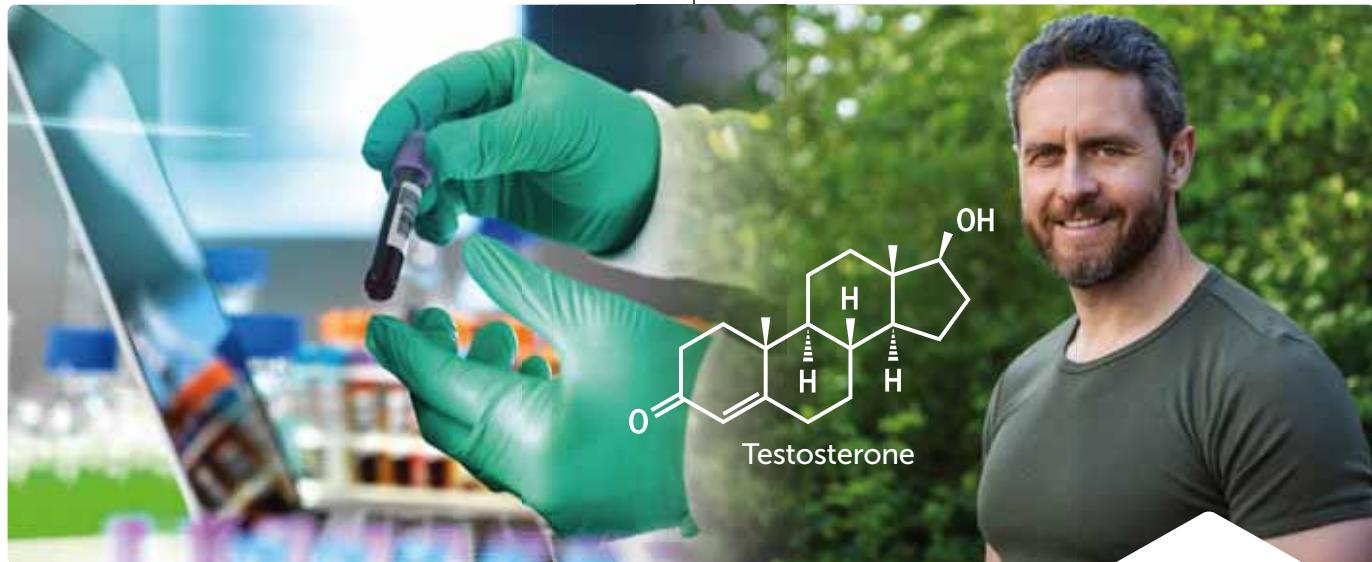
The article on page 20 of this issue describes studies supporting the use of **plant-derived** compounds to restore a more **youthful hormone balance** in men.

For longer life,

William Faloon, Co-Founder
Life Extension

Testosterone Hormone Levels as Men Age





References

1. Selinger S, Thallapureddy A. Cross-sectional analysis of national testosterone prescribing through prescription drug monitoring programs, 2018–2022. *PLoS One*. 2024;19(8):e0309160.
2. Dubin JM, Fantus RJ, Halpern JA. Testosterone replacement therapy in the era of telemedicine. *Int J Impot Res*. 2022 Nov;34(7):663-8.
3. Jesse E, Sellke N, Rivero MJ, et al. Practice Comparison and Cost Analysis of Direct-to-Consumer Telemedicine Platforms Offering Testosterone Therapy. *J Sex Med*. 2022 Nov;19(11):1608-15.
4. Available at: https://www.wsj.com/health/healthcare/testosterone-clinics-telehealth-steroids-474835d5?mod=Searchresults_pos4&page=1. Accessed 06/25/2025,
5. Dhindsa S, Ghanim H, Batra M, et al. Insulin Resistance and Inflammation in Hypogonadotropic Hypogonadism and Their Reduction After Testosterone Replacement in Men With Type 2 Diabetes. *Diabetes Care*. 2016 Jan;39(1):82-91.
6. Tishova Y, Kalinchenko S, Mskhalaya G, et al. Testosterone therapy reduces insulin resistance in men with adult-onset testosterone deficiency and metabolic syndrome. Results from the Moscow Study, a randomized controlled trial with an open-label phase. *Diabetes Obes Metab*. 2024 Jun;26(6):2147-57.
7. Saad F. Testosterone Therapy and Glucose Homeostasis in Men with Testosterone Deficiency (Hypogonadism). *Adv Exp Med Biol*. 2017;1043:527-58.
8. Kapoor D, Goodwin E, Channer KS, et al. Testosterone replacement therapy improves insulin resistance, glycaemic control, visceral adiposity and hypercholesterolaemia in hypogonadal men with type 2 diabetes. *Eur J Endocrinol*. 2006 Jun;154(6):899-906.
9. Heufelder AE, Saad F, Bunck MC, et al. Fifty-two-week treatment with diet and exercise plus transdermal testosterone reverses the metabolic syndrome and improves glycemic control in men with newly diagnosed type 2 diabetes and subnormal plasma testosterone. *J Androl*. 2009 Nov-Dec;30(6):726-33.
10. Marriott RJ, Murray K, Flicker L, et al. Lower serum testosterone concentrations are associated with a higher incidence of dementia in men: The UK Biobank prospective cohort study. *Alzheimers Dement*. 2022 Oct;18(10):1907-18.
11. Zito S, Nosari G, Pignoni A, et al. Association between testosterone levels and mood disorders: A minireview. *J Affect Disord*. 2023 Jun 1;330:48-56.
12. Almeida OP, Yeap BB, Hankey GJ, et al. Low free testosterone concentration as a potentially treatable cause of depressive symptoms in older men. *Arch Gen Psychiatry*. 2008 Mar;65(3):283-9.
13. Kelly DM, Jones TH. Testosterone and obesity. *Obes Rev*. 2015 Jul;16(7):581-606.
14. Blaya R, Blaya P, Rhoden L, et al. Low Testosterone Levels and Metabolic Syndrome in Aging Male. *Curr Pharm Des*. 2017 Nov 28;23(30):4470-4.
15. Lapauw B, Kaufman JM. MANAGEMENT OF ENDOCRINE DISEASE: Rationale and current evidence for testosterone therapy in the management of obesity and its complications. *Eur J Endocrinol*. 2020 Dec;183(6):R167-R83.
16. Gaffney CD, Pagano MJ, Kuker AP, et al. Osteoporosis and Low Bone Mineral Density in Men with Testosterone Deficiency Syndrome. *Sex Med Rev*. 2015 Oct;3(4):298-315.
17. Babcock MC, DuBose LE, Witten TL, et al. Oxidative Stress and Inflammation Are Associated With Age-Related Endothelial Dysfunction in Men With Low Testosterone. *J Clin Endocrinol Metab*. 2022 Jan 18;107(2):e500-e14.
18. Vlachopoulos C, Ioakeimidis N, Miner M, et al. Testosterone deficiency: a determinant of aortic stiffness in men. *Atherosclerosis*. 2014 Mar;233(1):278-83.
19. Grandys M, Majerczak J, Zapart-Bukowska J, et al. Lowered Serum Testosterone Concentration Is Associated With Enhanced Inflammation and Worsened Lipid Profile in Men. *Front Endocrinol (Lausanne)*. 2021;12:735638.
20. Ainslie RJ, Simitidilis I, Kirkwood PM, et al. RISING STARS: Androgens and immune cell function. *J Endocrinol*. 2024 Jun 1;261(3).
21. Osmancevic A, Daka B, Michos ED, et al. The Association between Inflammation, Testosterone and SHBG in men: A cross-sectional Multi-Ethnic Study of Atherosclerosis. *Clin Endocrinol (Oxf)*. 2023 Aug;99(2):190-7.
22. Bobjer J, Katsikas M, Tsatsanis C, et al. Negative association between testosterone concentration and inflammatory markers in young men: a nested cross-sectional study. *PLoS One*. 2013;8(4):e61466.
23. Rovira-Llopis S, Banuls C, de Maranon AM, et al. Low testosterone levels are related to oxidative stress, mitochondrial dysfunction and altered subclinical atherosclerotic markers in type 2 diabetic male patients. *Free Radic Biol Med*. 2017 Jul;108:155-62.
24. Fleseriu M, Hashim IA, Karavitsaki N, et al. Hormonal Replacement in Hypopituitarism in Adults: An Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab*. 2016 Nov;101(11):3888-921.
25. Xu X, Wang L, Luo D, et al. Effect of Testosterone Synthesis and Conversion on Serum Testosterone Levels in Obese Men. *Horm Metab Res*. 2018 Sep;50(9):661-70.

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- Supports nerve cell function.
- Supports cellular energy production.

Methylcobalamin

- Supports brain cell function.
- Promotes red blood cell production.
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"It is everything I wanted in a B12 supplement."

Christine

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300 mg of nicotinamide riboside per capsule.

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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

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Cecil

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REVIEW

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It provides nutrients to support your prostate and bladder, and melatonin encourages healthy sleep patterns.

In a open study of 30 healthy, older men who took Men's Bladder Support formula for 60 days before bed, up to **60%** reported an uninterrupted night's sleep.*

Enjoy your dreams without interruptions. Try Men's Bladder Support today.

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* Glob Adv Health Med. 2020 Nov 27:9:2164956120973639.

CAUTION: Do not consume alcohol, drive or operate machinery after taking this product.
Lycored Lycobeads® is a registered trademark of Lycored; Orange, New Jersey.



Item #02306

30 vegetarian capsules

1 bottle **\$20**

4 bottles \$18 each



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In the News



Vitamin D Deficiency Associated with Increased Cataract Risk

A study published in the *British Journal of Ophthalmology* found that severe vitamin D deficiency is linked with an *increased* risk of **cataracts**, particularly in adults under age 50.*

The researchers included a cross-sectional study on 442,255 participants, which found that low vitamin D levels were associated with cataracts.

They then conducted a longitudinal analysis, a type of research design that involves repeated observations of the same variable over extended periods.

After about 11 years, participants with severe baseline vitamin D deficiency (<10 ng/mL) had an **11%** higher risk of developing cataracts compared to those with insufficiency ($20\text{-}30$ ng/mL).

The association was even stronger in adults under age 50. Those with severe baseline vitamin D deficiency had a **27% higher** risk of cataract compared to those with insufficiency.

Note that minimum vitamin D levels to be considered “sufficient” are **30 ng/mL** with optimal ranges between **50-80 ng/mL**.

Editor's Note: “These findings suggest a potential critical period in early adulthood when vitamin D supplementation may be most effective for cataract prevention, warranting further investigation into age-specific intervention strategies,” the researchers concluded.

* *Br J Ophthalmol.* 2025 Aug 18:bjophthalmol-2024-326716.

Eating Cruciferous Veggies May Reduce the Odds of Getting Colon Cancer

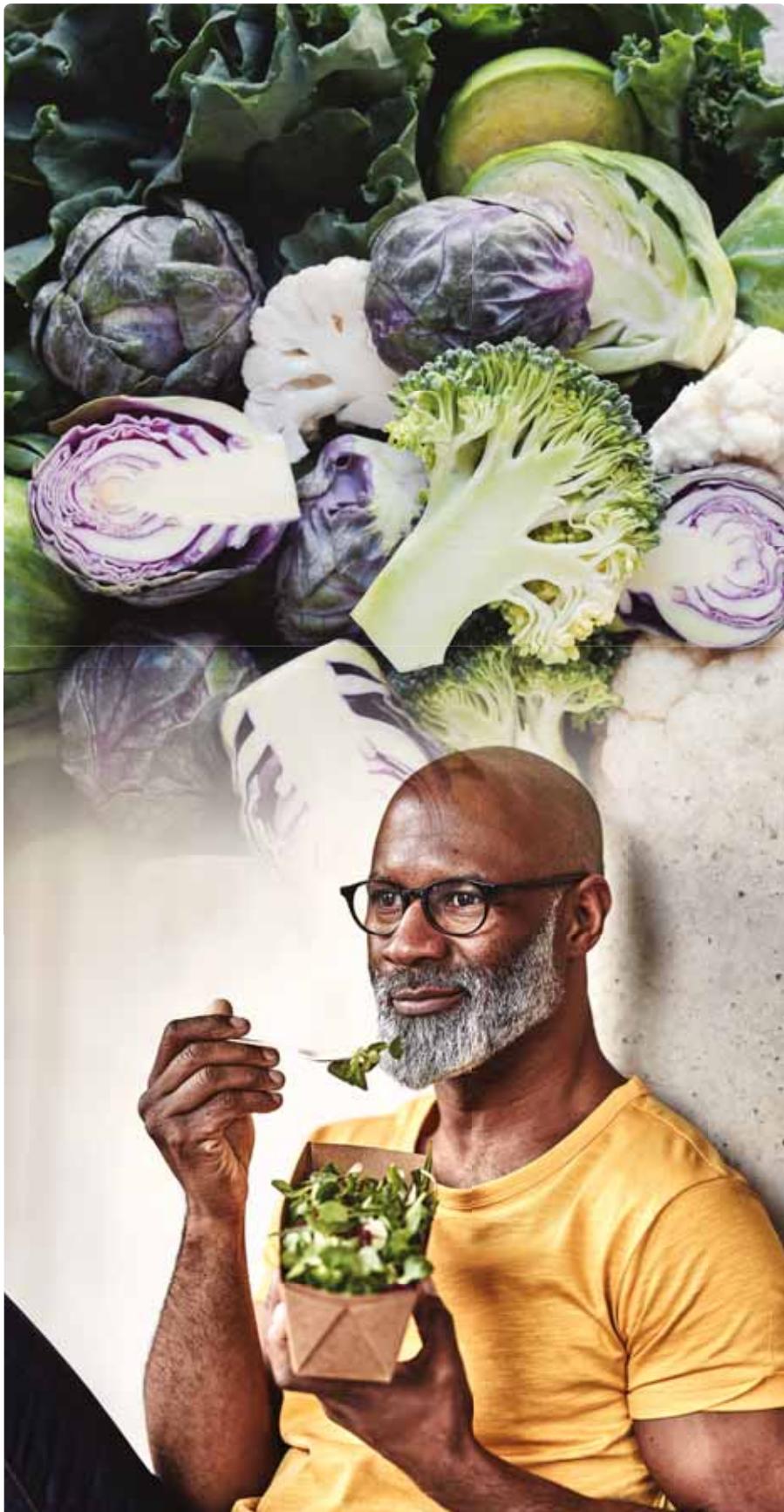
A meta-analysis combining data from 7 cohort and 10 case-control studies with a total of nearly 100,000 participants found that higher intake of **cruciferous** vegetables is associated with **20%** reduced odds for colon cancer.*

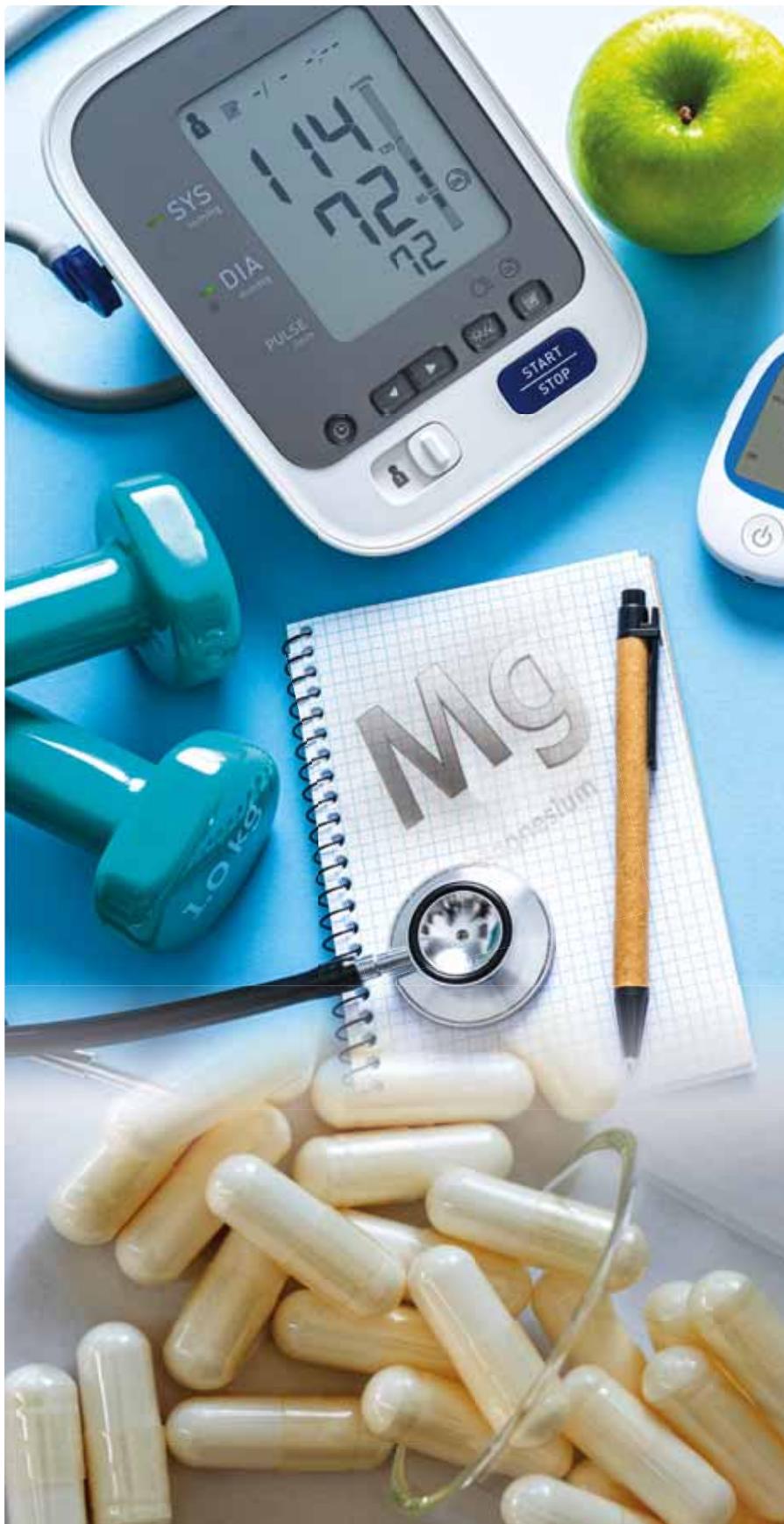
This protective effect was attributed to bioactive compounds such as glucosinolates and isothiocyanates, which promote carcinogen detoxification, apoptosis, and cell cycle arrest. (Glucosinolates convert into **sulforaphane** in the body.)

Cruciferous vegetables include broccoli, Brussels sprouts, cabbage, cauliflower, and others. Making dietary changes is a key modifiable risk factor in the development of **colon cancer**.

Editor's note: Colon cancer is the third most diagnosed cancer and the second leading cause of cancer mortality globally.

* *BMC Gastroenterol.* 2025 Aug 11;25(1):575.





Magnesium Linked with Reduced High Blood Pressure

Findings from a systematic review and meta-analysis affirmed a reduction in blood pressure in association with the addition of magnesium to the diet.*

Researchers analyzed 38 randomized controlled trials that compared the blood pressure benefit of additional magnesium with a placebo among a total of 2,709 participants with and without hypertension. Magnesium doses ranged from **82-637 mg** administered for a 12-week median period.

The participants who received magnesium experienced average reductions of about **3 mmHg** systolic blood pressure and **2 mmHg** diastolic blood pressure compared with the placebo groups.

Editor's Note: Greater reductions in blood pressure from magnesium supplementation compared with the placebo groups were found in those also taking **hypertensive medication**, who had systolic and diastolic reductions of about **8 mmHg** and **3 mmHg**, respectively. Those with **low magnesium levels** had systolic and diastolic reductions of about **6 mmHg** and **5 mmHg**, respectively.

* *Hypertension*. 2025 Nov;82(11):1844-1856.

Vitamin B12 Deficiency Linked with Wasting of Brain Area Involved in Memory

A study revealed an association between vitamin B12 **deficiency** and atrophy (wasting) of the hippocampus, an area of the brain involved in memory and learning.*

The study included 567 participants who visited a dementia clinic and subsequently underwent a brain MRI.

A Mini Mental State Examination was used to assess cognitive function and blood samples were analyzed for vitamin B12 and other factors.

Magnetic resonance imaging of the brain's hippocampus revealed atrophy among **43%** of the group. Individuals with hippocampal atrophy were significantly older than those whose hippocampus was normal.

Vitamin B12 deficiency was associated with greater hippocampal atrophy (brain shrinkage).

Those with hippocampal atrophy were more likely to have low Mini Mental State Examination scores.

Editor's Note: B vitamins, which are part of the metabolic network, are involved in nutrient signaling and biosynthesis, oxidation-reduction homeostasis, and epigenetics.

* *J Prev Alzheimers Dis.* 2025 Sep;12(8):100265.



Some Things
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Aged Black Garlic

FOR HEART HEALTH



Black garlic is created through a patent-pending, solvent-free aging process that can take up to 90 days.

This produces a high content of s-allyl-cysteine, a phytocompound associated with **cardiovascular health**.¹⁻⁴

Clinical research has shown that **aged black garlic** provides targeted support for healthy serum triglycerides, blood pressure, and cholesterol within normal range.⁴



Item #02530

30 500 mg vegetarian capsules

1 bottle \$18

4 bottles \$17 each



References

1. *Molecules*. 2021 Aug 19;26(16):5028.
2. *Journal of Functional Foods*. 107(2023):105657.
3. *Molecules*. 2017 Jun 1;22(6) ; 919.
4. *OAJCAM*. September 20, 2023;6(1).

For full product description and to order **Aged Black Garlic Odorless Extract**,
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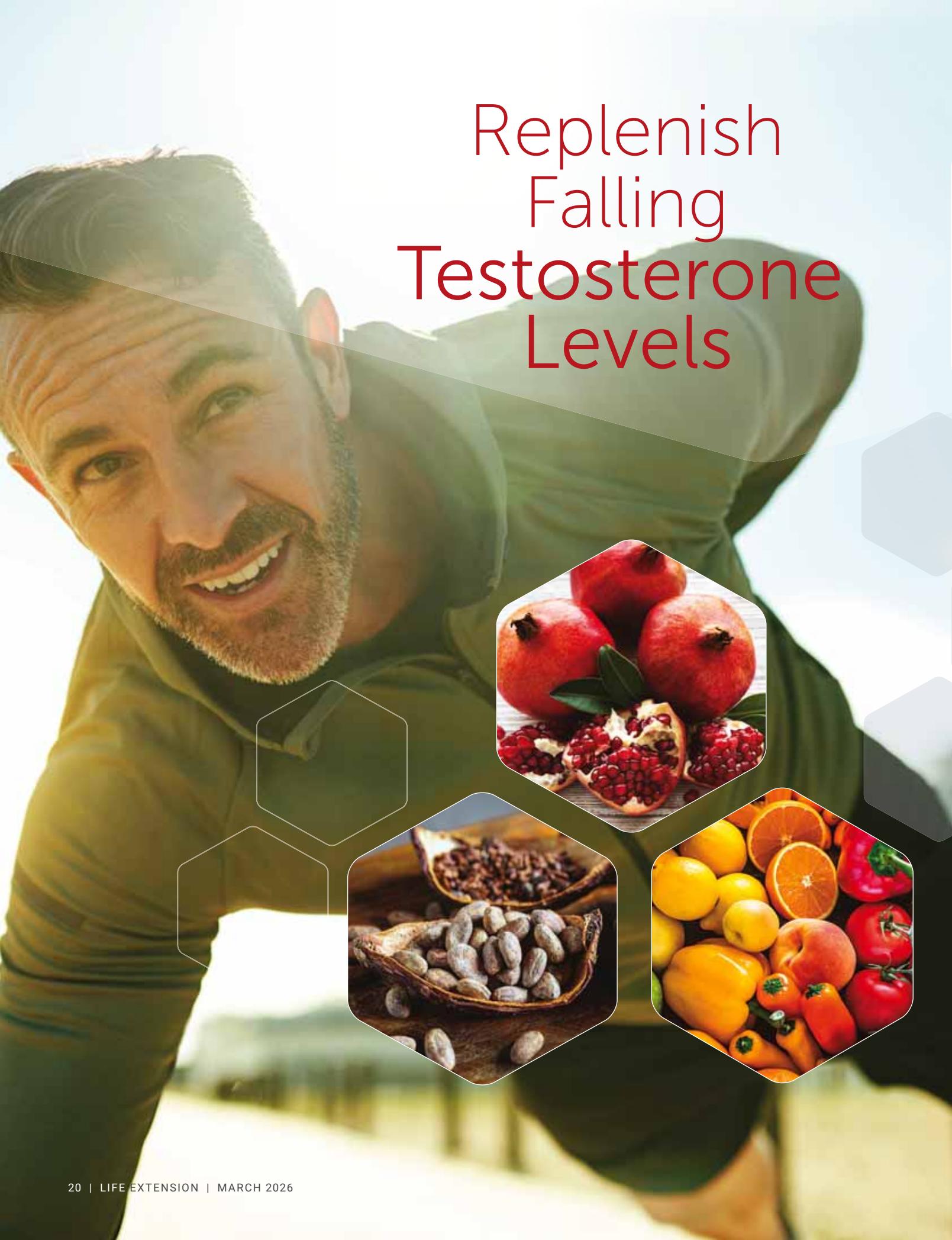


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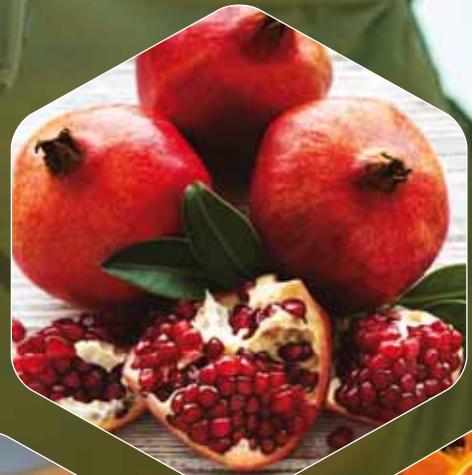
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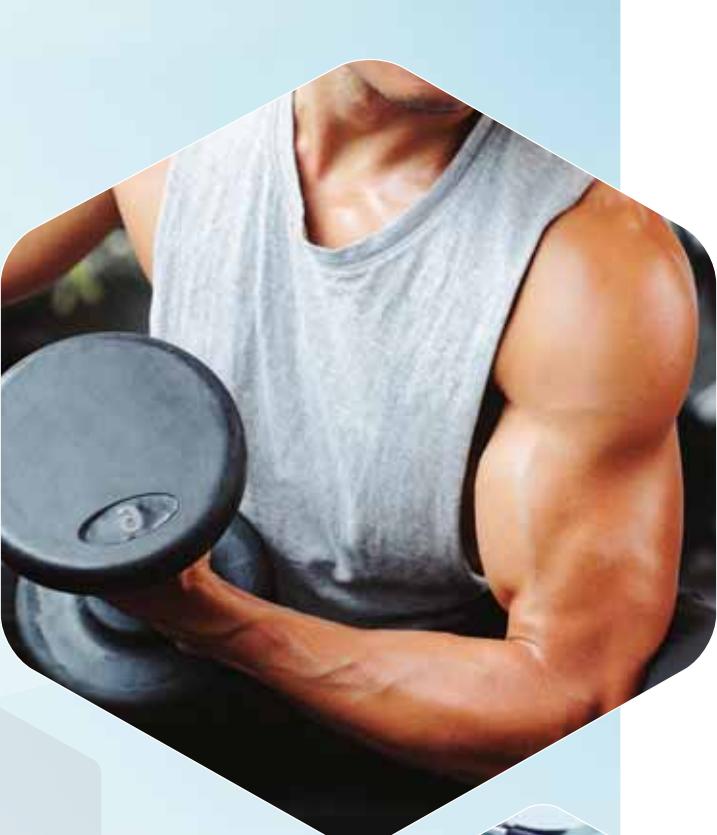
† Studied against powder turmeric extract standardized to 95% curcuminoids

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Replenish Falling Testosterone Levels





BY MICHAEL DOWNEY

Men today have **less testosterone** than their fathers did at the same age.^{1,2}

After **age 30**, they lose even *more*—around **1% each year**.³

That can lead to diminished **libido**, fatigue, and reduced **muscle mass**.^{4,5}

More serious risks of low testosterone include cardiovascular disease,⁶⁻⁸ metabolic disorders, and even **death from any cause**.^{6,7}

Scientists have identified three **plant-derived** nutrients that increase testosterone levels.

In one clinical study, a blend of **pomegranate** and **cacao seed** extracts boosted **free testosterone** in aging men by **48%**.⁹

Another clinical trial showed that a highly bioavailable form of the flavonoid **luteolin** increased **free testosterone** by **22%**.¹⁰

Together, these ingredients can support testosterone production to promote youthful vigor and better health.

Free Testosterone Declines

Testosterone is a hormone primarily produced by the testes that is crucial for development of the male reproductive system.⁵

It is also required for the optimal function of tissues **throughout the body**.⁵

Most testosterone circulating in the blood is bound to proteins, especially **sex hormone binding globulin (SHBG)**. In this form, it cannot attach to testosterone receptors on body cells to perform its vital roles.⁵

Only about **4%** of circulating testosterone is **free testosterone**, which is unbound and **biologically active**.¹¹

Free testosterone falls about **2-3% per year** after age **50**.⁹

This is in *addition* to the decline in **average testosterone** levels that occurs in men as they age past age **30**.¹

Risks of Low Testosterone

As testosterone drops, men may experience fatigue, and reduced **muscle mass** and strength.^{4,5}

Testosterone deficiency in men has also been linked to *higher* risks of:

- Cardiovascular disease and mortality,^{7,12}
- Stroke,¹³
- Chronic inflammation,^{5,14,15}
- Osteoporosis and fractures,^{5,16}
- Obesity,^{2,17}
- Type 2 diabetes,⁸
- Anemia,⁴
- Cognitive decline,^{5,18}
- Depression,^{19,20} and
- Death from **any cause**.⁷

Aging men often seek to reverse this decline.

Scientists have identified three **plant-derived** ingredients that provide a non-prescription way to boost testosterone: **pomegranate extract, cacao seed extract**, and **luteolin**.

Pomegranate and Cacao Seed

Scientists took note of an early study showing that drinking **pomegranate juice** for just two weeks raised salivary **testosterone** levels by up to **27%**.²¹

After screening hundreds of plant extracts, researchers found that both **pomegranate** and **cacao seed** (from the beans used to make cocoa) enhanced **testosterone production** in mouse testes cells.²²

These extracts showed a greater effect when combined. In a rat study, a **pomegranate-cacao seed combination** increased testosterone levels by over **72%** in just six weeks.²³

Testosterone-Boosting Blend

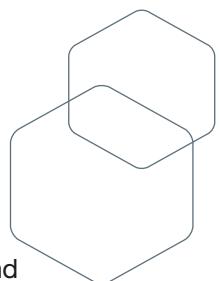
In a **human** study, men aged 36 to 55 took a placebo or **400 mg** of a **pomegranate-cacao seed** extract blend daily.

After eight weeks, the treatment group had:⁹

- **48%** higher **free testosterone** levels,
- **26%** lower measures of **stress**,
- Improved **well-being**, and
- **25%** greater hand-grip **strength**.

They also had a **19%** reduction on the **Aging Males' Symptoms scale**, which includes:

- Joint pain and muscle aches,
- Excessive sweating,
- Sleep problems and exhaustion,
- Anxiety and irritability,
- Depression and feeling burned out, and
- Decrease in libido and other sexual problems.



In a separate clinical study, daily supplementation with **400 mg** of this **pomegranate-cacao seed extract blend** increased **free testosterone** levels by **25%** in younger men aged 21-35. Participants also experienced improvements in grip strength and upper-arm circumference.²³



What You
Need
To Know

Restore Testosterone for Healthier Aging

- **Testosterone** levels in men begin to decline after age 30, leading to sexual issues, fatigue, reduced strength, and increased risk of chronic diseases and death.
- A blend of **pomegranate** and **cacao seed** extracts increased bioactive **free testosterone** by **48%** in a human study and improved measures of grip strength, stress, and well-being.
- A recently developed **bioavailable luteolin** boosted absorption **14 times** as much as standard luteolin and increased **free testosterone** by **22%** in a clinical trial.
- Combining these ingredients may help aging men maintain healthy vigor while reducing health risks of low testosterone.

Bioavailable Luteolin

Luteolin is a flavonoid found in many fruits and vegetables, including parsley, celery and green peppers.²⁴

In preclinical studies, **luteolin** was shown to:

- Increase levels of **StAR** (steroidogenic acute regulatory protein), an enzyme essential for testosterone production,²⁵ and
- Inhibit **aromatase**, an enzyme that converts testosterone into estradiol (a form of estrogen).^{26,27}



These effects support *higher testosterone* levels.

Luteolin typically suffers from low **bioavailability**, limiting its benefits. To get around this problem, scientists coated luteolin in a matrix of **galactomannans**, a type of fiber. This enhances luteolin's stability in the gut, promoting *better absorption and bioavailability*.

In a human study, this highly **bioavailable luteolin** increased blood levels of luteolin **14 times** more than standard luteolin.³⁰

Benefits of Bioavailable Luteolin

In a clinical study, men aged 35 to 55 with low testosterone were given **100 mg** of this highly **bioavailable luteolin** or a placebo daily.¹⁰

After 84 days, compared to baseline, taking bioavailable **luteolin** resulted in:

- **13%** higher **total** testosterone, and
- **22%** higher **free** testosterone.

The luteolin group also had **11% lower** levels of **sex hormone binding globulin (SHBG)**, the protein that blocks testosterone from attaching to receptors.

A combination of **pomegranate-cacao** extracts and **bioavailable luteolin** can benefit men hoping to maintain vigor and reduce risks of low testosterone.

Summary

Testosterone levels in men begin to decline around age 30. Low testosterone may lead to sexual dysfunction, reduced strength and muscle mass, and fatigue.

It can also elevate risks of chronic diseases and **all-cause mortality**.

In a clinical trial, a blend of **pomegranate** and **cacao seed** extracts increased **free testosterone** by **48%** and improved measures of stress resilience and strength.

The compound **luteolin** also increases testosterone but has low bioavailability. A new bioavailable form raised luteolin levels **14 times higher** than standard luteolin and increased **free testosterone** by **22%** in a clinical study.

Together, these ingredients may help aging men replenish testosterone, maintaining youthful feeling and reducing long-term risks of low testosterone. ■

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

- Travison TG, Araujo AB, O'Donnell AB, et al. A population-level decline in serum testosterone levels in American men. *J Clin Endocrinol Metab*. 2007 Jan;92(1):196-202.
- Mazur A, Westerman R, Mueller U. Is rising obesity causing a secular (age-independent) decline in testosterone among American men? *PLoS One*. 2013;8(10):e76178.
- Available at: <https://www.nhs.uk/conditions/male-menopause/>. Accessed December 12, 2025.
- Barone B, Napolitano L, Abate M, et al. The Role of Testosterone in the Elderly: What Do We Know? *Int J Mol Sci*. 2022 Mar 24;23(7).
- Yassin A, Al-Zoubi RM, Alzubaidi RT, et al. Testosterone and men's health: An in-depth exploration of their relationship. *UroPrecision*. 2025;3(1):36-46.
- Gianatti EJ, Grossmann M. Testosterone deficiency in men with Type 2 diabetes: pathophysiology and treatment. *Diabet Med*. 2020 Feb;37(2):174-86.
- Araujo AB, Dixon JM, Suarez EA, et al. Clinical review: Endogenous testosterone and mortality in men: a systematic review and meta-analysis. *J Clin Endocrinol Metab*. 2011 Oct;96(10):3007-19.
- Fernandez-Miro M, Chillaron JJ, Pedro-Botet J. [Testosterone deficiency, metabolic syndrome and diabetes mellitus]. *Med Clin (Barc)*. 2016 Jan 15;146(2):69-73.
- Pandit SL, Yaligar D, Halemane M, et al. A proprietary blend of standardized *Punica granatum* fruit rind and *Theobroma cacao* seed extracts mitigates aging males' symptoms: A randomized, double-blind, placebo-controlled study. *Int J Med Sci*. 2022;19(8):1290-9.
- file. B-LESDo. Bio-Luteolin Efficacy Study. Data on file. 2025. 2025.
- Goldman AL, Bhasin S, Wu FCW, et al. A Reappraisal of Testosterone's Binding in Circulation: Physiological and Clinical Implications. *Endocr Rev*. 2017 Aug 1;38(4):302-24.
- Yeap BB, Marriott RJ, Dwivedi G, et al. Associations of Testosterone and Related Hormones With All-Cause and Cardiovascular Mortality and Incident Cardiovascular Disease in Men : Individual Participant Data Meta-analyses. *Ann Intern Med*. 2024 Jun;177(6):768-81.
- Adelborg K, Rasmussen TB, Norrelund H, et al. Cardiovascular Outcomes and All-cause Mortality Following Measurement of Endogenous Testosterone Levels. *Am J Cardiol*. 2019 Jun 1;123(11):1757-64.
- Li Y, Liu M, Cui Y, et al. Increased risk of testosterone deficiency is associated with the systemic immune-inflammation index: a population-based cohort study. *Front Endocrinol (Lausanne)*. 2022;13:974773.
- Babcock MC, DuBose LE, Witten TL, et al. Oxidative Stress and Inflammation Are Associated With Age-Related Endothelial Dysfunction in Men With Low Testosterone. *J Clin Endocrinol Metab*. 2022 Jan 18;107(2):e500-e14.
- Luo Z, Feng A, Tyurin A, et al. Testosterone, sex hormone-binding globulin, and fracture risk in men: evidence from observational and Mendelian randomization analyses. *Osteoporos Int*. 2025 Oct;36(10):1977-86.
- Yuan Y, Cui S, Hou Y, et al. Associations between sex hormones and obesity-related indicators: results from the NHANES and Mendelian randomization study. *Eur J Med Res*. 2025 Nov 27;30(1):1216.
- Zhang Z, Kang D, Li H. Testosterone and Cognitive Impairment or Dementia in Middle-Aged or Aging Males: Causation and Intervention, a Systematic Review and Meta-Analysis. *J Geriatr Psychiatry Neurol*. 2021 Sep;34(5):405-17.
- Neat KT. Androgens and depression: a review and update. *Curr Opin Endocrinol Diabetes Obes*. 2019 Jun;26(3):175-9.
- Kheirkhah F, Hosseini SR, Hosseini SF, et al. Relationship between testosterone levels and depressive symptoms in older men in Amirkola, Iran. *Caspian J Intern Med*. 2014 Spring;5(2):65-70.
- Small N, Al-Dujaili E. Pomegranate juice intake enhances salivary testosterone levels and improves mood and well being in healthy men and women. 2012.
- Study LNI. Evaluating testosterone production activating capacity of herbal extractrs in MA-10 mouse leydig cells. 2018.
- Sreeramaneni PGA, Yalamanchi A, Konda MR, et al. A Proprietary Herbal Blend Containing Extracts of *Punica granatum* Fruit Rind and *Theobroma cacao* Seeds Increases Serum Testosterone Level in Healthy Young Males: A Randomized, Double-Blind Placebo-Controlled Study. *J Diet Suppl*. 2023;20(3):411-27.
- Punia Bangar S, Kajla P, Chaudhary V, et al. Luteolin: A flavone with myriads of bioactivities and food applications. *Food Bioscience*. 2023 2023/04/01;52:102366.
- Couture R, Mora N, Al Bittar S, et al. Luteolin modulates gene expression related to steroidogenesis, apoptosis, and stress response in rat LC540 tumor Leydig cells. *Cell Biol Toxicol*. 2020 Feb;36(1):31-49.
- Lu DF, Yang LJ, Wang F, et al. Inhibitory effect of luteolin on estrogen biosynthesis in human ovarian granulosa cells by suppression of aromatase (CYP19). *J Agric Food Chem*. 2012 Aug 29;60(34):8411-8.
- Shi XK, Peng T, Azimova B, et al. Luteolin and its analog luteolin-7-methylether from *Leonurus japonicus* Houtt suppress aromatase-mediated estrogen biosynthesis to alleviate polycystic ovary syndrome by the inhibition of tumor progression locus 2. *J Ethnopharmacol*. 2024 Sep 15;331:118279.
- Shimoji K, Okada H, Furugori M, et al. Intestinal absorption of luteolin and luteolin 7-O-beta-glucoside in rats and humans. *FEBS Lett*. 1998 Nov 6;438(3):220-4.
- Thilakarathna SH, Rupasinghe HP. Flavonoid bioavailability and attempts for bioavailability enhancement. *Nutrients*. 2013 Aug 28;5(9):3367-87.
- file. B-LBSDo. Bio-Luteolin Bioavailability Study. Data on file. 2025.

What's Your Testosterone Level?

Checking testosterone levels requires only a simple **blood test**.

The optimal ranges for blood levels of **testosterone** in men are:

- **Free** testosterone: **15-25 pg/mL**
- **Total** testosterone: **600-900 ng/dL**



"It is my goal
to never run out
of this. Ever!"

Rusty

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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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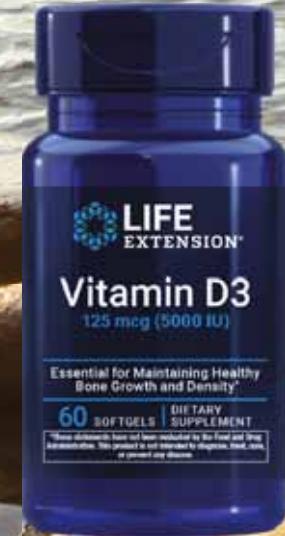
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Mg

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Glycinate**
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Power Up!

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Free testosterone is the unbound form active in cells throughout the body.

The **Testosterone Elite™ formula** promotes more youthful free and total **testosterone** levels with three **plant-based** nutrients:

- In a **clinical** study, a proprietary blend of **pomegranate** and **cacao** extracts in this product **promoted free testosterone** by up to **48%¹**.
- Formulated with an innovative **fenugreek** fiber coating, the highly bioavailable **luteolin** in this product demonstrated up to a **14-fold** increase in luteolin levels compared to unformulated luteolin.*²
- This advanced **luteolin** ingredient **supported free testosterone** by up to **22%** in a separate **human** trial.³

Don't let testosterone levels hold you back from feeling your best. The once-daily **Testosterone Elite[†]** product is the perfect complement to a testosterone-friendly lifestyle.



Item #02500
30 vegetarian capsules
1 bottle \$39
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For full product description
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Testosterone Elite blend, call
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Tesnor® is a trademark of Laila Nutra and Gencor.

[†]This product is intended to promote testosterone levels but does not contain testosterone.

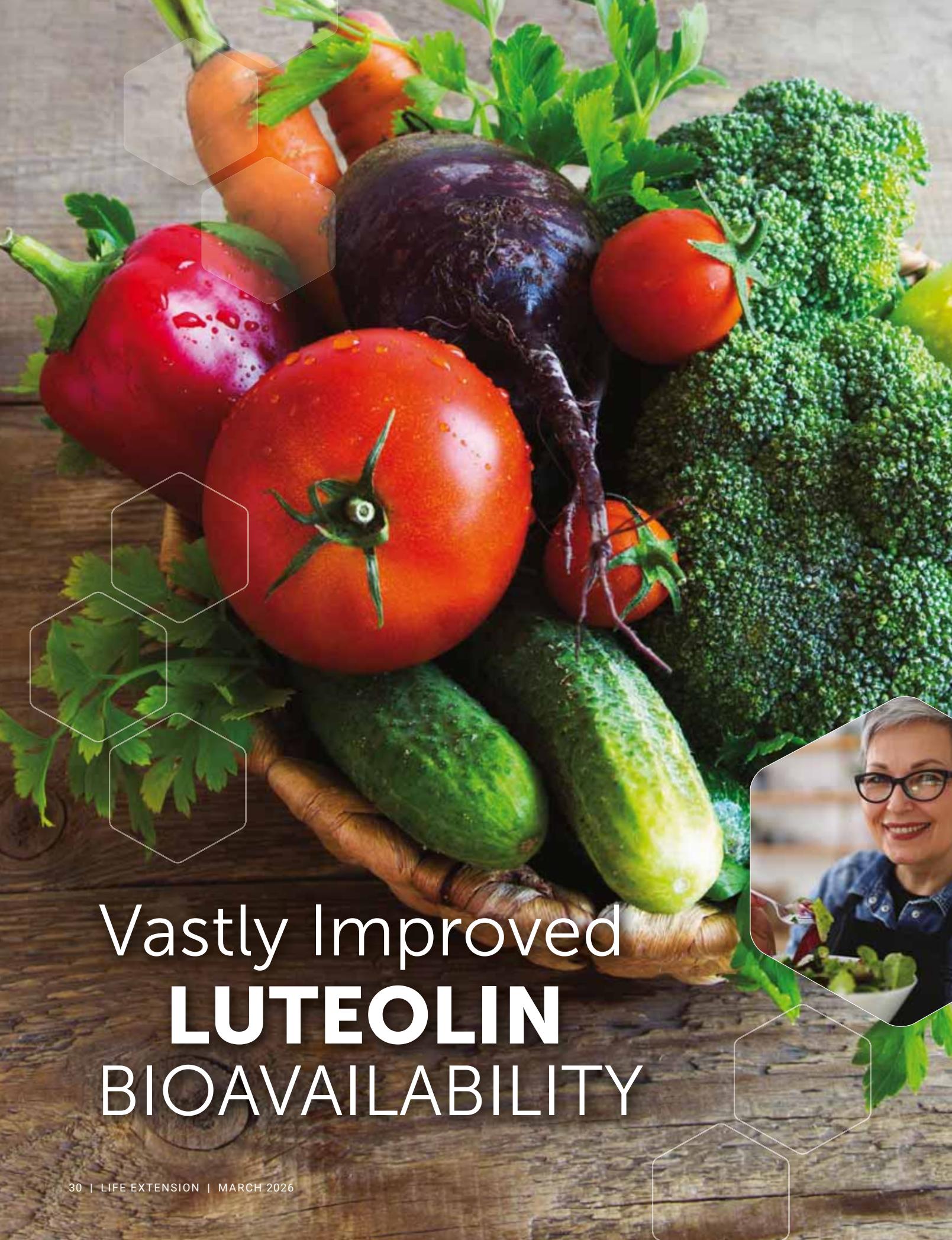
* regular luteolin defined as **98% pure powder luteolin**

Not for sale in India.

1. *Int J Med Sci.* 2022;19(8):1290-1299.

2. Bio-Luteolin Bioavailability Study. Data on file. 2025.

3. Bio-Luteolin Efficacy Study. Data on file. 2025.



Vastly Improved **LUTEOLIN** BIOAVAILABILITY



BY DAVID NOVIS

Luteolin is a component of healthy plant foods.

In preclinical studies it demonstrated anti-cancer action, cardiovascular support, neuroprotective activity, and more.¹

Until recently, these benefits could not be easily studied in human trials because luteolin suffers from poor **bioavailability**.¹

That's all about to change.

Scientists have found a way to significantly enhance the **bioavailability** of luteolin.

By combining luteolin with a plant-derived fiber, this formulation has been **clinically** shown to boost the amount of **luteolin** that circulates in the body by up to **14 times**.²

This improved **luteolin delivery** may lead to high-quality human studies to study luteolin's effects in promoting **healthy aging** and reducing chronic disease risk.

What Is Luteolin?

Luteolin is a flavonoid found in small amounts in onions, cabbage, carrots, apples, parsley, peppers, broccoli, and other plants.³

Flavonoids are health-promoting compounds found in many plants. Diets high in flavonoids are associated with reduced risk for some chronic diseases.⁴

In the plant kingdom, luteolin protects against cellular damage by the sun's **ultraviolet radiation**.^{5,6}

Luteolin can also protect against UV damage in animal and cell models.⁷ As a potent antioxidant, it shields against **oxidative stress**, making it critical to cellular health.⁸

Luteolin is also able to modulate cellular pathways and drive gene expression in ways that improve cellular function and defend against **chronic inflammation** and other threats.⁸⁻¹⁰

An Improved Luteolin

Only a small fraction of ingested **luteolin** is *absorbed* and reaches systemic circulation in its unmodified form. Although scientists have done extensive cell and animal studies, this **poor bioavailability** has made human studies difficult.

By combining luteolin with **galactomannans**, an indigestible fiber found in fenugreek seeds, it is more stabilized in the gut and readily absorbed into the bloodstream.

In a clinical study, healthy subjects took a single dose of standard luteolin or the new **bioavailability-enhancing** formulation. The difference was astonishing:

The amount of luteolin in the blood after taking the new formula was up to 14 times more than the standard luteolin.²



Luteolin's Mechanisms

Over time, cellular structures become damaged and dysfunctional, contributing to aging and risk for disease.

Luteolin has demonstrated protective effects, and a new bioavailable formula may allow greater benefits to be applied to humans by:

- **Supporting cellular housekeeping:** **Autophagy** is a process of cellular housekeeping that eliminates corroded cellular parts, rejuvenating the cell. With age, this process is diminished,¹¹ but in cell and animal studies, luteolin boosts autophagy significantly.¹²⁻¹⁴
- **Improving cellular signaling and gene expression:** Luteolin "switches on" **Nrf-2**, a cellular defense mechanism that promotes anti-oxidant defenses, detoxification, and more.^{15,16}
- **Enhancing metabolic health** by promoting activity of the enzyme **AMPK** that inhibits a critical regulatory protein called **mTOR**.^{17,18} When mTOR is *high* and AMPK *low*, metabolism is dysfunctional, contributing to obesity, metabolic disease like diabetes, and risk for cardiovascular disease and neurodegenerative disorder.¹⁹ Luteolin may help throw that metabolic switch back into the correct (more youthful) direction.
- **Reducing inflammation:** Chronic inflammation drives practically every age-related disease. Luteolin *reduces* the activity of **NF- κ B (nuclear factor-kappa B)**,^{9,18} a promoter of chronic inflammation throughout the body.²⁰ It also lowers levels of several pro-inflammatory compounds and increases production of an *anti-inflammatory* signaling compound.^{9,18,21}

Disease-Fighting Capabilities

Through these actions, luteolin has the potential to improve overall health. Preclinical models show luteolin to be beneficial in combating specific disorders, including:

- **Cardiovascular.** In animal models, luteolin has demonstrated cardioprotective effects,²²⁻²⁴ helping shield heart tissue against damage and supporting healthy cardiac function.²⁴

Research suggests that luteolin may help reduce the development of **atherosclerotic plaque**,²⁵ which is one of the major contributors to cardiovascular disease.

- **Gastrointestinal disorders.** Luteolin has also been shown to encourage the growth of a healthy mix of microorganisms in the intestines²⁶ and to support **intestinal barrier function**, which helps prevent the spread of toxins and inflammation body-wide.^{26,27} In a mouse model of **ulcerative colitis**, an inflammatory bowel disease, luteolin reduced inflammation and colonic injury.²⁶
- **Cancer.** By inhibiting several processes involved in cancer progression and spread, luteolin may reduce risk for many cancers,^{10,13,18,28} including colon, prostate, lung, melanoma, breast, oral, and brain cancer.
- **Neurodegenerative disease.** Luteolin has shown to be neuroprotective, shielding brain cells from inflammation, oxidative stress, and metabolic derangements.²⁹⁻³³ In animal models of **Alzheimer's**, luteolin alleviates cognitive impairment^{29,31-33} and improves learning and memory.

Additional preclinical evidence shows that luteolin may help protect against autoimmune conditions, arthritis, liver disease, kidney disease, type 2 diabetes, and lung disease.¹⁸

Based on the wealth of preclinical data, this **high bioavailability luteolin** has the potential to promote better health in humans.

Future **clinical trials** could demonstrate the potential health benefits of luteolin.

Summary

Luteolin is a flavonoid that defends cellular health, supports healthy aging, and reduces risk of cardiovascular, cancer, and neurodegenerative diseases in pre-clinical studies.

Luteolin has traditionally suffered from poor bioavailability, but scientists have created a formulation that boosts bioavailability in humans up to **14 times**.

This **bioavailable luteolin** may finally allow its true potential to be realized. ■



A Better Luteolin

- In cell and animal models, the plant flavonoid **luteolin** defends against common diseases of aging, including cardiovascular disease, neurodegenerative disorders, metabolic disease, gastrointestinal disorders, and cancer.
- Human trials of luteolin have been limited due to its poor bioavailability. A new formulation boosts its bioavailability in humans by **14 times** compared to standard formulations.
- Clinical trials of this new **bioavailable luteolin** may demonstrate its potential benefits for reducing disease risk and supporting healthy aging.

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

1. Taheri Y, Sharifi-Rad J, Antika G, et al. Paving Luteolin Therapeutic Potentialities and Agro-Food-Pharma Applications: Emphasis on In Vivo Pharmacological Effects and Bioavailability Traits. *Oxid Med Cell Longev*. 2021;2021:1987588.
2. Akay. Data on file. Bio-luteolin pharmacokinetics study. 2025.
3. Almatroodi SA, Almatroodi A, Alharbi HOA, et al. Effects and Mechanisms of Luteolin, a Plant-Based Flavonoid, in the Prevention of Cancers via Modulation of Inflammation and Cell Signaling Molecules. *Molecules*. 2024 Feb 29;29(5).
4. Yao X, Zhou Z. Dietary intake of luteolin is negatively associated with all-cause and cardiovascular mortality in chronic kidney disease patients. *BMC Public Health*. 2024 Jul 30;24(1):2044.
5. Markham KR, Ryan KG, Bloor SJ, et al. An increase in the luteolin : Apigenin ratio in Marchantia polymorpha on UV-B enhancement. *Phytochemistry*. 1998 1998/07/01;48(5):791-4.
6. Muruganathan N, Dhanapal AR, Baskar V, et al. Recent Updates on Source, Biosynthesis, and Therapeutic Potential of Natural Flavonoid Luteolin: A Review. *Metabolites*. 2022 Nov 20;12(11).
7. Mu J, Ma H, Chen H, et al. Luteolin Prevents UVB-Induced Skin Photoaging Damage by Modulating SIRT3/ROS/MAPK Signaling: An in vitro and in vivo Studies. *Front Pharmacol*. 2021;12:728261.
8. Gendrisch F, Esser PR, Schempf CM, et al. Luteolin as a modulator of skin aging and inflammation. *Biofactors*. 2021 Mar;47(2):170-80.
9. Aziz N, Kim MY, Cho JY. Anti-inflammatory effects of luteolin: A review of in vitro, in vivo, and in silico studies. *J Ethnopharmacol*. 2018 Oct 28;225:342-58.
10. Huang L, Kim MY, Cho JY. Immunopharmacological Activities of Luteolin in Chronic Diseases. *Int J Mol Sci*. 2023 Jan 21;24(3).
11. Aman Y, Schmauck-Medina T, Hansen M, et al. Autophagy in healthy aging and disease. *Nat Aging*. 2021 Aug;1(8):634-50.
12. Couture R, Mora N, Al Bittar S, et al. Luteolin modulates gene expression related to steroidogenesis, apoptosis, and stress response in rat LC540 tumor Leydig cells. *Cell Biol Toxicol*. 2020 Feb;36(1):31-49.
13. Mahwish, Imran M, Naeem H, et al. Antioxidative and Anticancer Potential of Luteolin: A Comprehensive Approach Against Wide Range of Human Malignancies. *Food Sci Nutr*. 2025 Jan;13(1):e4682.
14. Ashrafizadeh M, Ahmadi Z, Farkhondeh T, et al. Autophagy regulation using luteolin: new insight into its anti-tumor activity. *Cancer Cell Int*. 2020 Nov 4;20(1):537.
15. Bottcher N, Suhr F, Pufe T, et al. Luteolin Induces Nrf2 Activity in C2C12 Cells: Implications for Muscle Health. *Int J Mol Sci*. 2025 Apr 25;26(9).
16. Liang DY, Cong SH, Li LH, et al. Luteolin delays the progression of IgA nephropathy by attenuating inflammation, oxidative stress and reducing extracellular matrix accumulation through activating the Nrf-2/HO-1 pathway. *Front Pharmacol*. 2025;16:1530655.
17. Liu Y, Huang J, Zheng X, et al. Luteolin, a natural flavonoid, inhibits methylglyoxal induced apoptosis via the mTOR/4E-BP1 signaling pathway. *Sci Rep*. 2017 Aug 11;7(1):7877.
18. Zhu M, Sun Y, Su Y, et al. Luteolin: A promising multifunctional natural flavonoid for human diseases. *Phytother Res*. 2024 Jul;38(7):3417-43.
19. He L, Cho S, Blenis J. mTORC1, the maestro of cell metabolism and growth. *Genes Dev*. 2025 Jan 7;39(1-2):109-31.
20. Mao H, Zhao X, Sun SC. NF- κ B in inflammation and cancer. *Cell Mol Immunol*. 2025 Aug;22(8):811-39.
21. Wang T, Yin Y, Jiang X, et al. Exploring the mechanism of luteolin by regulating microglia polarization based on network pharmacology and in vitro experiments. *Sci Rep*. 2023 Aug 23;13(1):13767.
22. Dong M, Luo Y, Lan Y, et al. Luteolin reduces cardiac damage caused by hyperlipidemia in Sprague-Dawley rats. *Helijon*. 2023 Jun;9(6):e17613.
23. Luo Y, Shang P, Li D. Luteolin: A Flavonoid that Has Multiple Cardio-Protective Effects and Its Molecular Mechanisms. *Front Pharmacol*. 2017;8:692.
24. Wu B, Song H, Fan M, et al. Luteolin attenuates sepsis-induced myocardial injury by enhancing autophagy in mice. *Int J Mol Med*. 2020 May;45(5):1477-87.
25. Li J, Dong JZ, Ren YL, et al. Luteolin decreases atherosclerosis in LDL receptor-deficient mice via a mechanism including decreasing AMPK-SIRT1 signaling in macrophages. *Exp Ther Med*. 2018 Sep;16(3):2593-9.
26. Li B, Du P, Du Y, et al. Luteolin alleviates inflammation and modulates gut microbiota in ulcerative colitis rats. *Life Sci*. 2021 Mar 15;269:119008.
27. Yuan J, Che S, Ruan Z, et al. Regulatory effects of flavonoids luteolin on BDE-209-induced intestinal epithelial barrier damage in Caco-2 cell monolayer model. *Food Chem Toxicol*. 2021 Apr;150:112098.
28. Ambasta RK, Gupta R, Kumar D, et al. Can luteolin be a therapeutic molecule for both colon cancer and diabetes? *Brief Funct Genomics*. 2018 Jul 22;18(4):230-9.
29. He Z, Li X, Wang Z, et al. Protective effects of luteolin against amyloid beta-induced oxidative stress and mitochondrial impairments through peroxisome proliferator-activated receptor gamma-dependent mechanism in Alzheimer's disease. *Redox Biol*. 2023 Oct;66:102848.
30. Jayawickreme DK, Ekwosi C, Anand A, et al. Luteolin for neurodegenerative diseases: a review. *Pharmacol Rep*. 2024 Aug;76(4):644-64.
31. Kou JJ, Shi JZ, He YY, et al. Luteolin alleviates cognitive impairment in Alzheimer's disease mouse model via inhibiting endoplasmic reticulum stress-dependent neuroinflammation. *Acta Pharmacol Sin*. 2022 Apr;43(4):840-9.
32. Tao X, Wang L, Gong W. Untargeted metabolomics reveals the mechanisms of luteolin and exercise combination treatment against cognitive impairments in AD mice through modulating autophagy. *J Nutr Biochem*. 2025 Nov;145:110011.
33. Yao ZH, Yao XL, Zhang Y, et al. Luteolin Could Improve Cognitive Dysfunction by Inhibiting Neuroinflammation. *Neurochem Res*. 2018 Apr;43(4):806-20.
34. Akay. Data on file. Bio-luteolin efficacy study. 2025.

The First Human Study of Bioavailable Luteolin

In addition to the study that showed up to a **14-fold** improvement in luteolin bioavailability, another **human** study tested its effects on **testosterone** levels in men.^{2,34}

In this study, 51 men aged 35-55 years, with **low testosterone** levels, were randomized to receive two different doses of the bioavailable luteolin or a placebo.

After 12 weeks, those receiving **500 mg** of **bioavailable luteolin** had a significant improvement in **grip strength** compared to both baseline function and the placebo group. Compared to baseline, their strength improved by **8%**.

This encouraging study will hopefully spur further human trials of the novel luteolin formula.

Level UP with CoQ10

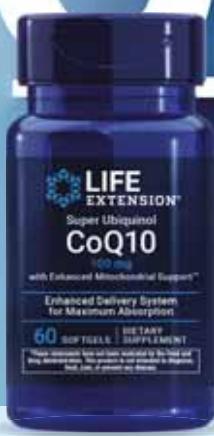


"Super product!"

Richard
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REVIEW

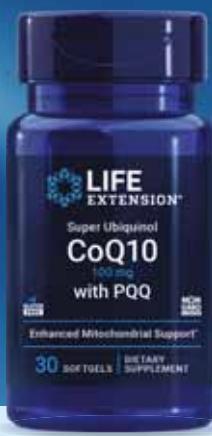
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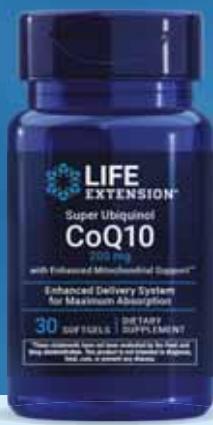
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Life Extension® Optimized Cran-Max® with Ellirose™ formula uniquely complements whole cranberries' effectiveness for urinary tract health, especially for women.

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Item #01424

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4 bottles \$12 each

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eye

PRESSURE SUPPORT



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VERIFIED CUSTOMER REVIEW

Eye Pressure Support with Mirtogenol®

formula is designed to support blood flow in tiny vessels of the eyes, to help maintain healthy fluid pressure.

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1 bottle **\$30.75**

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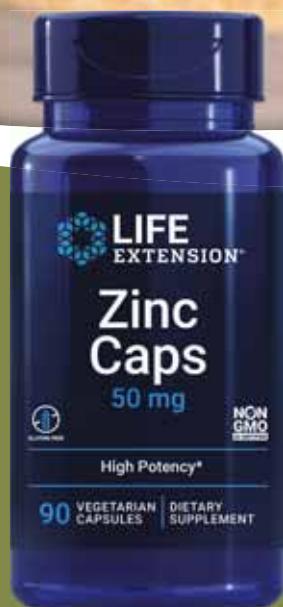
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Think Zinc For Immune Health

You know zinc is good for you—but are you getting enough?

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Bioavailability-Enhanced **BIO-LUTEOLIN™**

In a clinical study, Bio-Luteolin™ supplements achieved **blood levels** nearly **14 times** higher compared to regular luteolin*!¹

For the first time, the plant flavonoid **luteolin** has been scientifically optimized and shown to have increased bioavailability.

Bioavailability refers to the proportion of an orally administered compound that reaches the bloodstream intact and becomes available to produce effects in the body.²

Luteolin occurs naturally in foods such as celery, broccoli, peppers, and artichokes, but because it's metabolized in the intestines, it's not easily absorbed by the body.

The **Bio-Luteolin** formula is formulated with fenugreek-derived galactomannans that have been shown to greatly boost bioavailability.

For full product description and to order **Bio-Luteolin**,
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4 bottles \$14 each

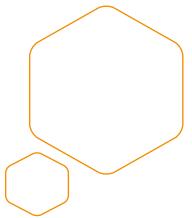


* Regular luteolin defined as 98% pure powder luteolin.

References 1. Akay. Data on file. Bio-Luteolin pharmacokinetics study. 2025. 2. *Molecules*. 2023;28(24):8038.

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.





How BEE PROPOLIS Supports a Strong Immune Defense

BY MARSHA MCCULLOCH, MS, RD

Cough and cold season is frequently accompanied by sudden upper respiratory tract infections.

Supporting a resilient **immune system** helps the body stay prepared.

Bee propolis is one of the oldest-known therapies to support immune health.¹

A substance bees make and use to protect their hives, propolis has **anti-viral**, anti-bacterial, and other immune benefits.²

Propolis extract can be taken daily to help protect against **upper respiratory infections**.

In addition, a propolis **spray** can provide immediate, short-term relief for someone who's already sick.

In placebo-controlled trials, standardized **propolis** extract:

- Reduced risk of upper respiratory infection by **31%** when taken daily during cough and cold season,³ and
- Led to recovery from sore throats **two days faster** when used as a spray.⁴

These propolis formulas deliver a one-two punch for immune support and faster upper respiratory symptom relief.

What Is Propolis?

Propolis is a substance bees make out of beeswax and materials extracted from plants.¹

It is sometimes called “bee glue” because it is sticky. Bees use it to seal gaps in the hive and create a healthy, **anti-microbial environment**.¹

People have safely used **bee propolis** medicinally for centuries.⁵

Preclinical research shows that propolis has broad-spectrum **immune system** effects.⁵⁻⁷

The benefits of propolis are largely attributed to its unique mixture of plant-based **polyphenols**.⁶

Fighting Respiratory Infections

An **upper respiratory tract infection** often starts with a sore, inflamed throat.⁸ It can rapidly turn into a full-blown illness.

Viruses most commonly cause these infections, though **bacteria** can also be the culprit.⁹

Preclinical studies found that **propolis** and propolis-derived compounds help fight various microbes, such as those that cause the **common cold** and **influenza**. They do so in multiple ways, including by:

- Preventing harmful microbes from **invading** cells,⁷
- Inhibiting key enzymes needed for a virus to **replicate**,⁷
- Making cell membranes of unhealthy bacteria more **permeable** and vulnerable to attack,¹⁰
- Disrupting **energy metabolism** of the pathogen,^{7,10} and
- Helping maintain the body’s **antioxidant defenses** during the infection.^{6,7}

Clinical research has confirmed the ability of standardized propolis to fight upper respiratory tract infections in humans.⁴

Standardized Propolis Extract

Like honey, not all **propolis** is the same. Its precise content varies based on its geographic origin and the extraction process, which can influence its health-promoting properties.^{5,11}



Bee-Based Immune Support

- Bees make a substance called **propolis** to protect their hives from pathogens. Research shows it can help protect people from viruses and bacteria that cause **upper respiratory infections**.
- Not all propolis is the same. Propolis that has been **standardized** to contain an ample mix of polyphenols can provide consistent immune system benefits.
- **Throat spray** made with standardized propolis extract has been clinically shown to help people get over sore throats **two days faster** than a placebo.
- In a clinical study, daily oral intake of **propolis capsules** cut the risk of getting upper respiratory tract infections by nearly **one-third**.

To enable consistent immune functions, scientists developed a specialized extraction process that results in propolis standardized to a **12% polyphenol content**.¹²

This extract is rich in six distinct polyphenols with strong antimicrobial and antioxidant activity, including **galangin**, **quercetin**, **pinocembrin**, **pinobanksin**, **apigenin**, and **chrysin**.¹²

Spray Away Sore Throats

In a clinical trial, 122 healthy adults (ages 18 to 77) were given a standardized **propolis oral spray** or placebo spray on the first day of mild upper respiratory tract infection symptoms.⁴

Symptoms included a **sore**, **red**, **swollen**, or **hoarse throat**. The majority of cases were caused by viruses.

The subjects used two to four sprays three times daily for five days. In the treatment group, this provided **12 mg** to **24 mg** of **propolis polyphenols** per day.



After three days, **83%** of people using the **propolis** spray had relief from all their throat symptoms, compared with only **28%** of those in the **placebo** group.

After five days, subjects in both groups had largely recovered from their throat discomfort, which is typical of mild upper respiratory tract infections.^{4,13}

This means the **propolis** group resolved their sore throat symptoms **two days faster** than the placebo group.⁴

Preventive Immune Support

Daily use of **propolis** extract can help *prevent* upper respiratory infections in the first place.

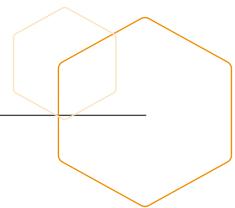
In a clinical trial, 295 adults (ages 25 to 69) were given capsules containing **200 mg** of standardized **propolis extract** or a placebo twice daily for three months.³

The study took place during the colder months, a common time for upper respiratory tract infections.¹⁴

Compared with the placebo group, those in the propolis group had:³

- **34%** fewer sick days,
- **26%** fewer subjects who experienced **upper respiratory discomfort**, and a
- **31%** lower risk of getting an upper respiratory infection at any time during the treatment.

The propolis was well-tolerated without side effects.



Proven Bioavailability

Before conducting this clinical trial, scientists evaluated how **bioavailable** the **polyphenols** in the **propolis extract** were.

Bioavailability of polyphenols is often low, ranging from **0.3%** to **43%**.^{15,16} Specialized **extraction** methods can improve **bioavailability**.

After giving healthy adults a single dose of a **standardized propolis** capsule or a placebo, scientists collected blood and urine samples over 24 to 48 hours, respectively.¹⁷

Blood biomarker and urinary excretion data showed that polyphenols in the propolis extract were over **70% bioavailable**.¹⁷

That means the active compounds in the propolis were able to effectively spread throughout the body, helping to support immune health, which may help to support fighting off colds and flu.

Summary

Propolis, a byproduct from bees, is a powerful immune system supporter.

Daily use of standardized propolis extract has been shown to reduce the risk of **upper respiratory infections** by **31%**.

Propolis throat spray helps resolve upper respiratory infection symptoms, including **sore throats**, two days faster than a placebo in a clinical study. ■

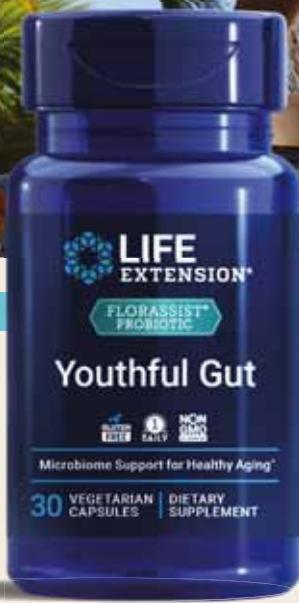


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References

1. Martinotti S, Bonsignore G, Ranzato E. Propolis: a natural substance with multifaceted properties and activities. *Int J Mol Sci.* 2025 Feb 11;26(4).
2. Yosri N, Abd El-Wahed AA, Ghonaim R, et al. Anti-Viral and Immuno-modulatory Properties of Propolis: Chemical Diversity, Pharmacological Properties, Preclinical and Clinical Applications, and In Silico Potential against SARS-CoV-2. *Foods.* 2021 Jul 31;10(8).
3. Poplar-type propolis dry extract ESIT12: immunomodulation efficacy study. Data on file. 2025.
4. Esposito C, Garzarella EU, Bocchino B, et al. A standardized polyphenol mixture extracted from poplar-type propolis for remission of symptoms of uncomplicated upper respiratory tract infection (URTI): A monocentric, randomized, double-blind, placebo-controlled clinical trial. *Phytomedicine.* 2021 Jan;80:153368.
5. Balasubramaniam AK, Elangovan A, Rahman MA, et al. Propolis: a comprehensive review on the nature's polyphenolic wonder. *Fitoterapia.* 2025 Apr 7;183:106526.
6. Magnavacca A, Sangiovanni E, Racagni G, et al. The antiviral and immunomodulatory activities of propolis: an update and future perspectives for respiratory diseases. *Med Res Rev.* 2022 Mar;42(2):897-945.
7. Zulhendri F, Chandrasekaran K, Kowacz M, et al. Antiviral, antibacterial, antifungal, and antiparasitic properties of propolis: a review. *Foods.* 2021 Jun 11;10(6).
8. Ware JE, Jr., Coutinho G, Smith AB, et al. The effects of greater frequency of two most prevalent bothersome acute respiratory symptoms on health-related quality of life in the 2020 US general population. *Qual Life Res.* 2023 Apr;32(4):1043-51.
9. Sur DKC, Plesa ML. Antibiotic use in acute upper respiratory tract infections. *Am Fam Physician.* 2022 Dec;106(6):628-36.
10. Rana A, Malik A, Sobti RC. Anti-bacterial Properties of Propolis: A Comprehensive Review. *Curr Microbiol.* 2025 Aug 26;82(10):479.
11. Bobis O. Plants: Sources of Diversity in Propolis Properties. *Plants (Basel).* 2022 Sep 2;11(17).
12. Zaccaria V, Garzarella EU, Di Giovanni C, et al. Multi dynamic extraction: an innovative method to obtain a standardized chemically and biologically reproducible polyphenol extract from poplar-type propolis to be used for its anti-infective properties. *Materials (Basel).* 2019 Nov 13;12(22).
13. van der Velden AW, Sessa A, Altiner A, et al. Patients with sore throat: a survey of self-management and healthcare-seeking behavior in 13 countries worldwide. *Pragmat Obs Res.* 2020;11:91-102.
14. Moriyama M, Hugentobler WJ, Iwasaki A. Seasonality of respiratory viral infections. *Annu Rev Virol.* 2020 Sep 29;7(1):83-101.
15. Ganu G, Nagore D, Rede SM, et al. Navigating the future of nutraceuticals and herbal products: insights into bioavailability and pharmacokinetics. *International Journal of Medical Science in Clinical Research and Review.* 2024;7(5):1051-60.
16. Manach C, Williamson G, Morand C, et al. Bioavailability and bioefficacy of polyphenols in humans. I. Review of 97 bioavailability studies. *Am J Clin Nutr.* 2005 Jan;81(1 Suppl):230S-42S.
17. Poplar-type Propolis Dry Extract ESIT12 : Nutrikinetic and Bioavailability Studies. Data on file. 2023.

YOU'VE GUT THIS



Item #02539
30 vegetarian capsules
1 bottle \$22.50
4 bottles \$20.50 each



Your gut microbiome is intricately linked to your well-being, so you want to keep it healthy. But your digestive tract bacteria change as you age, which can affect everything from your nutritional uptake to cholesterol.

The **FLORASSIST® Probiotic Youthful Gut** formula is a novel probiotic + postbiotic combo designed to help turn back the clock by encouraging a variety of biomarkers associated with healthy aging.

Nourish your gut and support a long, healthy life with a daily probiotic designed for aging well.

For full product description and to order **FLORASSIST® Probiotic Youthful Gut**,
call 1-800-544-4440 or visit www.LifeExtension.com

PoZibio® is protected under US Patent No.11,622,981 and is a registered trademark of Postbiotics, Inc. L. plantarum ECGC 13110402 is LPLDL.

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.

Great Hair!

Oral Formula Promotes
Hair Growth and Fullness



Item #02538

30 softgels

1 bottle \$21

4 bottles \$19 each

Just one Hair Growth for Men softgel daily can help maintain healthy hair.

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 that in a 4-month clinical trial demonstrated support for:²

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

For full product description and to order **Hair Growth for Men**,
call **1-800-544-4440** or visit www.LifeExtension.com

References: 1. *J Cosmo Tricho*. 2023;9(3):207. 2. *Clin Cosmet Investig Dermatol*. 2023 Nov 11;16:3251-3266.

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

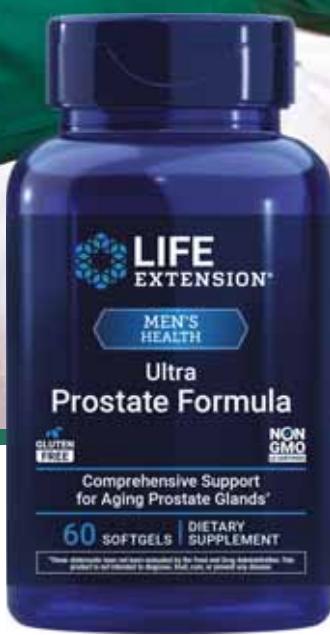
Up Your Game

With Ultra Prostate Formula, you'll always have a great play.

Ultra Prostate Formula

addresses multiple factors essential to lasting prostate health, so you can stay on top of your game.

Our best prostate supplement features ingredients like nettle root, pygeum and betasitosterol to promote healthy prostate function, healthy urine flow and more.



Item #02029
60 softgels
1 bottle **\$29.25**
4 bottles **\$27 each**

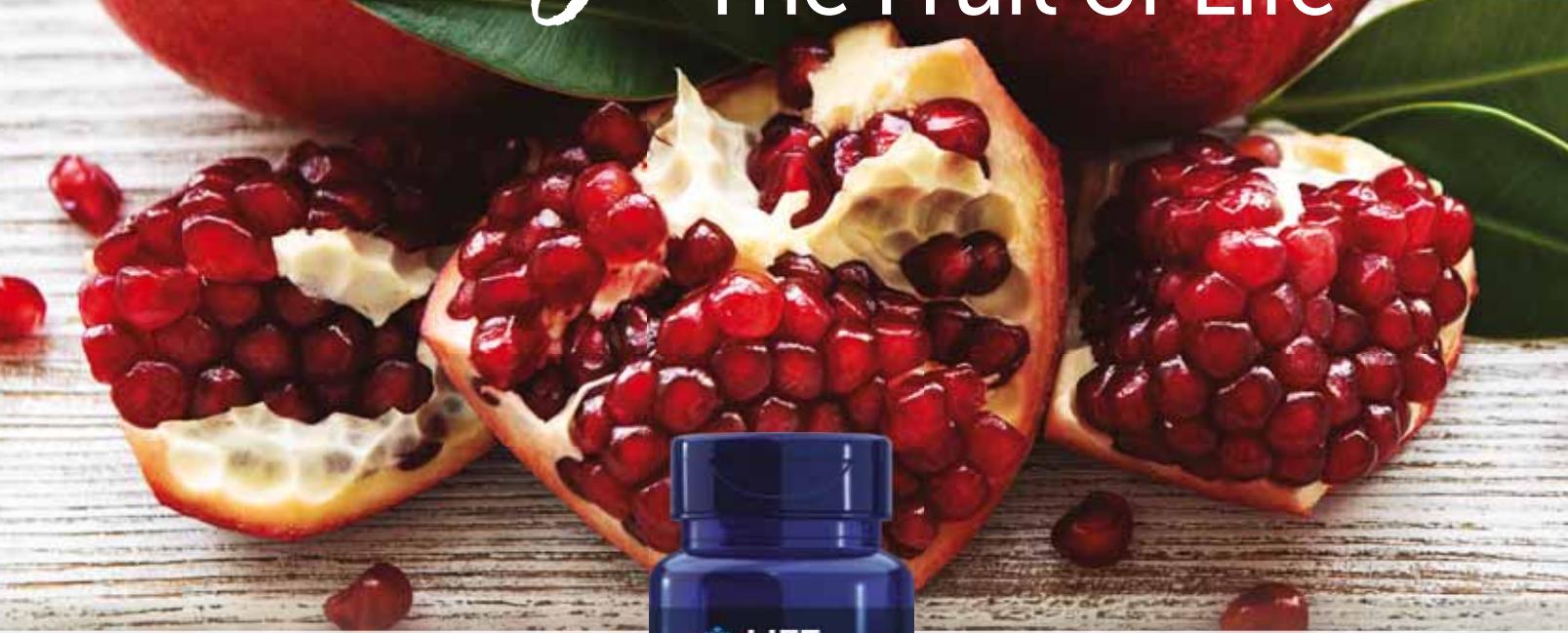
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For full product description and to order Ultra Prostate Formula,
call 1-800-544-4440 or visit www.LifeExtension.com

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.

Pomegranate

The Fruit of Life



Pomegranate Complete
combines extracts from the
whole fruit, flower, and seed oil.

Pomegranate plant compounds
support **heart** health.



Item #01953
30 softgels
1 bottle **\$18**
4 bottles \$15.75 each



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

Pomella® is a registered trademark of Verdure Sciences, Inc. Patent Pending.

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.



Bee Prepared For Seasonal Challenges

Propolis is a bee-derived substance that provides a synergistic, immune-supporting mixture of **polyphenols** that:

- Support a healthy **immune** response to assist your body in shoring up its defenses.^{1,2}
- Can head off seasonal challenges that might be lingering in the air, **especially in the colder months.**

Bee Immune Propolis is available in two forms—a quick-acting **spray** for immediate support,¹ and daily **capsules** for long-term immune strength.²

Formulated BEE IMMUNE PROPOLIS can help support defenses year-round.

NEW



Item #02550
0.5 Fl. Oz. (15 mL)
1 bottle \$15.75
4 bottles \$14.50 each

Spraying five times into the mouth provides **4 mg** of polyphenols from 690 mg of standardized **bee propolis** extract.



Item #02546
60 vegetarian capsules
1 bottle \$18
4 bottles \$16 each

Two vegetarian capsules provide **400 mg** of standardized **bee propolis** extract.

GLUTEN FREE
NON-GMO
LE CERTIFIED

For full product description and to order
Bee Immune Propolis Capsules
and/or **Bee Immune Propolis Spray**, call
1-800-544-4440 or visit www.LifeExtension.com

References

1. Esposito C et al. *Phytomedicine*. 2021 Jan;80:153368.
2. Poplar-type propolis dry extract ESIT12: immunomodulation efficacy study. Data on file. 2025.

Promunel® is a trademark of Fytexia SAS.

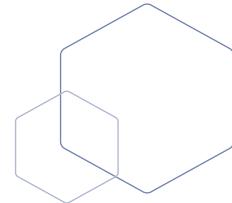




CONFERENCE REPORT

Revolution Against Aging and Death RAADfest 2025

BY WILLIAM FALOON



If anyone doubted the ability of **science** to overcome the scourge of **degenerative aging**, attending the annual **RAADfest** conference might change their mind.

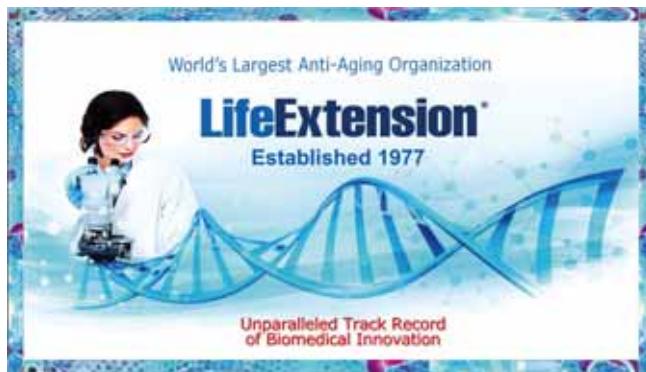
A record number of speakers presented findings about decelerating **degeneration** now with experimental indices of systemic **age-reversal** in the near future.

In my opening keynote address, I covered a wide range of research projects funded by **Life Extension®**.

I also described initiatives and advances made by other groups who seek to restore *youthful* functionality to our **aged** bodies.

This article includes many of my PowerPoint slides along with descriptive verbiage so you can see how far **rejuvenation research** has advanced in less than a year's time.

I open my presentations by letting newcomers know that our **Life Extension®** group was established **48 years ago** and that we have a track record of introducing biomedical innovations before they are recognized by mainstream medicine.



I showed a slide of pharmacy shelves packed with dozens of brands of low-cost nutrients/drugs that were introduced to Americans by our **Life Extension®** group.

I briefly describe our multi-decade battle to keep these products on the shelves, including our precedent-setting legal cases against the government and our role in passing legislation in **1994** that allows consumers to learn how dietary supplements function in the body.



Popular Ingredients/Formulas Introduced by Life Extension®

By way of example, the next slide reports on a recent placebo-controlled **clinical trial** that showed supplementing with just **2,000 IU/day of vitamin D reduced telomere shortening by 76%** compared to the average base pair loss over a four-year period based on population studies.^{1,2}

WHAT ARE TELOMERES?

Telomeres are protective DNA caps at the ends of chromosomes that shorten each time a cell divides.

Telomere **shortening** is a driver of **biological aging**.

As telomeres erode, stem cells weaken, immunity declines, and age-related disorders become more likely.

From the *American Journal of Clinical Nutrition* May 21st, 2025

Vitamin D supplement reduced telomere shortening by 76%

[https://ajcn.nutrition.org/article/S0002-9165\(25\)00255-2/](https://ajcn.nutrition.org/article/S0002-9165(25)00255-2/)

- Study subjects received 2000 IU/day of vitamin D or placebo.
- Vitamin D group had roughly **76% reduction in telomere attrition** compared to the average base pair loss over a 4-year period based upon population studies."

"Telomere length attrition measures are still in the research phase and not yet fully clinically validated." They remain a laboratory measure of biological aging that vitamin D favorably influences along with improved DNA methylation (epigenetic aging) scores."

The above **human** study was published six weeks before RAADFest 2025, and reenforced previous data indicating that vitamin D can **slow telomere attrition**, which may enable *longer* lifespans.

I then clicked to a graph showing people born in **1880** had an average life expectancy of only **40 years**, with only a slight improvement by **1900**.³

I gave examples of why 1880 was not that long ago, such as many in the audience in their younger years knew people born in **1880**.



The most common diseases that killed Americans in **1900** have largely been vanquished in immune-competent individuals.³

Current life expectancy in the U.S. is around 79 years,⁴ but can you imagine how it will be extended in the next decades or so?



A Few Common Causes of Death in 1900

- **Pneumonia**
- **Tuberculosis**
- **Diarrhea**
- **Diphtheria**

- **Appendicitis** mortality rate about **26%** in **1900**
- **Appendicitis** mortality rate about **0.2%** in **1980**

I then presented slides from respected media that describe **longevity** drugs being developed to “slow or prevent the onset of age-related conditions.”^{5,6}

The Wall Street Journal Reports: Feb 5th, 2025

The Scientific Fight Over Whether Aging Is a Disease

The way we think about age is changing

“Longevity drugs, if proven to work, could slow or prevent the onset of age-related conditions rather than treating them after they develop, and eventually save millions on chronic disease spending in later life.”

www.wsj.com/health/wellness/aging-disease-science-medicine-032114q9



Even more optimistic are reports predicting that if we can live into the **2030s**, we might achieve super-longevity, as reported by a **Microsoft** newsletter and other articles.^{7,8}

Featured in: msn

November 19th, 2024

“Scientists believe that by the 2030s humans could live forever.”

“...advancing medical technology could enable life expectancy to outpace the passage of time, potentially leading to a form of **immortality**.”

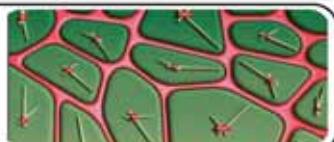
<http://www.msn.com/en-us/news/technology/scientists-believe-that-by-the-2030s-humans-could-live-forever/ar-AA1unGLK>



The **Washington Post** reported on the scientific quest to reverse human **aging** using a technique called “**cellular reprogramming**” that you will read a lot about in this article.⁹

The Washington Post Reports: March 6th, 2025

Inside the scientific quest to reverse human aging
Can reprogramming our genes make us young again? A breakthrough in longevity research may be nearing its first human trials.



“Cellular reprogramming is now hailed by its supporters as the most promising scientific approach to improving human healthspans and lifespans. Proponents claim it has the potential to reshape how — and whether — we grow old.”

<http://www.washingtonpost.com/wellness/2025/03/06/cellular-reprogramming-longevity-reverse-aging/>

How to Live Longer Today

Before getting into age-reversal **research**, I present new data on what our supporters can do now to live longer.

The most important findings published in the past year are about getting more physical activity. A large **human** study found that more daily walking added **5.3** more **life years**.¹⁰

The importance of reenforcing longevity data cannot be over-emphasized. I know supporters who engage in experimental attempts to **restore** their youth but omit consistent data showing the need to avoid sedentary lifestyles.

Featured in: BJSM Daily Walking Can Add Extra 5.3 Life Years

November 14th, 2024 / <https://pubmed.ncbi.nlm.nih.gov/39542739/>

Predictive modeling study suggests major longevity benefits of daily walking.



Americans over age 40 years could live an **extra 5.3 years** on average.

Overwhelming data indicates even small increases in physical activity can significantly reduce risk of premature death, especially for the inactive.

And my reinforcement of a healthy lifestyle includes following diets that avoid deadly foods.

I showed a survey released in **2025** where the **Mediterranean diet** continues to rank #1 and slides showing the **dementia risks** of consuming red meat, especially processed red meats.^{11,12}

CNBC Reports: Jan. 13th, 2025

The Mediterranean diet is the No. 1 diet for 2025: Why it's still so popular among doctors, nutritionists

<https://www.cnbc.com/2025/01/13/the-mediterranean-diet-is-the-no-1-diet-for-2025-why-its-so-popular-.html>

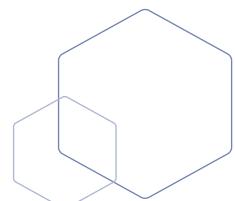
Panel of 69 experts rank Mediterranean diet #1:

Eat:

- Fruits
- Vegetables
- Whole grains
- Beans
- Nuts
- Healthy fats
- Fish
- Poultry

Limit:

- Sweets
- Processed foods
- Red meat
- Foods cooked at high temperature



Anti-Inflammatory Diet and Dementia in Older Adults with Cardiometabolic Diseases¹³



End result of study published in **JAMA** was a **31%** lower risk of **dementia** in study subjects who ingested nutrients that protect against **inflammaging**.

Those who adhered most to inflammation-lowering diets had **larger brain volumes** and **fewer degenerative pathologies**.

Best ways to ward off inflammaging:
Exercise, don't smoke, maintain healthy weight/eating patterns...emphasis on **Mediterranean diet**.

Published online by JAMA Network Open: August 12 2024
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2822212>

CNN Health Reports:^{14,15}

CNN Health Reports:

Red Meat Associated with Increased Dementia Risk. Processed Red Meat Worse

New study published in journal **Neurology**.

Researchers found that **1+ serving** of unprocessed red meat per day was associated with a **16% higher risk** of subjective **cognitive decline**, compared to **< ½ a serving per day**.

A mere **½ serving** of **processed** red meat like hot dogs was associated with a **13% higher risk** of dementia.

January 15th, 2025



Just eight weeks before RAADFest 2025, the **Wall Street Journal** published an extensive article on how Americans in their 80s and 90s are redefining old age.¹⁶ One doctor was quoted stating, this is "**a true triumph of humankind**."

The Wall Street Journal Reports: | May 17th, 2025

"Americans in Their 80s and 90s Are Redefining Old Age" Dementia rates are down...Many thriving deep into later years.

WSJ cites numerous elderly people living exceptionally healthy.

Peter Diamandis takes 75 pills—supplements and prescription drugs a day and gets to the gym...to keep himself in shape until better interventions can...reverse the aging process.

Increased life expectancy called:
"**a true triumph of humankind**"

<https://www.wsj.com/health/wellness/americans-in-their-80s-and-90s-are-redefining-old-age-5f8ae8af>

On the flip side are one in three Americans who suffer from the deadly **metabolic syndrome**. As seen on the following slide, metabolic syndrome sharply increases risks of early diseases and death.¹⁷⁻²⁰

Metabolic Syndrome is a clustering of Risk Factors that include:

Abdominal obesity
High fasting glucose
Hypertension
Dyslipidemia

Metabolic Syndrome is responsible for a:

- **5-fold increased risk of type 2 diabetes.**
- **2-fold increased risk of cardiovascular disease**
- **2-fold increased risk of coronary/cerebral vascular disease**
- **2.5-fold increased risk of cardiovascular mortality**
- **1.5-fold increased risk of all-cause mortality**

[https://diabetesjournals.org/doi/10.2337/1375-2546-48-2-265/Metformin-Treatment-With-or-Without-Mediterranean](https://diabetesjournals.org/doi/10.2337/1375-2546-48-2-265)

Metformin Counteracts Metabolic Syndrome

The fantastic news comes from a **2025** published **clinical trial** whereby those who took **850 mg** of **metformin** twice a day reduced their number of diseases and enjoyed an **80% lower** rate of developing **type 2 diabetes**.²¹

"Metformin treatment With or Without Mediterranean Diet for the Prevention of Age-Related Diseases in People With Metabolic Syndrome...Randomized Trial"

Degenerative Diseases Per 100 Person Years:

11.3 with placebo
13.3 with placebo + Mediterranean diet
6.9 with metformin alone
6.7 with metformin + Mediterranean diet



Combining **metformin** with a **Mediterranean diet** lowered **type 2 diabetes** incidence by **92%** compared to placebo as seen on the following slide.²¹

Impressive Prevention

Type 2 diabetes 80% lower with metformin and 92% lower with metformin + Mediterranean diet compared with placebo.

Feb 1st, 2025 | <https://doi.org/10.2337/1375-2546-48-2-265>

"The use of 1,700 mg/day metformin is effective to prevent diabetes in people selected on the basis of metabolic syndrome."



My next slide showed similar data published in **2017** in **JAMA**. I criticized the needless **delays** in incorporating published research findings (like prescribing metformin) into conventional medical practice.²²

Results Published in the Journal of the American Medical Association:**Study Results Found on March 21st 2017**

Metformin studied in **pre-diabetic** patients. Compared to placebo 850 mg of metformin two times a day:

Reduced type II diabetes risk 31%

In patients under age 60: **metformin reduced diabetic risk by 58%.**

Quote: "Metformin can cause weight loss..."

JAMA. Published online March 21, 2017. doi:10.1001/jama.2016.17844

To emphasize this point, I went further back in time to January **1995**, when a published study showed huge reductions in diabetes-related complications, death and all-cause mortality in those prescribed **metformin**.²³

United Kingdom Diabetes Study

Study results published January 1995

Type II diabetics taking metformin:

- **32% reduced risk of diabetic complications**
- **42% reduced risk of diabetes-related death**
- **36% reduced all-cause mortality risk**

British Medical Journal; Jan 14, 1995;²⁴ United Kingdom Prospective Diabetes Study (UKPDS)

In response to this **1995** study, I showed a list of medications available in other countries that we published in the **March 1995** issue of **Life Extension Magazine**[®]...with metformin at the top of the list.

Life Extension[®] recommended metformin 30 years ago... as an anti-aging drug!



March 1995

Drug	Description	1000 Units	Yield
Metformin HCl (Glumetza)	84, 500 mg tabs	\$21	
	328, 500 mg tabs	\$72	
Minaprine (Genter)	30, 100 mg caps	\$45	
	120, 100 mg caps	\$165	
Parlodol	30, 2.5 mg tabs	\$40	
	120, 2.5 mg tabs	\$140	
Permepron	30, 160 mg tabs	\$45	
	120, 160 mg tabs	\$165	
Phacetam	60, 800 mg tabs	\$38	
	240, 800 mg tabs	\$156	
Ribavirin (Rivavir)	100, 100 mg tabs	\$95	
	400, 100 mg tabs	\$380	
Roxithromycin	10, 150 mg tabs	\$45	
	40, 150 mg tabs	\$180	
Vinpocetine	100, 5 mg tabs	\$54	
	400, 5 mg tabs	\$180	
	SUB TOTAL:	\$	
	SHIPPING:	\$ 7.00	
	GRAND TOTAL:	\$	

I then showed details from a **May 2025** study showing **30% lower** mortality in type 2 diabetics prescribed **metformin** compared to the previously most popular anti-diabetic drug class.²⁴ (Refer to slide on top of next column).

30% Lower Mortality in Diabetics on Metformin vs. Popular Alternative

"Women initiating metformin monotherapy had a significantly lower mortality rate before age 90 compared to those on sulfonylurea monotherapy, 3.7 vs. 5.0 deaths per 100 person-years, respectively."

"This analysis is novel in targeting 'exceptional longevity' as an endpoint. By specifically examining survival to age 90, the study highlights a potential age-extending benefit of metformin beyond conventional glycemic control or cardiovascular risk mitigation."

The Journals of Gerontology May 2025

<https://academic.oup.com/biomedgerontology/advance-article/doi/10.1093/gerona/gia095/8137954>



And I reminded the audience about the **37-year delay** in metformin being available to Americans compared to people in England.²⁵

Deadly Delays!

- **England approves metformin: 1957**
- **FDA approves metformin: 1994**
- **37-year delay caused millions of American deaths.**
- **68-years later most people don't know metformin is anti-aging drug.**



Spread the word about these delays!

The next three slides described a study published right after RAADFEST 2024 showing **metformin decelerated** aging across a broad range of tissues in middle-aged male **monkeys**, including a **six-year** regression in measures of **brain aging**.

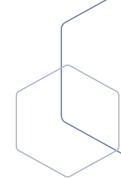
Metformin Regresses Aging in Middle-Aged Monkeys²⁶**Published in the Journal Cell:**

Metformin decelerates aging clock in male monkeys



- Metformin prevents brain atrophy, elevating cognitive function in aged male primates
- Metformin slows the pace of aging across diverse male primate tissues
- Metformin counteracts neuronal aging, delivering geroprotection in male primates

<https://doi.org/10.1016/j.cell.2024.08.021>



Cell Reports: Sept. 12, 2024 | <https://doi.org/10.1016/j.cell.2024.08.021>

DNA methylation age beneficially reduced in monkeys treated with metformin compared to vehicle

Tissue	Epigenetic Age
- Liver	-3.95 years
- Lungs	-5.11 years
- Brain (frontal lobe)	-6.10 years

AND

"ProteinAge" appeared 6.41 years younger

AND

Reduced markers of cell senescence + enhanced neuronal regeneration

Published in the Journal Cell:

Online now, September 12, 2024 | <https://doi.org/10.1016/j.cell.2024.08.021>



Results in Cynomolgus monkeys at human age equivalent 40–50 years:

"In a rigorous **40-month** study, we evaluated the geroprotective effects of metformin on **adult male** cynomolgus monkeys...The results highlighted a significant **slowing of aging** indicators, notably a roughly **6-year regression in brain aging...**"

Greenland Sharks Live for 400 Years

A study published at the end of **2024** surprised the world by showing that **Greenland sharks** live for about **400 years**.^{27,28}

Scientists sequenced **92%** of these sharks' **genome** and found one reason for this super-longevity is that they have many copies of **DNA repair** genes.

This mechanism enables rapid repair of DNA strands. It's why so many people today supplement with **NAD⁺** precursors to facilitate more youthful DNA repair, but ideally, we might want to reprogram our cells, to have many more **DNA repair** genes like the Greenland shark. Scientists are studying how to do this.

From CNN "The longest-living vertebrate could offer clues to extending the human lifespan..." Dec. 13, 2024

92% of the Greenland shark's genome has been sequenced

This allows researchers to investigate molecular mechanisms of longevity

Greenland sharks found to have many copies of DNA repair genes

This slows down the aging process by fixing damaged DNA

<https://www.cnn.com/2024/12/13/science/greenland-shark-genome-longevity-study/index.html>

From CNN "The longest-living vertebrate could offer clues to extending the human lifespan..." Dec. 13, 2024

Human cells experience many DNA strand **breaks** daily, which are addressed by **repair** mechanisms to maintain genomic stability.

Scientists may design drugs that improve **human DNA repair** to work like the Greenland shark's

These sharks may live > **400 years!**

<https://www.cnn.com/2024/12/13/science/greenland-shark-genome-longevity-study/index.html>



Cellular Reprogramming: Research in Motion

Road to Reversal of Biological Aging

Restore Youthful DNA Function using OSK genes (Yamanaka factors)



In **2006**, Shinya Yamanaka showed that introducing four **transcription factors** to cell DNA *in vitro* could partially or completely reverse aging.^{29,30}

In **2022-2024**, published research demonstrated that administration of three or four of these "**Yamanaka factors**" induced systemic **age reversal** in live mice.³¹

From the Salk Institute March 7, 2022

Salk Scientists Reverse Aging in Mice

"Scientists safely and effectively reverse the **aging process** in middle-aged and elderly mice by partially resetting their cells to more **youthful** states."

<https://www.nature.com/articles/s43587-022-00183-2>

<https://www.salk.edu/news-release/cellular-rejuvenation-therapy-safely-reverses-signs-of-aging-in-mice/>



Source: Salk Scientists Reverse Aging in Mice^{32,33}

Remarkable > 100% Extension in Median Remaining Life in Response to OSK Expression

Feb 15, 2024

Two-part AAV system employed for systemic intracellular OSK delivery.

Old mice equivalent to **77-year-old** people used to enhance human translatability.

Partial OSK reprogramming increased lifespan and improved frailty scores in old mice.

Control mice had **8.86 weeks** of life remaining versus **18.5 weeks** in OSK-treated group.



<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC20230672/>

Source: Remarkable > 100% Extension in Median Remaining Life in Response to OSK Expression.³¹

Transcription factors are DNA-binding proteins that control **gene expression**.

Yamanaka (OSK) transcription factors

Reprogram **old cells** into **young adult cells** that can theoretically regenerate tissues **forever**.



Cells-2006



Mice-2022-2024



Monkeys-2025



Humans-2026

Update: Our scientists continue to identify more efficient ways of inducing OSK* (Yamanaka factors OCT4, SOX2, and KLF4) *in vivo* expression. We first validate these methods in mice and initiated **OSK gene addition** in monkeys on December 9, 2025. The goal is to rejuvenate old monkeys by utilizing more effective **OSK** delivery methods. We are targeting OSK clinical projects for the end of 2026, assuming the monkeys grow biologically younger.

(*Note that **OSK** is the acronym for three of the four **Yamanaka** transcription factors.)

Delivering (transfected) Yamanaka Factors on to DNA

There are several ways of adding Yamanaka factors to DNA. Many researchers utilize **viral delivery** methods, but our research focuses on other methods that we believe to be more practical.

The following slides show these differing delivery methods. The next slide shows how **lipid nanoparticles** (LNPs) deliver **OSK** into DNA of mice, monkeys, and we hope soon, aged humans.

Transferring OSK Genes Inside Cells

In vivo OSK delivery methods being studied:

AAV9 vector (adeno-associated virus)

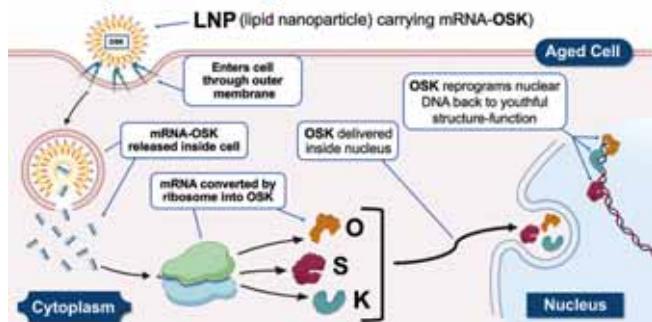
Polymer & Plasmid-based vector

Lipid nano-particles

Chemical reprogramming



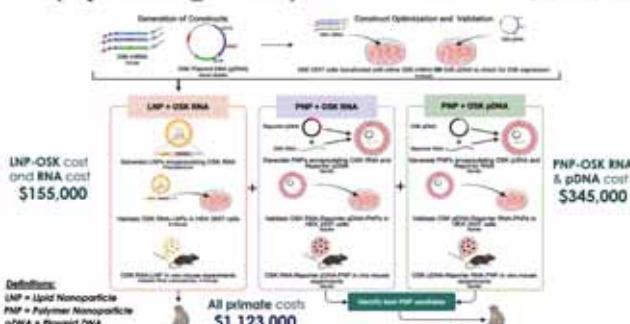
In Vivo Age Reversal using LNP delivered OSK Yamanaka factors



See how we encase the **OSK** RNA blueprint into a lipid nanoparticle to enable it to easily cross the cell membrane. Once inside, the lipid nanoparticle releases the **OSK** blueprint that is converted to **OSK** proteins by ribosomes. These **OSK** proteins then pass through pores in the nucleus where they bind to nuclear DNA and induce a “reprogramming” effect that enables old cells to regain youthful structure-function.

We are funding multiple research projects that will study the effects of differing OSK delivery platforms in old mice and monkeys. The goal is systemic reversal of aging biomarkers and robust extension of remaining lifespans.

OSK project trial of 3 different protocols Total cost: \$1,783,000



I described the meticulous processes we are funding that first validate delivery of OSK to nuclear DNA of mice using lipid nanoparticles, polymer mRNA or polymer pDNA. We then use what works best in mice to deliver OSK into old African green monkeys. These were study costs as of July 10, 2025.³⁴

Project Update: December 2025



Within six months of the OSK validation accomplished by July 10, 2025 (see below), we completed multiple steps needed to initiate primate *in vivo* OSK delivery.

The Major Advance as of July 10, 2025

When designing and building **OSK constructs**, the only way of knowing if these are effectively binding to cell nuclear **DN**A is to attach a fluorescent protein (called "mCherry").³¹

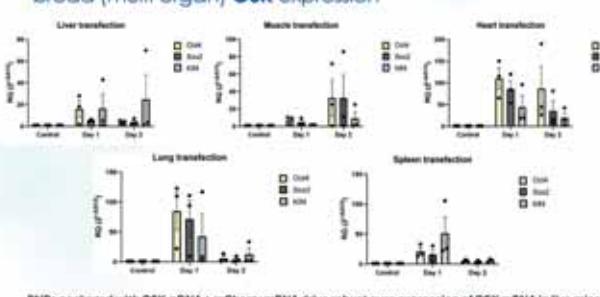
It often involves many attempts (trial and error) before a significant amount of **OSK** transfects (binds) onto nuclear DNA.

Our experienced scientific team was able to achieve robust OSK delivery and OSK gene expression the first time they tried in **live mice**.

The slides on this page show multi-organ robust OSK expression in these live mice using **pDNA-OSK**, which moved this closer to *in vivo* **monkey** research.

We followed through with testing **lipid nanoparticle** and **polymer mRNA** in live mice and achieved similar results.

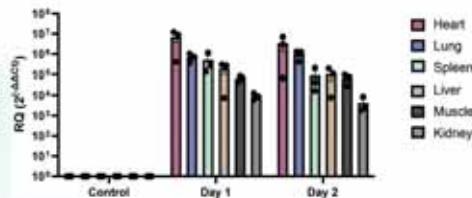
Live mice injected with OSK-pDNA demonstrate broad (multi-organ) OSK expression



The following slide shows broad (multi-organ) expression of OSK using polymer pDNA. Note that controls show zero OSK whereas there is a marked OSK increase on Day 1.

Live mice injected with **mCherry** fluorescent protein + **OSK-pDNA** demonstrate robust **OSK expression** in multiple tissues

Biodistribution (mCherry mRNA)



Consistent with the previous slide, PNPs packaged with OSK-pDNA + reporter mCherry RNA show broad biodistribution in live mice. (Reporter mCherry mRNA indicates successful targeting.)

This slide confirms broad biodistribution of polymer packaged OSK-pDNA demonstrating successful transfection of OSK into cellular nuclear DNA.

Sam Altman (ChatGPT founder) May Be Ahead of Us

We are not the only group engaged in **OSK rejuvenation** research.

Silicon Valley billionaires are pouring huge amounts of money into research to "conquer death."

In **January 2025**, researchers funded by Sam Altman announced they are able to change two of the Yamanaka factors to be **50 times** more effective than the **natural OSK** we are using.³⁵

We hope they succeed in showing their improved **Yamanaka factors** induce even more beneficial age reversal.

This does not deter us from our project aimed at showing systemic **age reversal** in **monkeys** and then in **humans** as quickly as possible using natural-to-the-body **OSK**.

The Daily Mail Reports April 8th, 2023

"First anti-aging pills to hit shelves in 2028, expert predicts – as Silicon Valley races to conquer death"

<https://www.dailymail.co.uk/sciencetech/article-11844303>

ChatGPT boss Sam Altman has invested **\$180 million** in anti-aging biotech firm.

Long line of Silicon Valley billionaires throw considerable wealth behind the science.

Jeff Bezos put **\$3 billion** into anti-aging startup.

Pills to help people reverse the effects of aging "could be on the market in the next 5 years"



Sam Altman

Source: Daily Mail reports³⁶

Featured in **MIT TECHNOLOGY REVIEW** | Jan. 17th, 2025

BIOTECHNOLOGY AND HEALTH
"OpenAI has created an AI model for longevity science"

GPT-4b micro, was trained to suggest ways to re-engineer the **Yamanaka factors** to increase their function.

Researchers used the model to change two of the **Yamanaka factors** to be more than **50 times** as effective according to some preliminary measures.

technologyreview.com/2025/01/17/1110086/openai-has-created-an-ai-model-for-longevity-science/



Source: MIT Technology Review⁹

New FDA Commissioner Supports this Research

The FDA historically has been the greatest impediment to lifesaving biomedical advances.

The new FDA Commissioner, however, is aware of how **Yamanaka factors** function and has made public comments (prior to assuming the FDA Commissioner role) that this research may lead to the "**reversal of the aging process.**"³⁷

New FDA Commissioner:

"The science of aging is fairly mature...there is actually a fair amount of literature on what you can do to reverse or slow the aging process."

- Marty Makary
Johns Hopkins University surgeon



Restored Fertility in Rats using OSKM

The **Life Extension®** group funds large and small projects involving **cellular reprogramming**.

The next two slides show the results of a study whereby OSKM (in viral vector delivery form) was injected into the brains of middle-aged female rats.³⁸

The results show that the **OSKM**-treated rats **improved pregnancy rates three times more** than control rats, and the pups were healthier.

This study has ramifications in extending **human** reproductive capability whereby an increasing percent of women seek to have children after age 30-40 years but are unable to conceive.

OSK or OSKM treatment could restore fertility and improve the health of offspring. (Note **OSKM** is all four Yamanaka factors.)³⁸

www.aging-us.com AGING 2025, Vol. 17, Advance Accepted: Jan 15, 2025

Oct4, Sox2, Klf4, c-My (OSKM) Gene Therapy in the Hypothalamus Prolongs Fertility and Ovulation in Female Rats

Maria D. Gallardo, Mauricio Girardi, Enrique L. Portanerky, Rodolfo G. Goyka | www.aging-us.com/article/206191

► Middle-aged female **rats** beyond 10 months **stop ovulating**.

► There is a need to extend fertility window in **human** females.

Treatment: OSKM genes injected into rat brains (hypothalamus).



www.aging-us.com AGING 2025, Vol. 17, Advance Accepted: Jan 15, 2025

Oct4, Sox2, Klf4, c-My (OSKM) Gene Therapy in the Hypothalamus Prolongs Fertility and Ovulation in Female Rats

Maria D. Gallardo, Mauricio Girardi, Enrique L. Portanerky, Rodolfo G. Goyka | www.aging-us.com/article/206191

► Treatment tested - At age 9.3 months, all female rats mated with young males.

Pregnancy rates:

1) Young rats: 83%	2) Control Group Rats: 8.3%	3) OSKM Treated Rats: 25%
---------------------------	------------------------------------	----------------------------------

Pup weight at weaning significantly higher in OSKM-treated rats

OSKM-treated females continued to show regular estrous cycles

These results show for first time that OSKM gene therapy can extend functionality of a complex system (hypothalamo-pituitary-ovarian axis).



I then reminded the audience of the sense of urgency that drives our regenerative medicine initiatives.³⁹

The problem:
About **7,700** Americans die each day.

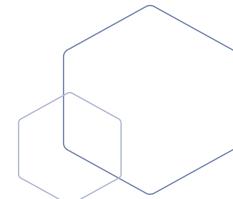
The major cause:
Degenerative Aging

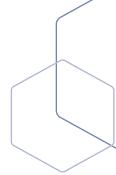
The solution:
Rapidly transition **Rejuvenation Research** findings into Humans!





Stated succinctly, we don't have time for delayed age-reversal research. We need to rapidly identify what interventions are effective so as not to miss out on life-saving opportunities.

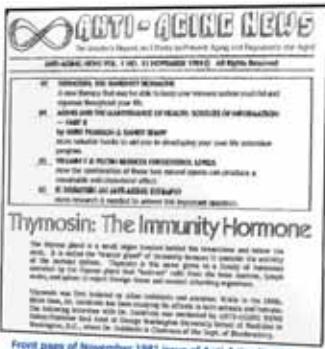




By way of example, I once again described the potential for improved outcomes in **cancer patients** if an immune-boosting hormone (**thymosin alpha 1**) was administered along with checkpoint inhibitor drugs (like Keytruda®) and conventional treatments.

I reminded the group that hard data sets in the early 1980s indicated that **thymosin alpha 1** could save lives, but the FDA rejected clinical trial results that were accepted by other countries.

Life Extension®
published and
advocated for
FDA approval of
thymosin alpha-1
in **1981**.



Front page of November 1981 issue of Anti-Aging News



Primary mechanisms through which **thymosin alpha 1** boosts immunity:

1. Activation of T Cells
2. Boosting Natural Killer (NK) Cell Activity
3. Modulation of Cytokine Production
4. Enhancement of Antigen Presentation
5. Regulation of Immune Cell Apoptosis
6. Anti-Viral Effects
7. Immune Surveillance Against Cancer
8. Regulation of Innate Immunity

I presented numerous published abstracts about **thymosin alpha 1** from the years 2018-2024 (like the one at the top of the next column) indicating potential lifesaving benefits if it were available.⁴⁰

Front Cover

Published online 2019 Sep 6. doi: 10.3389/fonc.2019.00873

PMCID: PMC6742685

PMID: 31556601

2019

A Reappraisal of Thymosin Alpha1 in Cancer Therapy

Claudio Cantisani,¹ Alessia M. Belotti,¹ Martina Pavan,¹ Giovanna Rango,¹ Claudia Sianesi,¹ Alain L. Gohde,² Enrico Gennari,³ and Luisella Romano,^{1,2}

Abstract

Thymosin alpha1 (Tα1), an endogenous peptide first isolated from the thymus tissue in the mid-1960s, has gained considerable attention for its immunomodulatory activity that led to its applications in diverse pathological conditions, including cancer. Studies in animal models and human trials have demonstrated the immunomodulatory, anti-tumorigenic, and antiviral effects of Tα1, especially in combination with other chemotherapeutic and immunotherapy. For this reason, the administration of low-dose Tα1 has the adjacent role of Tα1 have moved in parallel with the development of novel cancer therapies in a way that Tα1 was integrated to changing paradigms and protocols, and tested for increased efficacy and safety. Cancer immunotherapy has recently experienced a tremendous boost following the development and clinical application of immune checkpoint inhibitors. By unleashing the full potential of the adaptive immune response, these potent induktors were expected to be very effective against tumors, but it soon became clear that a widespread and successful application as not straightforward and shortcomings in efficacy and safety clearly emerged. These results led to the development of novel concepts in immunotherapy and the design of combination protocols to overcome these limitations, thus opening up novel opportunities for Tα1 application. Herein, we summarize in a historical perspective the use of Tα1 in cancer, with particular reference to melanoma, hepatocellular carcinoma and lung cancer. We will discuss the current limitations of checkpoint inhibitors in clinical practice and the researches at the basis of a potential application of Tα1 in combination protocols.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6742685/>

I then showed a **January 2025** published study that found **thymosin alpha 1** not only boosts **immune** functions but also improved **depression** scores by **52%**. Thymosin likely did this by suppressing **inflammatory** processes in the brain that are linked to certain forms of **depression**.⁴¹

I commented that my self-experimentation with **thymosin alpha 1** in late 2024 made me **feel better**, even though I am not depressed. I thought my feeling better might be a placebo effect but then one month later, a published study showed that **thymosin alpha 1** had shown **anti-depressant** effects.

"Indications for an antidepressive effect of thymosin alpha-1 in a small open-label proof of concept study in common variable immune deficiency patients with depression"

In all 5 depressed CVID patients, **depression scores improved by 52%** with **thymosin alpha 1** treatment.

Markers of **immune** function improved.

4 of 5 had **inflammatory** marker (IL-6) level **reduction**.



"This preliminary small study suggests thymosin hormone treatment to have antidepressive and related immune correcting effects. Data urge for larger placebo-controlled trials."

January 2nd, 2025 <https://pmc.ncbi.nlm.nih.gov/articles/PMC11762651/>

Thymosin alpha 1 is a stark example of a drug that should have been studied for treating a wide range of disorders, including immune senescence that impacts all elderly people. Yet bureaucratic barriers continue to deny Americans access to it.³⁷

After 44 years,
most doctors are
unaware that
thymosin alpha-1
has **anti-aging**,
anti-viral and
anti-cancer
effects.



Back page of November 1981 issue of Anti-Aging News

Overcoming Regulatory Barriers

The biosciences are rapidly advancing.

The major obstacles to consumer access are outdated regulations and the inability of many regulators to understand these novel areas of regenerative research.

Major efforts are being made by groups that seek to tear down regulatory barriers that impede or deny Americans access to potential lifesaving therapies.

To review what is being done to persuade the **FDA** to classify “aging as a disease” and other health freedom initiatives log on to: www.age-reversal.net/FDA



To bolster our argument, I presented a slide that contained just a few of the innovations introduced by the **Life Extension** group in earlier decades.⁴²



The encouraging news is that more mainstream researchers are recognizing the need to reform antiquated regulations that are stifling lifesaving biomedical innovations.⁴³

The slide at the top of the next column describes a report published in **The Economist** about regulatory **delays** impeding advances in human **longevity**.

As reported in: The Economist
March 20th 2025

“Dreams of improving the human race are no longer science fiction”

“But the ‘enhancement’ industry is still hobbled by out-of-date regulation”

Longevity Impeded by Regulatory Barriers

The Economist <https://www.economist.com/briefing/2025/03/20/dreams-of-improving-the-human-race-are-no-longer-science-fiction>

Life-Saving Value of Blood Tests

Encouraging data published by the **American Medical Association** revealed the importance of **blood markers** with which most readers of **Life Extension Magazine**[®] are familiar.

A study published in **JAMA** looked at a wide range of data available from comprehensive blood tests.

The findings corroborate the importance of blood tests that most readers of **Life Extension Magazine** have done every year.

The slide below shows reduced death rates are associated with lower levels of **homocysteine**, **C-reactive protein** and other measures identified with **comprehensive** blood tests.^{44,45}

Article in JAMA Blood Tests Predict Human Longevity

May 13, 2024 <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2819335>

23% death reduction with highest adherence to Mediterranean diet:

Reduced **death risks** were associated with:

- ✓ Lower homocysteine, triglycerides (other lipids)
- ✓ Lower C-reactive protein (other inflammatory markers)
- ✓ Lower creatinine (kidney)
- ✓ Lower insulin resistance (diabetic markers)
- ✓ Lower body mass
- ✓ Higher alanine & citrate (mitochondria & protein synthesis)

In earlier years, conventional medicine ignored many of these blood markers and did not test their patients’ blood for them.

Sadly, most medical offices today omit these blood tests that can reveal correctable disease risk markers.

Yet the data is consistent as it relates to markers like **C-reactive protein** that when elevated, sharply increase mortality risks.

High CRP in Women Increases Coronary Heart Disease 223%

August 29, 2025

Data from **Women's Health Study** found over a 30-year period each incremental elevation in C-reactive protein (CRP) increased cardiovascular risks.

Comparing **highest vs lowest CRP** (in women without other risk factors):

Median CRP initial blood levels for **CV disease** group was **2.22 mg/dL** compared to **1.50 mg/dL** of those without.

Women should target CRP **<1.50 mg/dL**. (Men should target **<0.55 mg/dL**).

European Heart Journal | <https://doi.org/10.1093/eurheartj/ehaf658>

69%↑ in ischemic stroke

74%↑ in cardiovascular events

223%↑ in coronary artery disease

Our **Life Extension®** group recommended **C-reactive protein (CRP)** screening in the late **1990s**. But in **2002**, the **American Heart Association** discouraged universal **CRP** screening citing insufficient evidence (in their opinion).

In a major turnaround in September 2025, based on large-scale clinical studies, the **American College of Cardiology Foundation** now recommends **CRP blood tests** as a long-term predictor of cardiovascular outcomes, as prognostic as LDL cholesterol.

We were nearly **30 years ahead** of conventional cardiology in recommending **CRP screening**. This is one example of why staying informed about what is published in the scientific literature, instead of relying on slow-moving conventional dogma, can literally save your life.⁴⁶

The slide below is an example of one of many comprehensive blood test panels that **Life Extension®** offers that include **C-reactive protein (CRP)**.

Phenotypic Blood Tests to Calculate Biological Age:

Complete Blood Count-Chemistry

+ C-reactive protein

+ A1C + Lipids + Fasting Insulin

Commercial Lab: \$720

Age Reversal Project: \$85

+ Phenotypic Age score at no cost



Life Extension® has offered direct-to-consumer blood tests since **1996** at prices substantially lower than commercial labs. Those who utilize these learn of modifiable risk factors that can reduce risks of many degenerative diseases and contribute to our knowledge base.

Huge Money Pouring into Aging Research

I commended the younger wealthy individuals who are pouring huge dollars into research aimed at defeating biological aging and death itself.⁴⁷

March 20th, 2025

The Economist Reports:

► **Bryan Johnson** wants to **live forever**. The goal is not merely to live a few years longer. It is to **vanquish death** entirely.

► Mr Johnson and his fellows, who include **Peter Thiel** and **Elon Musk**, are exploring life extension, brain implants and drugs that enhance mind and body



The Economist Piece: <https://www.economist.com/leaders/2025/03/20/how-to-enhance-humans>

And **Ray Kurzweil's** track record of predicting technological advances, including **super-longevity for humans** who are able to stay alive into the **2030s** era.⁴⁸

As seen in — POPULAR MECHANICS

"...Humans Will Go Backwards in Time Within Just 4 Years"

May 28th, 2025

Ray Kurzweil predicts humans will reach longevity escape velocity **within 4 years**.

If achieved and sustained over time, this could theoretically result in **ageless or biologically immortal humans**.



<https://www.popularmechanics.com/science/a64906457/humans-going-backwards-in-time/>

I presented my annual list of billionaires who died over the past year and my opinion many could be alive had they aggressively supported **aging research** initiatives with their vast fortunes.⁴⁹⁻⁵²

Who missed the longevity boat?



Frederick W. Smith (1944-2025)
Expiration date: June 21, 2025
Net worth > \$5.8 billion

Founder of Federal Express

► Fred Smith founded FedEx in 1971.

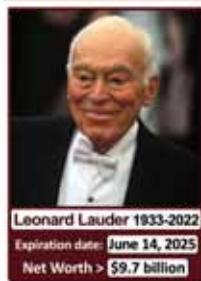
► Acting CEO for 50 years.

► Battled **critics** to turn FedEx into \$90/billion-year enterprise.

Died of Heart Attack at age 80

<https://www.nytimes.com/2025/06/22/obituaries/fred-smith-billionaire-founder-of-fedex-is-dead-at-80.html>

Who missed the longevity boat?



AN HEIR OF ESTEE LAUDER

- Leonard Lauder, eldest son of cosmetic pioneer Estée Lauder. Headed Estée Lauder Companies.
- Philanthropist for cancer/ Alzheimer's research.
- Donated \$1 billion of art to public museum.
- Dead at age 92.

<https://www.cnbc.com/2025/06/15/business/leonard-lauder-dies-estee-lauder>

Home Depot Co-Founder Dies at age 95 on November 5, 2024

Bernie Markus

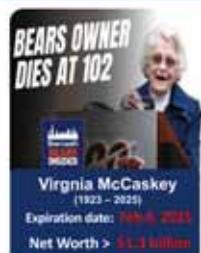
Net Worth: \$7.4 billion

Donated \$2 billion to charities.

Most of his estate donated to charity.



Who missed the longevity boat?



MAJORITY OWNER OF THE CHICAGO BEARS

- Value of Chicago Bears Football team: >\$6 billion
- Typical philanthropic contributions made. None to aging research that are apparent.

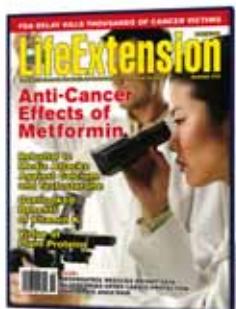
Dead at age 102.

<https://www.nbcchicago.com/news/sports/101/who-owns-the-chicago-bears-after-the-death-of-virginia-mccaskey/>

I then went back to new data on metformin showing its **anti-cancer** effects are even more robust than what we long ago published.⁵³

November 2010

LifeExtension® described metformin's multiple anti-cancer mechanisms 15 years ago.



<https://www.lifeextension.com/magazine/2010/11/the-drug-virtually-everyone-should-ask-their-doctor-about>

The following slides highlight a study showing those stricken with **myeloproliferative disorders** have strikingly *higher* rates of the most common and deadly malignancies.⁵⁴⁻⁵⁸

I then show even more impressive data that those taking **metformin** have sharply *lower* incidences of these **cancer-inducting** myeloproliferative disorders.

In my keynote presentation, there were three major new benefits attributed to **metformin** including:

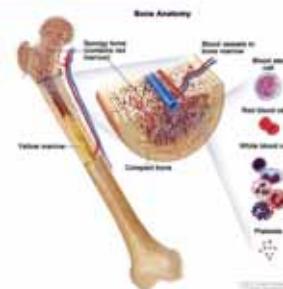
- 1) Reduced risk of **metabolic syndrome** patients advancing to **type 2 diabetes**,⁵⁹
- 2) Lower **dementia** rates in middle-aged monkeys⁶⁰ and
- 3) Sharply lower **myeloproliferative disorders** incidences as can be seen in the three slides below.⁵⁶

Myeloproliferative Disorders

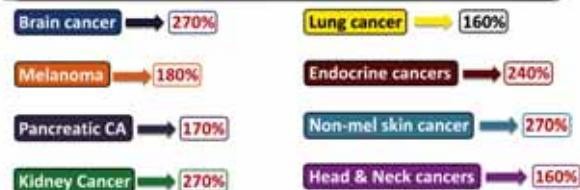
Myeloproliferative neoplasms refers to a clonal, malignant condition (e.g., polycythemia vera, essential thrombocythemia, and primary myelofibrosis).

The term "myeloproliferative neoplasm" comes from the words:

- "myelo" (marrow)
- "proliferative" (rapid production)
- "neoplasm" (new growth).



Myeloproliferative neoplasms can lead to the development of **leukemia**, **lymphoma**, **myeloma** and are associated with **increased risks of**:



Myeloproliferative neoplasms: Risk Factors, Biological Findings, and Targeted Therapeutic Options. International Journal of Molecular Sciences. 2019;20(24):5244. doi:10.3390/ijms20245244. Last updated: 2024-06-20. Myeloproliferative Neoplasms: A Literature Review on Risk, Characteristics, and Outcomes. Mayo Clinic Proceedings. 2017;92(7):1118-1126. doi:10.1016/j.mayocp.2017.03.020. Second Malignancies in Patients With Myeloproliferative Neoplasms: A Population-Based Cohort Study of 9174 Patients. Leukemia. 2018;32(10):2209-2216. doi:10.1038/s41375-018-0187-y. Risk of Solid and Lymphatic Malignancies in Patients With Myeloproliferative Neoplasms: Clinical Implications. Cancers. 2024;16(1):100. doi:10.3390/cancers160100100.

Findings published in journal: **Blood Advances** Aug. 10th, 2024

Metformin associated with reduced risk of myeloproliferative neoplasm

Cumulative metformin use duration	Associated risk reduction
Under 1 year	→ 21% lower risk
1 to 4.99 years	→ 22% lower risk
5 to 9.99 years	→ 58% lower risk
Over 10 years	→ 44% lower risk

<https://ashpublications.org/bloodadvances/article/8/16/4478/516327/Metformin-use-and-risk-of-myeloproliferative>

Perhaps my most important slide of immediate concern was an ostrich with its head stuck in the sand.

I reminded the group that I have been professionally involved with **Life Extension®** for the past 48 years.

I've observed countless lives needlessly lost because of the failure to have comprehensive diagnostics, failure to follow up on reversing/treating what a diagnostic test uncovers, or failure to immediately investigate a suspicious symptom (like a lump that develops anywhere on the body).



Identifying What is Effective Today

There are dozens of treatments available in the United States and/or offshore that may slow and partially reverse degenerative aging processes.

I am often asked if a particular approach, be it plasma exchange, exosomes, gene replacement and others are efficacious.

The answer is that other than anecdotal feedback, no one has solid data to validate what is meaningfully working in the field of human rejuvenation due to the significant challenges associated with conducting anti-aging clinical trials.

A few years ago, I evaluated software that would track individual baseline, treatment, and follow-up that regrettably did not meet our stringent analytic requirements.

It is nonetheless critical that we identify what experimental therapies are yielding real world results.

For individuals considering an experimental regenerative treatment we strongly encourage you to obtain copies of your medical records and diligently track your outcomes.

If you are pursuing an experimental regenerative treatment, a key part of your journey is to become an active record-keeper. Before your treatment, please gather your baseline health data such as blood test results, blood pressure, and other relevant metrics. Afterwards, continue to track these metrics.

Meanwhile, our short-term solution to address the significant knowledge gap surrounding regenerative antiaging therapies is to conduct an observational study that may translate promising results into clinical context.

Vitality in Aging Research Group is currently collecting contact information for future enrollment for a study called *Assessing the Effects of Regenerative Treatments on Biological Aging: An Observational Ambispective Case Series to assess the effects of regenerative anti-aging treatments on biological aging*.

This research will seek to identify and evaluate which intervention, or combination of experimental interventions may be reducing biological aging and yielding regenerative benefits.

Additionally, the study will allow for the collection of real-world safety and efficacy data, paving the way for more informed decision-making and, ultimately, the responsible translation of these therapies.

The study will be open to anyone 50 years of age or older who meets the study eligibility, is willing to complete an informed consent; agrees to provide medical history, medical records and information about their regenerative anti-aging treatments; complete monthly health questionnaires; and provide basic blood work results every six months.

For information on participating in this study go to:

<https://vitalityinaging.org/longitudinal-study/>

Moving Rejuvenation Research Forward

Each year, hundreds of thousands of Americans travel to other countries for treatments not readily available in the U.S.

Others flock to onshore hotels and clinics where doctors administer unconventional therapies.

The life sciences are rapidly advancing, yet bureaucratic red tape is delaying **clinical trials** or denying them altogether.

Our solution is to enable aging Americans to opt out of today's regulatory stranglehold that denies them the opportunity to live more years in good health.

Effective methods may exist today to achieve meaningful biological age-reversal, but these techniques need to be validated in **human** studies. A major impediment is institutional barriers that stifle clinical trials, and therefore biomedical progress.

Every second, a library of knowledge is destroyed as productive humans deteriorate into systemic frailty, dementia, and demise.

A robust slowdown or reversal of **degenerative aging** will improve living standards, the economy, the planet, and most other afflictions we contend with today.

Your ongoing support of organizations fighting back against institutional roadblocks could very well save your life, and the lives of those you care about.

RAADFEST 2026

The first **Revolution Against Aging and Death** (RAADFest) conference was held in **2016**.

Since then, there have been major advances in our understandings of the **mechanisms of aging** and what may be done to circumvent many of them.

This year's **RAADFEST 2026** is being held over the **Labor Day** weekend (Sept 4-6) in Scottsdale, **Arizona**.

Unlike previous years where you might have felt lost in the crowd, the plan for **RAADFEST 2026** is a more intimate 300-500 people gathering with robust information sharing between attendees and speakers.

We want each attendee to gain knowledge of methods to delay biological aging today in order to live long enough to benefit from upcoming biomedical breakthroughs. Here is the schedule:

- **RAADFEST 2026** opens Friday evening (Sept 4) at 6:30 pm with keynote addresses and results from recent studies.
- **Saturday** (Sept 5) is packed with scientific presentations and meal breaks to keep the entire group interacting together.
- **Sunday** (Sept 6) is an informal (optional) day where speakers and attendees can have in-depth discussions with leaders in the longevity field on a wide variety of topics related to conquering aging and death in our lifetimes.

We chose the **Phoenix-Scottsdale** area this year to lower the high hotel cost and other expenses we encountered in Las Vegas and Southern California in previous years.

Early bird registration this year has been reduced to only **\$547**, which includes a healthy free lunch and special discounted hotel rooms.

RAADFEST is sponsored by the non-profit **Coalition for Radical Life Extension**. Your support for this annual event enables physicians, scientists, and the lay public to advance life sciences via robust intrapersonal knowledge exchanges.

To register for RAADFEST 2026 or ask questions, log on to:

www.RAADfest.com or call 480-345-6554.

For longer life,



Bill Faloon, Co-Founder
Life Extension® Group (Est. 1977)
Age Reversal Network (Est. 2017)

To Keep Up-to-Date on Rejuvenation Technologies

If you would like to receive free age reversal updates including advanced notice of clinical projects you might want to participate in, enter your name and email address at:

age-reversal.net/join

To View a Video of my live RAADFEST 2025 Presentation, log on to:

age-reversal.net/video

References

1. Zhu H, Manson JE, Cook NR, et al. Vitamin D(3) and marine omega-3 fatty acids supplementation and leukocyte telomere length: 4-year findings from the VITamin D and OmegA-3 Trial (VITAL) randomized controlled trial. *Am J Clin Nutr.* 2025 Jul;122(1):39-47.
2. Studies DofIRoS. Data on file: Internal Review of Scientific Studies. 2025.
3. Available at: <https://www.statista.com/statistics/1040079/life-expectancy-united-states-all-time/>. Accessed October 2, 2025.
4. Available at: <https://www.cdc.gov/nchs/fastats/life-expectancy.htm>. Accessed October 2, 2025.
5. Available at: <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4829a1.htm>. Accessed October 9, 2025.
6. Berry J, Jr., Malt RA. Appendicitis near its centenary. *Ann Surg.* 1984 Nov;200(5):567-75.
7. MSN. Scientist Predicts Immortality Might Be Possible In The Near Future. *MSN2024*.
8. Journal TWS. The Scientific Fight Over Whether Aging Is a Disease. *The Wall Street Journal* 2025. Accessed October 2, 2025.
9. Post TW. Inside the scientific quest to reverse human aging. *The Washington Post* 2025. Accessed October 2, 2025.

10. Veerman L, Tarp J, Wijaya R, et al. Physical activity and life expectancy: a life-table analysis. *Br J Sports Med.* 2025 Feb 20;59(5):333-8.

11. it M. The Mediterranean diet is the No. 1 diet for 2025: Why it's still so popular among doctors, nutritionists. *Make it2025.*

12. Available at: <https://www.cnbc.com/2025/01/13/the-mediterranean-diet-is-the-no-1-diet-for-2025-why-its-so-popular-.html>. Accessed October 9, 2025.

13. Dove A, Dunk MM, Wang J, et al. Anti-Inflammatory Diet and Dementia in Older Adults With Cardiometabolic Diseases. *JAMA Netw Open.* 2024 Aug 1;7(8):e2427125.

14. Available at: <https://www.cnn.com/2025/01/15/health/red-meat-dementia-wellness>. Accessed October 2, 2025.

15. Li Y, Li Y, Gu X, et al. Long-Term Intake of Red Meat in Relation to Dementia Risk and Cognitive Function in US Adults. *Neurology.* 2025 Feb 11;104(3):e210286.

16. WSJ. Americans in Their 80s and 90s Are Redefining Old Age. 2025. Accessed October 2, 2025.

17. Liang X, Or B, Tsai MF, et al. Prevalence of metabolic syndrome in the United States National Health and Nutrition Examination Survey 2011-18. *Postgrad Med J.* 2023 Aug 22;99(1175):985-92.

18. Shin D, Kongpakpaisarn K, Bohra C. Trends in the prevalence of metabolic syndrome and its components in the United States 2007-2014. *Int J Cardiol.* 2018 May 15;259:216-9.

19. Grundy SM, Stone NJ, Bailey AL, et al. 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *J Am Coll Cardiol.* 2019 Jun 25;73(24):e285-e350.

20. Moore JX, Chaudhary N, Akinyemiju T. Metabolic Syndrome Prevalence by Race/Ethnicity and Sex in the United States, National Health and Nutrition Examination Survey, 1988-2012. *Prev Chronic Dis.* 2017 Mar 16;14:E24.

21. Pasanisi P, Oliverio A, Baldassari I, et al. Metformin Treatment With or Without Mediterranean Diet for the Prevention of Age-Related Diseases in People With Metabolic Syndrome: The MeMeMe Randomized Trial. *Diabetes Care.* 2025 Feb 1;48(2):265-72.

22. Metformin for Prediabetes. *JAMA.* 2017 Mar 21;317(11):1171.

23. United Kingdom Prospective Diabetes Study (UKPDS). 13: Relative efficacy of randomly allocated diet, sulphonylurea, insulin, or metformin in patients with newly diagnosed non-insulin dependent diabetes followed for three years. *BMJ.* 1995 Jan 14;310(6972):83-8.

24. Shadyab AH, Espeland MA, Odegaard AO, et al. Comparative Effectiveness of Metformin Versus Sulfonylureas on Exceptional Longevity in Women With Type 2 Diabetes: Target Trial Emulation. *J Gerontol A Biol Sci Med Sci.* 2025 Jun 10;80(7).

25. Available at: <https://www.lifeextension.com/magazine/2021/9/lethal-delays>. Accessed October 8, 2025.

26. Yang Y, Lu X, Liu N, et al. Metformin decelerates aging clock in male monkeys. *Cell.* 2024 Oct 31;187(22):6358-78 e29.

27. Available at: <https://www.cnn.com/2024/12/13/science/greenland-shark-genome-longevity-study>. Accessed October 2, 2025.

28. Sahm A, Cherkasov A, Liu H, et al. The Greenland shark (Somniosus microcephalus) genome provides insights into extreme longevity. *bioRxiv.* 2024:2024.09.09.611499.

29. Available at: <https://www.lifespan.io/topic/yamanaka-factors/#>. Accessed October 2, 2025.

30. Papp B, Plath K. Reprogramming to pluripotency: stepwise resetting of the epigenetic landscape. *Cell Res.* 2011 Mar;21(3):486-501.

31. Macip CC, Hasan R, Hoznek V, et al. Gene Therapy-Mediated Partial Reprogramming Extends Lifespan and Reverses Age-Related Changes in Aged Mice. *Cell Reprogram.* 2024 Feb;26(1):24-32.

32. Browder KC, Reddy P, Yamamoto M, et al. In vivo partial reprogramming alters age-associated molecular changes during physiological aging in mice. *Nat Aging.* 2022 Mar;2(3):243-53.

33. Available at: <https://www.salk.edu/news-release/cellular-rejuvenation-therapy-safely-reverses-signs-of-aging-in-mice/>. Accessed October 2, 2025.

34. Ben-Akiva E, Karlsson J, Hemmati S, et al. Biodegradable lipophilic polymeric mRNA nanoparticles for ligand-free targeting of splenic dendritic cells for cancer vaccination. *Proc Natl Acad Sci U S A.* 2023 Jun 27;120(26):e2301606120.

35. Available at: <https://www.technologyreview.com/2025/01/17/1110086/openai-has-created-an-ai-model-for-longevity-science/>. Accessed October 2, 2025.

36. Available at: <https://www.dailymail.co.uk/sciencetech/article-11844303/First-anti-aging-pills-hit-shelves-2028-expert-predicts.html>. Accessed October 9, 2025.

37. Available at: https://www.lifeextension.com/magazine/2025/3/life-extension-thymosin-alpha-1-1981?srslid=AfmBOoq98lOIDrFhHT1YtqMgydskl8df_N_DslamK5SyrOtU0AejT0hv. Accessed October 10, 2025.

38. Gallardo MD, Girard M, Portiansky EL, et al. Oct4, Sox2, Klf4, c-Myc (OSKM) gene therapy in the hypothalamus prolongs fertility and ovulation in female rats. *Aging (Albany NY).* 2025 Jan 24;17(1):161-9.

39. Available at: <https://www.cdc.gov/mmwr/volumes/68/wr/mm6826a5.htm>. Accessed October 10, 2025.

40. Costantini C, Bellet MM, Pariano M, et al. A Reappraisal of Thymosin Alpha1 in Cancer Therapy. *Front Oncol.* 2019;9:873.

41. Aynekulu Mersha DG, Fromme SE, van Boven F, et al. Indications for an antidepressive effect of thymosin alpha-1 in a small open-label proof of concept study in common variable immune deficiency patients with depression. *Brain Behav Immun Health.* 2025 Feb;43:100934.

42. Available at: <https://www.lifeextension.com/about/life-extension-story-history>. Accessed October 10, 2025.

43. Available at: <https://www.economist.com/briefing/2025/03/20/dreams-of-improving-the-human-race-are-no-longer-science-fiction>. Accessed October 25, 2025.

44. Ahmad S, Moorthy MV, Lee IM, et al. Mediterranean Diet Adherence and Risk of All-Cause Mortality in Women. *JAMA Netw Open.* 2024 May 1;7(5):e2414322.

45. Ridker PM, Figtree GA, Moorthy MV, et al. C-reactive protein and cardiovascular risk among women with no standard modifiable risk factors: evaluating the 'SMuRF-less but inflamed'. *Eur Heart J.* 2025 Aug 29.

46. Mensah GA, Arnold N, Prabhu SD, et al. Inflammation and Cardiovascular Disease: 2025 ACC Scientific Statement: A Report of the American College of Cardiology. *J Am Coll Cardiol.* 2025 Sep 29;0(0).

47. Available at: <https://www.economist.com/leaders/2025/03/20/how-to-enhance-humans>. Accessed October 10, 2025.

48. Available at: <https://www.popularmechanics.com/science/a64906457-humans-going-backwards-in-time/>. Accessed October 2, 2025.

49. Available at: <https://www.nytimes.com/2025/06/22/obituaries/fred-smith-billionaire-founder-of-fedex-is-dead-at-80.html>. Accessed October 10, 2025.

50. Available at: <https://www.cnn.com/2025/06/15/business/leonard-lauder-dies-estee-lauder>. Accessed October 10, 2025.

51. Available at: <https://www.nbcchicago.com/news/sports/nfl/chicago-bears/who-owns-the-chicago-bears-after-the-death-of-virginia-mc-caskey/3667559/>. Accessed October 10, 2025.

52. Available at: <https://www.npr.org/2024/11/06/1226837379/bernie-marcus-home-depot-obituary>. Accessed October 10, 2025.

53. Available at: <https://www.lifeextension.com/magazine/2010/11/the-drug-virtually-everyone-should-ask-their-doctor-about>. Accessed October 10, 2025.

54. Landtblom AR, Bower H, Andersson TM, et al. Second malignancies in patients with myeloproliferative neoplasms: a population-based cohort study of 9379 patients. *Leukemia.* 2018 Oct;32(10):2203-10.

55. Yogarajah M, Tefferi A. Leukemic Transformation in Myeloproliferative Neoplasms: A Literature Review on Risk, Characteristics, and Outcome. *Mayo Clin Proc.* 2017 Jul;92(7):1118-28.

56. Kristensen DT, Ovilsen AK, Jakobsen LHK, et al. Metformin use and risk of myeloproliferative neoplasms: a Danish population-based case-control study. *Blood Adv.* 2024 Aug 27;8(16):4478-85.

57. Iurlo A, Cattaneo D, Gianelli U. Blast Transformation in Myeloproliferative Neoplasms: Risk Factors, Biological Findings, and Targeted Therapeutic Options. *Int J Mol Sci.* 2019 Apr 13;20(8).

58. Brabrand M, Frederiksen H. Risks of Solid and Lymphoid Malignancies in Patients with Myeloproliferative Neoplasms: Clinical Implications. *Cancers (Basel).* 2020 Oct 20;12(10).

59. Patel D, Ayesha IE, Monson NR, et al. The Effectiveness of Metformin in Diabetes Prevention: A Systematic Review and Meta-Analysis. *Cureus.* 2023 Sep;15(9):e46108.

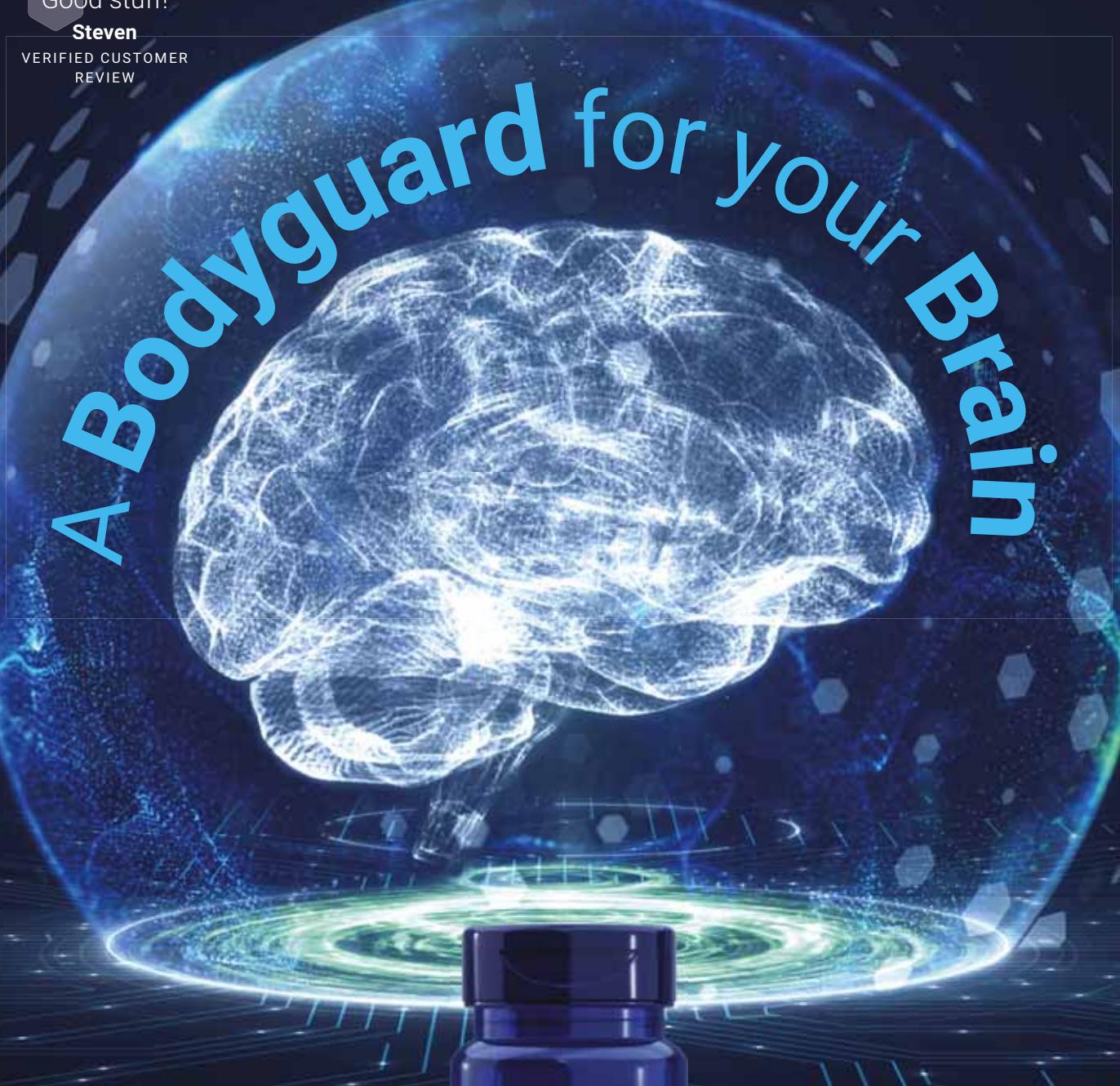
60. Abou Zaki R, El-Osta A. Metformin: decelerates biomarkers of aging clocks. *Signal Transduct Target Ther.* 2024 Nov 13;9(1):319.

"Good stuff!"

Steven

VERIFIED CUSTOMER
REVIEW

A Bodyguard for your Brain



People tend to live longer in areas where lithium is abundant in the drinking water.*

Lithium is a low-cost mineral that functions in several ways to support cognition and overall brain health.

Maintain healthy cognition with lithium—it's like a bodyguard for your brain!



(1000 mcg of lithium per tiny cap)
Item #02403 | 100 vegetarian capsules

1 bottle \$12 | 4 bottles \$10.50 each
Each bottle lasts 100 days.



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

For full product description or to order Lithium,
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.

Brains & BRAWN



Creatine & Acetyl-L-Carnitine Energy Plus promotes healthy **energy** production and supports **exercise performance** and **cognitive function**.

Clinical studies show that:

- 5 grams of creatine increase both workout capacity and lean tissue mass*^{1,2}
- 2 grams of acetyl-L-carnitine support physical and mental energy, as well as cognitive function³

Each scoop of **Creatine & Acetyl-L-Carnitine Energy Plus** provides **5 grams** of **creatine** and **2 grams** of **acetyl-L-carnitine**. This unflavored powder has no added sugars. It can be mixed easily into a smoothie, shake, juice, or water.



Item #02532 | Net Wt. 233 g (0.51 lb)

1 jar \$24.75 | 4 jars \$22 each

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

For full product description and to order **Creatine & Acetyl-L-Carnitine Energy Plus**, call **1-800-544-4440** or visit www.LifeExtension.com

1. *J Int Soc Sports Nutr.* 2017;14(1):18. 2. *Open Access J Sports Med.* 2017;8:213-226. 3. *Curr Opin Gastroenterol.* 2023;39(2):125-128.

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.

DEFEND Against Biological AGING

In a clinical study published in 2025, a standardized extract of the **scarlet beebalm plant** was shown to target **two biomarkers** related to **biological aging**:*

1. Helps slow the pace of epigenetic aging
2. Helps maintain leukocyte telomere length

One vegetarian capsule daily provides 4 mg didymin from standardized **scarlet beebalm**.



Item #02548
30 vegetarian capsules
1 bottle \$16.50
4 bottles \$14.75 each

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

* Geroscience. 2025 Jun;47(3):4253-90.

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.

Probiotic-
Prebiotic
blend for

Liver Health



FLORASSIST® Liver Restore™ contains **7 strains** of beneficial **probiotic** bacteria—plus a supporting **prebiotic**—to provide targeted liver support.

When clinically studied, the **probiotic-prebiotic** blend in **FLORASSIST® Liver Restore™** was found to:

- Support healthy levels of liver enzymes
- Inhibit inflammatory factors to support liver health

Take **2** capsules daily, or as recommended by a health-care practitioner.

For full product description and to order **FLORASSIST® Liver Restore™**, call 1-800-544-4440 or visit www.LifeExtension.com

PXN® is the registered trademark of ADM Protexin Limited. All rights reserved. Contains milk and soybeans.

Item #02402
60 vegetarian capsules
1 box \$15.75
4 boxes \$14 each



Sweet Potatoes

BY LAURIE MATHENA

With sweet potatoes, comfort food meets *superfood*.

Although they are higher in sugar than regular potatoes, sweet potatoes have a unique nutritional profile that helps regulate blood sugar and reduce insulin resistance, making this root vegetable hit the “sweet spot” of healthy and delicious.¹

Two compounds in particular are responsible for these benefits: anthocyanins and fiber.

Anthocyanins are plant pigments that help improve insulin sensitivity, regulate glucose metabolism, and reduce inflammation—all of which can help reduce the risk of type 2 diabetes.¹

Sweet potatoes also contain soluble and insoluble fiber, which helps digestion (insoluble)^{1,2} and modulates blood sugar (soluble fiber).^{2,3}

The most distinctive feature of sweet potatoes—their deep orange color—is an indicator of their high amount of **beta carotene**.¹

One cup (about **200 g**) of cooked, orange-fleshed sweet potato provides more than twice the daily vitamin A needs (as beta-carotene) for both adults and children.⁴ The body converts beta carotene into vitamin A, which is critical for eye health and immune function.⁵

A review of 23 studies determined that eating sweet potatoes positively influenced blood sugar levels, vitamin A status, liver function, iron absorption, and alleviating constipation.⁶

Another review highlighted sweet potatoes’ connection to heart health, with higher consumption tied to improved endothelial function, reduced inflammation, and better blood pressure.⁷

Sweet potatoes are just as versatile as they are *nutritious*. They can be eaten baked or mashed, included in soups and stews, sliced into healthy fries or chips, blended into smoothies, or tossed into a salad.

When possible, eat sweet potatoes with the skin on, as the skin itself provides additional fiber, antioxidants, and micronutrients. •

References

1. Maqsood S, Basher NS, Arshad MT, et al. Anthocyanins From Sweet Potatoes (*Ipomoea batatas*): Bioavailability, Mechanisms of Action, and Therapeutic Potential in Diabetes and Metabolic Disorders. *Food Sci Nutr*. 2025 Sep;13(9):e70895.
2. Amaglo FC, Yada B, Tumuhimbise GA, et al. The Potential of Sweetpotato as a Functional Food in Sub-Saharan Africa and Its Implications for Health: A Review. *Molecules*. 2021 May 17;26(10).
3. Hu L, Wang Z, Feng L, et al. Gut microbiota-modulating potential of sweet potato-derived dietary fiber for type 2 diabetes management. *J Sci Food Agric*. 2025 Nov;105(14):8137-48.
4. Berni P, Chitchumroonchokchai C, Canniatti-Brazaca SG, et al. Comparison of content and in vitro bioaccessibility of provitamin A carotenoids in home cooked and commercially processed orange fleshed sweet potato (*Ipomea batatas* Lam). *Plant Foods Hum Nutr*. 2015 Mar;70(1):1-8.
5. Thirunavukarasu AJ, Ross AC, Gilbert RM. Vitamin A, systemic T-cells, and the eye: Focus on degenerative retinal disease. *Front Nutr*. 2022;9:914457.
6. Qin Y, Naumovski N, Ranadheera CS, et al. Nutrition-related health outcomes of sweet potato (*Ipomoea batatas*) consumption: A systematic review. *Food Bioscience*. 2022 2022/12/01/;50:102208.
7. Islam S. Sweetpotatoes [*Ipomoea batatas* (L.) Lam]: the super food of the Next Century? An intensive review on their potential as a sustainable and versatile food source for future generations. *CyTa Journal of Food*. 2024;22.



Fisetin

The Healthy-Aging Flavonoid

Fisetin, a flavonoid found in strawberries and apples, is currently being studied for its effectiveness as a **senolytic** in humans.¹

Fisetin has low bioavailability due to its breakdown in the small intestines.

Bio-Fisetin® formula solves this problem by enclosing fisetin with fiber from the fenugreek herb.

A human trial showed **bioavailability** of this fisetin compound increased up to **25 times** compared to fisetin* by itself.²

"Good stuff."

Scott

VERIFIED CUSTOMER REVIEW



Item #02414
30 vegetarian capsules
1 bottle \$11.25
4 bottles \$10 each

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

References

1. *EBioMedicine*. 2018 Oct;36:18-28.
2. *J Nutr Sci*. 2022 Sep 9;11:e74.

* Studied against powder fisetin (98% purity)

LIFE EXTENSION
Bio-Fisetin®
Up to 25 Times Greater Bioavailability
30 VEGETARIAN CAPSULES | DIETARY SUPPLEMENT
NON-GMO | GLUTEN FREE

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.

"I like what I see when I look in my mirror!"

Nancy

VERIFIED CUSTOMER REVIEW

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

Revive Hair, Skin, and Nails from Within

For full product description and to order **Hair, Skin & Nails Collagen Plus Formula**, call 1-800-544-4440 or visit www.LifeExtension.com

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

Cynatine® is a registered trademark of Roxlor, LLC. VERISOL® and Bioactive Collagen Peptides® are registered trademarks of GELITA AG.

References

1. *Skin Pharmacol Physiol.* 2014 27(3):113-9.
2. *Vet Rec.* 1984 Dec 22-29;114 (25-26):642-5.
3. *Nutr Today.* 1993;28(4):13-8.



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 elasticity¹
- **Cynatine® HNS Plus**—Provides solubilized keratin, zinc, B vitamins, biotin, and copper
- **Biotin**—Supports nail strength and integrity²
- **Silicon**—For the formation of collagen and keratin molecules³

Item #02322

120 tablets

1 bottle **\$24.75**

4 bottles \$22.50 each





Prenatal Advantage provides vitamins and key nutrients recommended for about-to-become-pregnant, pregnant, and nursing women to optimally support their baby's overall health.

Scientifically formulated **Prenatal Advantage** contains:

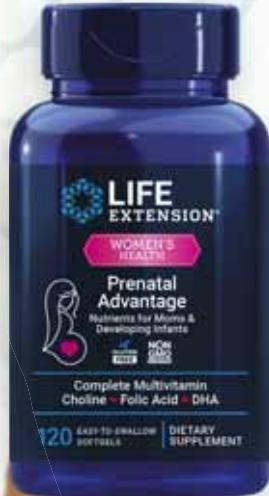
- **Choline** and **DHA** (docosahexaenoic acid) to promote healthy brain and eye development.
- **Folic acid** and its most *biologically active form*, called **5-MTHF**—to support healthy development.
- **Lutien, zeaxanthin**, and other carotenoids for healthy development of the eyes and brain.
- Full spectrum of vitamins and minerals to ensure against deficiencies.

Take **four** softgels daily, in divided doses with meals, or as directed by a healthcare practitioner.

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

A Complete Multivitamin

for Moms and Developing Infants



Item #02319
120 easy-to-swallow softgels
1 bottle \$21
4 bottles \$18 each

Metafolin® is a registered trademark of Merck KGaA, Darmstadt, Germany. L-OptiZinc is a Lonza trademark, registered in USA. SelenoExcel® is a registered trademark of Cypress Systems Inc. TRAACS® is a registered trademark of Albion Laboratories, Inc.

If you are taking a vitamin K antagonist (e.g. warfarin), consult your healthcare practitioner before taking this product.



Healthy Aging Amino Acid



L-ergothioneine, an amino acid found in **mushrooms**, is delivered directly to our cells and mitochondria

Mega L-Ergothioneine provides a powerful dose of highly bioavailable¹ **L-ergothioneine** and may support healthy aging by:

- Promoting plasma ergothioneine levels¹
- Providing sustained ergothioneine levels¹ with **high bioavailability** and efficient absorption
- Supporting overall well-being²
- Offering cellular protection against oxidative stress^{1,3}

Just one daily vegetarian capsule of **Mega L-Ergothioneine** provides a full **25 mg** of **L-ergothioneine**.

This strength provides **25 mg** of **L-ergothioneine** per capsule, which is equivalent to the amount found in approximately **10** to **23** cups of white button mushrooms.³⁻⁵



Item #02540
30 vegetarian capsules
1 bottle **\$28.50**
4 bottles **\$26** each

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

ErgoActive® is a registered mark of Blue California.

1. *Antioxid Redox Signal*. 2017 Feb 10;26(5):193-206.

2. *Food Chem*. 2017 Oct 15;233:429-433.

3. *Biointerface Research in Applied Chemistry*. 2020 08/02;11:8669-85.

4. *FEBS Lett*. 2018 Oct;592(20):3357-66.

5. *Food Chem*. 2017 Oct 15;233:429-33.

ACTIVE LIFESTYLE & FITNESS

- 02545 Active Vitality & Strength
- 02548 Biological Aging Defense
- 01529 Creatine Capsules
- 02543 Creatine Powder
- 02020 Super Carnosine
- 02532 Creatine & Acetyl-L-Carnitine Energy Plus
- 02023 Tart Cherry with CherryPURE®
- 02246C Wellness Code® Advanced Whey Protein Isolate Vanilla
- 02221 Wellness Code® Muscle Strength & Restore Formula
- 02127 Wellness Code® Plant Protein Complete & Amino Acid Complex
- 02261C Wellness Code® Whey Protein Concentrate Chocolate
- 02260 Wellness Code® Whey Protein Concentrate Vanilla
- 02243C Wellness Code® Whey Protein Isolate Chocolate
- 02242 Wellness Code® Whey Protein Isolate Vanilla

AMINO ACIDS

- 00038 Arginine Ornithine Powder
- 01253 Branched Chain Amino Acids
- 01829 Carnosine
- 01671 D,L-Phenylalanine Capsules
- 01624 L-Arginine Caps
- 01532 L-Carnitine
- 00345 L-Glutamine
- 00141 L-Glutamine Powder
- 01678 L-Lysine
- 01827 Taurine
- 00133 Taurine Powder

BLOOD PRESSURE & VASCULAR SUPPORT

- 01824 Advanced Olive Leaf Vascular Support
- 02004 Arterial Protect
- 56885 Natto Activ Cardiovascular & Respiratory Support
- 02320 NitroVasc™ Boost
- 01953 Pomegranate Complete
- 00956 Pomegranate Fruit Extract
- 02024 Triple Action Blood Pressure AM/PM
- 02102 VenoFlow™

BONE HEALTH

- 01726 Bone Restore Calcium Supplement
- 02123 Bone Restore Calcium Supplement Chewable Tablet
- 02416 Bone Restore Elite with Super Potent K2
- 01727 Bone Restore Calcium Supplement w/ Vitamin K2
- 01725 Bone Strength Collagen Formula
- 01963 Calcium Citrate with Vitamin D
- 01506C Dr. Strum's Intensive Bone Formula
- 02417 Mega Vitamin K2
- 01476 Strontium Caps

BRAIN HEALTH

- 01524 Acetyl-L-Carnitine
- 01974 Acetyl-L-Carnitine Arginate
- 02419 B12 Elite
- 02510 Brain Fog Relief
- 01659 CDP Choline
- 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
- 02101 Memory Protect
- 00709 Migra-Eeze™
- 01603 Neuro-Mag® Magnesium L-Threonate Caps
- 02032 Neuro-Mag® Magnesium L-Threonate Powder
- 02520 Neuro-Mag® Magnewum L-Threonate Gummies
- 00888 Optimized Ashwagandha
- 01676 PS (Phosphatidylserine) Caps
- 02406 Quick Brain Nootropic®
- 01327 Vinpocetine

CHOLESTEROL MANAGEMENT

- 01828 Advanced Lipid Control
- 01910 CHOL-Support™
- 01304 Theaflavins Standardized Extract
- 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
- 01706 Extraordinary Enzymes
- 02533 Food Sensitivity Relief with Diamine Oxidase
- 02100 Gastro-Ease™

ENERGY MANAGEMENT

- 01628C Adrenal Energy Formula • 60 veg capsules
- 01630C Adrenal Energy Formula • 120 veg capsules
- 00972 D-Ribose Powder
- 01473 D-Ribose Tablets
- 01900 Energy Renew
- 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™
- 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
- 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 InSea^{2®} and Crominex® 3+
 01620 CoffeeGenic® Green Coffee Extract
 02122 Glycemic Guard™
 00925 Mega Benfotiamine
 01803 Tri Sugar Shield®

HEART HEALTH

02530 Aged Black Garlic
 01066 Aspirin (Enteric Coated)
 01842 BioActive Folate & Vitamin B12 Caps
 02531 Cardio Peak™
 02121 Homocysteine Resist
 02508 Omega-3 Fish Oil Gummy Bites
 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™ • 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

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 veg capsules
 02368 Optimized Broccoli with Myrosinase
 00302 Pregnenolone • 50 mg, 100 capsules
 00700 Pregnenolone • 100 mg, 100 capsules
 01468 Triple Action Cruciferous Vegetable Extract
 01469 Triple Action Cruciferous Vegetable Extract and Resveratrol

IMMUNE SUPPORT

02546 Bee Immune Propolis Capsules
 02550 Bee Immune Propolis Spray
 02302 Bio-Quercetin®
 02433 Echinacea Elite
 01961 Enhanced Zinc Lozenges
 02425 Immune Packs with Vitamin C & D, Zinc and Probiotic
 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 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™
 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
 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)
 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 veg capsules
 01534 N-Acetyl-L-Cysteine
 01884 Silymarin
 02361 SOD Booster

LONGEVITY & WELLNESS

00457 Alpha-Lipoic Acid
 02414 Bio-Fisetin®
 02547 Bio-Luteolin
 01214 Blueberry Extract
 01438 Blueberry Extract and Pomegranate
 02431 Essential Youth - L-Ergothioneine
 02119 GEROPROTECT® Ageless Cell™
 02415 GEROPROTECT® Autophagy Renew
 02401 GEROPROTECT® Stem Cell
 02211 Grapeseed Extract
 02527 Healthy Aging Powder
 00954 Mega Green Tea Extract (decaffeinated)
 00953 Mega Green Tea Extract (lightly caffeinated)
 02540 Mega L-Ergothioneine
 01513 Optimized Fucoidan with Maritech® 926
 02230 Optimized Resveratrol Elite™
 01637 Pycnogenol® French Maritime Pine Bark Extract
 02210 Resveratrol Elite™
 02301 Senolytic Activator®
 01208 Super R-Lipoic Acid
 01919 X-R Shield

LUNG HEALTH

02512 Healthy Lungs

MEN'S HEALTH

02538 Hair Growth for Men
 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
 02252 Youthful Legs

PET CARE

01932 Cat Mix
 01931 Dog Mix

PROBIOTICS

01622 Bifido GI Balance
 02421 FLORASSIST® Daily Bowel Regularity
 02125 FLORASSIST® GI with Phage Technology
 01821 FLORASSIST® Heart Health
 02250 FLORASSIST® Mood Improve
 02208 FLORASSIST® Immune & Nasal Defense
 02120 FLORASSIST® Oral Hygiene
 02203 FLORASSIST® Prebiotic
 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
 02096 Skin Restoring Ceramides
 02528 Vegan Pro Collagen

SLEEP

01512 Bioactive Milk Peptides
 01511 Enhanced Sleep without Melatonin
 02234 Fast-Acting Liquid Melatonin
 01669 Glycine
 02308 Herbal Sleep PM
 01722 L-Tryptophan
 01668 Melatonin • 300 mcg, 100 veg capsules
 01083 Melatonin • 500 mcg, 200 veg capsules
 00329 Melatonin • 1 mg, 60 capsules
 00330 Melatonin • 3 mg, 60 veg capsules
 00331 Melatonin • 10 mg, 60 veg capsules
 00332 Melatonin • 3 mg, 60 veg lozenges
 02201 Melatonin IR/XR
 01787 Melatonin 6 Hour Timed Release
 300 mcg, 100 veg tablets
 01788 Melatonin 6 Hour Timed Release
 750 mcg, 60 veg tablets
 01786 Melatonin 6 Hour Timed Release
 3 mg, 60 veg tabs
 01721 Optimized Tryptophan Plus
 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 veg lozenges****01537 Vitamin B12 Methylcobalamin 5 mg, 60 veg lozenges****02228 Vitamin C and Bio-Quercetin® 60 veg tablets****02227 Vitamin C and Bio-Quercetin® 250 veg 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 veg capsules****02207 AMPK Metabolic Activator****02504 Body Trim and Appetite Control****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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Susan
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#1

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CUSTOMER
REVIEW

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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. Vitamin D supplementation is not recommended for individuals with high blood calcium levels.

† Ratings based on results of the 2024 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com/survey.

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- 7 TIMES THE **VITAMIN C**
- 2 TIMES THE **VITAMIN E**
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IN THIS EDITION OF *LIFE EXTENSION MAGAZINE*®



7 TESTOSTERONE ON THE RISE

Testosterone use among middle-aged men increased by up to **58%** in recent years. Men can restore *youthful* sex hormone balance with or without prescription medications.

20 RESTORE SEX HORMONE BALANCE

In clinical studies, **cacao seed** and **pomegranate** increased **free testosterone** by **48%**. A bioavailable **luteolin** boosted **free testosterone** by **22%** in a separate **human** study.

30 LUTEOLIN BIOAVAILABILITY

A new **luteolin** formulation boosted **absorption** by up to **14 times**.

40 BEE PROPOLIS SUPPORTS IMMUNE DEFENSES

A *standardized* **propolis extract** reduced the risk of upper respiratory infections by **31%**. In another study, a **propolis spray** provided short-term immediate relief.

50 CONFERENCE REPORT: REVOLUTION AGAINST AGING AND DEATH

Research projects *funded* by **Life Extension®** plus other scientific advances demonstrate how far **regenerative** technology has advanced.