



LIFE EXTENSION®

The Science of a Healthier Life®

LifeExtension.com

November 2023

FEATURE ARTICLES

- 7 Major Longevity Discovery
- 20 Keep Your Dog in Peak Condition
- 32 Probiotics Designed for Women
- 44 Taurine Deficit Accelerates Aging
- 56 Arterial Calcification & Bone Loss
- 66 Brain and Body Effects of Lithium

Keep Your Pet HEALTHY LONGER



PLUS:
Soothing Relief
for Dry Eyes

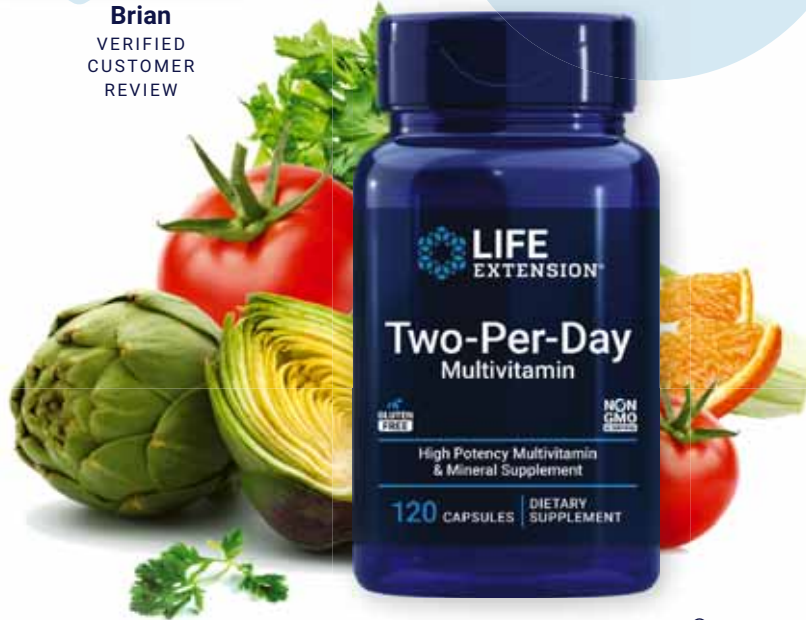
\$5.99US \$5.99CAN 11>

0 71486 01139 2

VOTED #1 MULTIVITAMIN

"Covers all the bases."

Brian
VERIFIED
CUSTOMER
REVIEW



Compare **Two-Per-Day Multivitamin** to the Leading Brand **Centrum®**

The **Two-Per-Day** multinutrient formula is superior to commercial multivitamins because it provides vastly **higher** potencies of **vitamins, minerals and plant extracts.**



#1 Rated
Multivitamins | 10 Time Winner!†

Compared to Centrum® Two-Per-Day Provides:

- 50 TIMES THE VITAMIN B1**
- 25 TIMES THE VITAMIN B6**
- 12 TIMES THE VITAMIN B12**
- 10 TIMES THE BIOTIN**
- 10 TIMES THE SELENIUM**
- 8 TIMES THE VITAMIN C**
- 3 TIMES THE VITAMIN E**
- 2.5 TIMES THE VITAMIN B3**
- 2 TIMES THE VITAMIN D**
- 2 TIMES THE ZINC**

Alpha lipoic acid, quercetin and plant extracts lacking in most commercial multivitamins.



Centrum® Can't Compete

Two-Per-Day Multivitamin Capsules

Item #02314 • 120 capsules (two-month supply)
1 bottle \$19.13 • 4 bottles \$17 each

Two-Per-Day Multivitamin Tablets

Item #02315 • 120 tablets (two-month supply)
1 bottle \$18.38 • 4 bottles \$16.25 each

For full product description and to order
TWO-PER-DAY MULTIVITAMIN,
call **1-800-544-4440** or
visit **www.Life Extension.com**

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 2023 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com/survey.

Crominex® 3+, Capros® and PrimaVie® are patent protected and registered trademarks of Natreon, Inc. Lycored LycoBeads® is a registered trademark of Lycored; Orange, New Jersey. SelenoExcell® is a registered trademark of Cypress Systems Inc. L-OptiZinc® is a Lonza trademark, registered in the USA.

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



REPORTS



Page 20
ON THE COVER

Protect Your Canine Companion

Like people, **dogs** face age-related ailments, from joint pain to behavioral issues. More veterinarians today recommend specific **nutrients** to address dog health.

32 PROBIOTICS JUST FOR WOMEN

A healthy balance of **vaginal flora** can support gynecological health. Two specific **probiotics** provide women with comprehensive gynecological, immune, and digestive support.



44 TAURINE SHOWN TO IMPROVE HEALTHY AGING

Taurine levels drop by as much as **80%** in older people, which may contribute to **rapid aging** and degenerative disorders. Restoring youthful **taurine** blood levels may enable healthier aging.



56 VITAMIN K AND ATHEROSCLEROSIS

Vitamin K helps reduce progression and severity of **atherosclerosis**. In a **10-year** study, adults with *highest* intakes of **vitamin K2** had a **57%** lower risk of death from coronary heart disease.



66 BRAIN AND BODY BENEFITS OF LOW-DOSE LITHIUM

Trace levels of **lithium** in drinking water correlate with enhanced **longevity** and reduced risk of dementia.



DEPARTMENTS

7 DIETARY SUPPLEMENT OF YEAR 2023

A major study published in **Science** in 2023 described **taurine** as a possible “**antiaging intervention**.” A team of researchers demonstrated how this amino acid might stave off degenerative processes. They showed the median **lifespan** of **taurine-supplemented** mice was **10%-12% longer** than unsupplemented mice. Taurine stands out for its affordability, widespread availability, and exciting new pro-longevity data.

13 IN THE NEWS

CoQ10 + selenium improves aging biomarkers; quercetin speeds muscle recovery after exercise; healthier eating lowers mortality risk; EGCG in green tea could target uterine fibroids.



7



13

71 RELIEF FOR DRY EYES

Left untreated, **dry eye syndrome** may cause **permanent eye damage** in severe cases. An extract from **maqui berries** produced a **72% improvement** in dry eye symptoms after 60 days.



71

Stay connected—and save!

Don't miss out on a single sale. Sign up for exclusive savings opportunities and the latest health news.



**Get \$15 Off
+ FREE Shipping**

on your order of \$75+
when you sign up for
emails & texts.

**Text "HEALTH" to 543339 to
sign up for emails & texts.**

By signing up via text, you agree to receive recurring automated text messages with account related notices and information, and promotional offers from Life Extension at the mobile number provided when signing up. Consent is not a condition of any purchase. Reply HELP for help and STOP to cancel. Msg frequency varies. Msg & data rates may apply. See Offer for details. View Terms <https://www.lifeextension.com/legal/legal-notices-01#text> and Privacy <https://www.lifeextension.com/legal/privacy-notice>.

MANAGE 202101



**#1 Rated
Catalog/Internet Merchant
4 Time Winner!***

* Ratings based on results of the 2022
ConsumerLab.com survey of supplement users.
More information at www.ConsumerLab.com/survey.

Editorial

Editor-in-Chief • Philip Smith
Executive Managing Editor • Renee Smith
Medical Editor • Mahwish Aurangzeb, MD, MPH
Senior Editor • Dan Jewel
Senior Staff Writer • Michael Downey
Department Editor • Laurie Mathena
Associate Editor • Rivka Rosenberger, EdD
Creative Director • Robert Vergara, MS
Art Director • Alexandra Maldonado

Chief Medical Officer

Steven Joyal, MD

Chief Scientific Officer

Andrew Swick, MS, PhD

Scientific Advisory Board

Richard Black, DO • John Boik, PhD • Aubrey de Grey, PhD
Deborah F. Harding, MD • Steven B. Harris, MD • Sandra C. Kaufmann, MD
Peter H. Langsjoen, MD, FACC • Dipnarine Maharaj, MD
L. Ray Matthews, MD, FACS • Ralph W. Moss, PhD
Michael D. Ozner, MD, FACC • Xiaoxi Wei, PhD • Jonathan V. Wright, MD

Contributors

Eric Blanco • Michael Downey • Sarah LoBisco, ND, IFMCP
Laurie Mathena • Paul Rankin • Stan Richards

Advertising

Chief Marketing Officer • Rey Searles • rsearles@lifeextension.com
National Advertising Manager • JT Hroncich • 404-347-4170

Senior Director of Sales and Business Development

Carolyn Bouchard • cbouchard@lifeextension.com • 954-202-7685

Circulation & Distribution

Life Extension • 3600 West Commercial Blvd., Ft. Lauderdale, FL 33309
Editorial offices: 954-766-8433 • fax: 954-491-5306

Customer Service: 800-678-8989 • Email: customerservice@LifeExtension.com

Wellness specialists: 800-226-2370 • Email: wellness@LifeExtension.com

Life Extension Magazine® values your opinion and welcomes feedback. Please mail your comments to *Life Extension Magazine*, Attn: Letters to the Editor, PO Box 407198, Fort Lauderdale, FL 33340 or email us: LEMagazine@LifeExtension.com

LIFE EXTENSION (ISSN 1524-198X) Vol. 29, No. 11 ©2023 is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33309-3338. LE Publications, Inc. All rights reserved. Published 13 times a year. Subscription rate: \$40 per year in the United States. US \$47 in Canada. US \$60 in other countries. Mail subscriptions or address changes to: LE Publications, Inc., P.O. Box 407198, Fort Lauderdale, FL 33340-7198, USA. Or phone us toll-free at: 1-800-841-5433. Canada Subscriptions: Publications mail agreement number 40028967. Return undeliverable Canadian addresses to PO Box 503, RPO West Beaver Creek, Richmond Hill, ON L4B4R6. You will be sent your first issue within six weeks after LE Publications, Inc. receives your subscription fee. Periodicals Postage paid at Fort Lauderdale, FL and at additional mailing offices. POSTMASTER: Send address changes to Life Extension, P.O. Box 407198, Ft. Lauderdale, Florida 33340-7198, USA. Printed in USA. The articles in this magazine are intended for informational purposes only. They are not intended to replace the attention or advice of a physician or other health-care professional. Anyone who wishes to embark on any dietary, drug, exercise, or other lifestyle change intended to prevent or treat a specific disease or condition should first consult with and seek clearance from a qualified health-care professional. LEGAL NOTICE: Health claims contained in articles and advertisements in this publication have not been approved by the FDA with the exception of FDA-approved, qualified health claims for calcium, antioxidant vitamins, folic acid and EPA and DHA omega-3 fatty acids, and selenium as noted where applicable. *Life Extension Magazine®* does not endorse any of the businesses or the products and/or services that may appear in advertisements for non-Life Extension branded products or services contained in it, except to state that they are advertisers who may have paid Life Extension for placement of an advertisement in this publication. Life Extension disclaims any and all responsibilities or warranties as to the accuracy of information contained in advertisements for non-Life Extension branded products or services. For Canadian customers send change of address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON L2A 6C7.



Prostate HEALTH

The best way to keep
YOU in the picture.

Ultra Prostate Formula was created to help maintain prostate health. It contains a dozen ingredients to:

- Support healthy urination
- Promote healthy prostate function
- Support healthy prostate cell division

Ultra Prostate Formula is our most comprehensive *standardized*-ingredient prostate-health supplement.

Item #02029

60 softgels

1 bottle **\$29.25**

4 bottles \$27 each



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

AprèsFlex® is a registered trademark of PLT Health Solutions—Laila Nutraceuticals LLC. HMRLignan™ is a trademark used under sublicense from Linnea S.A.
Lyc-O-Mato® is a registered trademark of Lycored Corp. Graminex® is a registered trademark of Graminex LLC.

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.

MEDICAL ADVISORY BOARD

Gustavo Tovar Baez, MD, operates the Life Extension Clinic in Caracas, Venezuela. He is the first physician in Caracas to specialize in anti-aging medicine.

Ricardo Bernales, MD, is a board-certified pediatrician and general practitioner in Chicago, IL, focusing on allergies, bronchial asthma, and immunodeficiency.

Mark S. Bezzek, MD, FACP, FAARM, FAAEM, is board-certified in internal medicine, emergency medicine, and anti-aging/regenerative medicine. He is the director of Med-Link Consulting, which specializes in bioidentical hormone replacement therapy, natural alternatives, anti-aging, and degenerative diseases. He holds U.S. patents for a multivitamin/mineral supplement, an Alzheimer's/dementia compilation, and a diabetic regimen.

Thomas F. Crais, MD, FACS, a board-certified plastic surgeon, was medical director of the microsurgical research and training lab at Southern Baptist Hospital in New Orleans, LA, and currently practices in Sun Valley, ID.

William Davis, MD, is a preventive cardiologist and author of *Wheat Belly: Lose the Wheat, Lose the Weight and Find Your Path Back to Health*. He is also medical director of the online heart disease prevention and reversal program, *Track Your Plaque* (www.trackyourplaque.com).

Martin Dayton, MD, DO, practices at the Sunny Isles Medical Center in North Miami Beach, FL. His focus is on nutrition, aging, chelation therapy, holistic medicine, and oxidative medicine.

John DeLuca, MD, DC, is a 2005 graduate of St. George's University School of Medicine. He completed his internal medicine residency at Monmouth Medical Center in Long Branch, NJ, in 2008 and is board-certified by the American Board of Internal Medicine. Dr. DeLuca is a Diplomate of the American Academy of Anti-Aging Medicine and has obtained certifications in hyperbaric medicine, pain management, nutrition, strength and conditioning, and manipulation under anesthesia.

Sergey A. Dzugan, MD, PhD, was formerly chief of cardiovascular surgery at the Donetsk Regional Medical Center in Donetsk, Ukraine. Dr. Dzugan's current primary interests are anti-aging and biological therapy for cancer, cholesterol, and hormonal disorders.

Patrick M. Fratellone, MD, RH, is the founder and executive medical director of Fratellone Associates. He completed his internal medicine and cardiology fellowship at Lenox Hill Hospital in 1994, before becoming the medical director for the Atkins Center for Complementary Medicine.

Norman R. Gay, MD, is proprietor of the Bahamas Anti-Aging Medical Institute in Nassau, Bahamas. A former member of the Bahamian Parliament, he served as Minister of Health and Minister of Youth and Sports.

Mitchell J. Ghen, DO, PhD, holds a doctorate in holistic health and anti-aging and serves on the faculty of medicine at the Benemerita Universidad Autonoma De Puebla, Mexico, as a professor of cellular hematopoietic studies.

Gary Goldfaden, MD, is a clinical dermatologist and a lifetime member of the American Academy of Dermatology. He is the founder of Academy Dermatology of Hollywood, FL, and COSMESIS Skin Care.

Miguelangelo Gonzalez, MD, is a certified plastic and reconstructive surgeon at the Miguelangelo Plastic Surgery Clinic, Cabo San Lucas.

Richard Heifetz, MD, is a board-certified anesthesiologist in Santa Rosa, CA, specializing in the delivery of anesthesia for office-based, plastic/cosmetic surgery, chelation therapy, and pain management.

Roberto Marasi, MD, is a psychiatrist in Brescia and in Piacenza, Italy. He is involved in anti-aging strategies and weight management.

Maurice D. Marholin, DC, DO, is a licensed chiropractic physician and board-certified osteopathic family physician. While training at the University of Alabama, he completed fellowships in Clinical Nutrition and Behavioral Medicine. He is currently in private practice in Clermont, FL.

Professor Francesco Marotta, MD, PhD, of Montepoleone Medical Center, Milan, Italy, is a gastroenterologist and nutrigenomics expert with extensive international university experience. He is also a consulting professor at the WHO-affiliated Center for Biotech & Traditional Medicine, University of Milano, Italy and honorary resident professor, Nutrition, Texas Women's University. He is the author of more than 130 papers and 400 lectures.

Philip Lee Miller, MD, is founder and medical director of the Los Gatos Longevity Institute in Los Gatos, CA.

Michele G. Morrow, DO, FAAFP, is a board-certified family physician who merges mainstream and alternative medicine using functional medicine concepts, nutrition, and natural approaches.

Filippo Ongaro, MD, is board-certified in anti-aging medicine and has worked for many years as flight surgeon at the European Space Agency. He is a pioneer in functional and anti-aging medicine in Italy where he also works as a journalist and a writer.

Lambert Titus K. Parker, MD, an internist and a board-certified anti-aging physician, practices integrative medicine from a human ecology perspective with emphasis on personalized brain health, biomarkers, genomics and total health optimization. He serves as the Medical Director of Integrative Longevity Institute of Virginia, a 501(c)3 Non-Profit Medical Research Institute. He also collaborates on education and research for Hampton Roads Hyperbaric Therapy.

Ross Pelton, RPh, PhD, CCN, is scientific director for Essential Formulas, Inc.

Patrick Quillin, PhD, RD, CNS, is a clinical nutritionist in Carlsbad, CA, and formerly served as vice president of nutrition for Cancer Treatment Centers of America, where he was a consultant to the National Institutes of Health.

Allan Rashford, MD, graduated from the University of Iowa Medical School. Upon completing medical training, he became chief of medicine at St. Francis Hospital in South Carolina, and he was later named president of the Charleston Medical Society.

Marc R. Rose, MD, practices ophthalmology in Los Angeles, CA, and is president of the Rose Eye Medical Group. He is on the staff of Pacific Alliance Medical Center, Los Angeles, and other area hospitals.

Michael R. Rose, MD, a board-certified ophthalmologist with the Rose Eye Medical Group in Los Angeles, CA, is on the staff of the University of Southern California and UCLA.

Ron Rothenberg, MD, is a full clinical professor at the University of California San Diego School of Medicine and founder of California HealthSpan Institute in San Diego.

Roman Rozencwaig, MD, is a pioneer in research on melatonin and aging. He practices in Montreal, Canada, as research associate at Montreal General Hospital, Department of Medicine, McGill University.

Michael D. Seidman, MD, FACS, is the director of skull base surgery and wellness for the Adventist Health System in Celebration, FL.

Ronald L. Shuler, BS, DDS, CCN, LN, is involved in immunoncology for the prevention and treatment of cancer, human growth hormone secretagogues, and osteoporosis. He is board-certified in anti-aging medicine.



Sandra C. Kaufmann, MD, is a fellowship-trained and board-certified pediatric anesthesiologist as well as the Chief of Anesthesia at the Joe DiMaggio Children's Hospital in Hollywood, Florida. She is the founder of The Kaufmann Anti-Aging Institute and the author of the book *The Kaufmann Protocol: Why we Age and How to Stop it* (2018). Her expertise is in the practical application of anti-aging research.



Richard Black, DO, is a dedicated nuclear medicine physician practicing as an independent contractor out of Cleveland, Ohio. Dr. Black is board-certified in internal medicine and nuclear medicine, and is licensed to practice medicine in multiple states throughout the United States.



John Boik, PhD, is the author of two books on cancer therapy, *Cancer and Natural Medicine* (1996) and *Natural Compounds in Cancer Therapy* (2001). He earned his doctorate at the University of Texas Graduate School of Biomedical Sciences with research at the MD Anderson Cancer Center, focusing on screening models to identify promising new anti-cancer drugs. He conducted his postdoctoral training at Stanford University's Department of Statistics.



Aubrey de Grey, PhD, is a biomedical gerontologist and Editor-in-Chief of *Rejuvenation Research*, the world's highest-impact, peer-reviewed journal focused on intervention in aging. He received his BA and PhD from the University of Cambridge in 1985 and 2000 respectively. Dr. de Grey is a Fellow of both the Gerontological Society of America and the American Aging Association and sits on the editorial and scientific advisory boards of numerous journals and organizations.



Deborah F. Harding, MD, is founder of the Harding Anti-Aging Center. She is double board-certified in internal medicine and sleep disorder medicine. She also earned the Cenegenics certification in age management medicine. She is a faculty member of the University of Central Florida Medical School.



Steven B. Harris, MD, has participated in groundbreaking hypothermia, cryothermia, and ischemia research. His research interests include antioxidant and dietary-restriction effects in animals and humans.



Peter H. Langsjoen, MD, FACC, is a cardiologist specializing in congestive heart failure, primary and statin-induced diastolic dysfunction, and other heart diseases. A leading authority on coenzyme Q10, Dr. Langsjoen has been involved with its clinical application since 1983. He is a founding member of the executive committee of the International Coenzyme Q10 Association, a fellow of the American College of Cardiology, and a member of numerous other medical associations.

Dipnarine Maharaj MD, MB, ChB, FRCP (Glasgow), FRCP (Edinburgh), FRCPATH., FACP, is the Medical Director of the Maharaj Institute of Immune Regenerative Medicine, and is regarded as one of the world's foremost experts on adult stem cells. He received his medical degree in 1978 from the University of Glasgow Medical School, Scotland. He completed his internship and residency in Internal Medicine and Hematology at the University's Royal Infirmary.



L. Ray Matthews, MD, FACS, is a professor of surgery and director of Surgical Critical Care at Morehouse School of Medicine in Atlanta, GA, and a trauma and critical care surgeon at Grady Memorial Hospital. He has published widely and is known as one of the top vitamin D experts. Dr. Matthews has spoken before the U.S. Food and Drug Administration several times, presenting a recent update about clinical research on vitamin D.



Ralph W. Moss, PhD, is the author of books such as *Antioxidants Against Cancer*, *Cancer Therapy*, *Questioning Chemotherapy*, and *The Cancer Industry*, as well as the award-winning PBS documentary *The Cancer War*. Dr. Moss has independently evaluated the claims of various cancer treatments and currently directs The Moss Reports, an updated library of detailed reports on more than 200 varieties of cancer diagnoses.



Michael D. Ozner, MD, FACC, FAHA, is a board-certified cardiologist who specializes in cardiovascular disease prevention. He serves as medical director for the Cardiovascular Prevention Institute of South Florida and is a noted national speaker on heart disease prevention. Dr. Ozner is also author of *Heart Attacks Are Not Worth Dying For*, *The Great American Heart Hoax*, and *The Complete Mediterranean Diet*. For more information visit www.DrOzner.com.



Jonathan V. Wright, MD, is medical director of the Tahoma Clinic in Tukwila, WA. He received his MD from the University of Michigan and has taught natural biochemical medical treatments since 1983. Dr. Wright pioneered the use of bioidentical estrogens and DHEA in daily medical practice. He has authored or co-authored 14 books, selling more than 1.5 million copies.



Xiaoxi Wei, PhD, is a chemist, expert in supramolecular assembly and development of synthetic transmembrane nanopores with distinguished selectivity via biomimetic nanoscience. She has expertise in ion channel function and characterization. She founded X-Therma Inc., a company developing a radical new highway towards non-toxic, hyper-effective antifreeze agents to fight unwanted ice formation in regenerative medicine and reduce mechanical icing.





NEURO-MAG[®]

THE SMART MAGNESIUM

Supports Improvement in
Overall Cognitive Ability*



With age, **synapses** that connect
our brain cells wither.

Formulated by MIT scientists,
Neuro-Mag[®] Magnesium L-Threonate has
been shown to improve **synaptic density** and
other structural components of the brain.



Item #01603 • 90 vegetarian capsules
1 bottle **\$30.75** • 4 bottles \$27.50 each



Item #02032 • 93.35 grams of powder
1 jar **\$30.75** • 4 jars \$27.50 each

For full product description and to order **Neuro-Mag[®] Magnesium L-Threonate** or
Neuro-Mag[®] Magnesium L-Threonate Powder, call 1-800-544-4440 or visit www.LifeExtension.com

* *Gerontology*. 1996;42(3):170-80.

Magtein[®] is a trademark of Magceutics[®], Inc. and is distributed exclusively by AIDP, Inc.
Magtein[®] is protected under a family of US patents, pending patents, and is protected worldwide.

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



Dietary Supplement of Year 2023



WILLIAM FALOON

In most years, no single **nutrient** demonstrates so much **healthy longevity** potential that it deserves a special award.

Our trophy criteria extend beyond the **science** to include:

- **Affordability** (not cost prohibitive)
- **Practicality** (easy to take)
- **Availability** (broad consumer access)

The last time we bestowed a prize was in **2020** when describing how low-dose **lithium** might enable people to live *longer* in better health.

This year, a major study published in the journal *Science* described **taurine** as a possible “**antiaging intervention**.”¹ This study garnered worldwide news attention and revealed the following data:

- **Blood levels** of **taurine** in elderly **humans** are **80% lower** than when they were younger.
- Lower taurine concentrations in **humans** were associated with **age-related** problems.
- Taurine-supplemented monkeys gained less weight and had more bone density.
- The median **lifespan** of **taurine-treated** mice was **10%-12% longer** than unsupplemented mice, and life expectancy at 28 months increased by about **18%-25%**.
- Middle-aged **mice** receiving **taurine** appeared **healthier**. They had less **body fat** and more bone mass than mice not getting **taurine**.

- Middle-aged **mice** also performed better in measures of muscle strength, endurance, coordination, and insulin sensitivity.
- The lifespans of **worms** fed **taurine** were lengthened **10%-23%** compared to those not receiving it.
- **Taurine** concentrations in **mice, monkeys, and worms** plummeted as they grew older.
- Taurine levels in middle-aged **monkeys** (human equivalent about 45-50 years) were **85% lower** than in *younger* monkeys (human equivalent about 12-14 years).

These new data sets, plus decades of experience with **taurine**, motivate me to nominate this consumer-friendly amino acid (taurine) as the best documented dietary supplement for the year **2023**.



I am open to suggestions, but **taurine** fits the award criteria including consistent prior research, new findings that exceed expectations, affordability, and wide availability.

Overall, studies show that taurine is safe and can even improve kidney function.²⁻⁵

Those with **end-stage renal failure**, however, should avoid high-dose taurine because impaired kidney function can cause excess taurine accumulation in the blood.⁶

Vegetarians and **vegans**, on the other hand, should consider **taurine** supplements since meat is the main dietary source.⁷

What startled me was the sharp decline in **taurine** levels that occur in older people (**80% lower** in the elderly) and how this can adversely impact healthy longevity.

The “experts” urge caution regarding taurine supplements until randomized human trials are conducted.

We at **Life Extension** agree, but we are **aging to death** today. My question is: who is going to pay for controlled **human** trials and how **long** will it take to obtain data?

As you’ll read in this month’s issue, **taurine** has been around for a long time, and the **2023** study published in **Science** reveals multiple ways that it might stave off degenerative processes.

For longer life,



Bill Faloon, Co-Founder
Life Extension®

TAURINE

$C_2H_7NO_3S$



References

1. Singh P, Gollapalli K, Mangiola S, et al. Taurine deficiency as a driver of aging. *Science*. 2023 Jun 9;380(6649):eabn9257.
2. Baliou S, Adamaki M, Ioannou P, et al. Ameliorative effect of taurine against diabetes and renal-associated disorders (Review). *Med Int (Lond)*. 2021 May-Jun;1(2):3.
3. Heidari R, Behnamrad S, Khodami Z, et al. The nephroprotective properties of taurine in colistin-treated mice is mediated through the regulation of mitochondrial function and mitigation of oxidative stress. *Biomed Pharmacother*. 2019 Jan;109:103-11.
4. Chesney RW, Han X, Patters AB. Taurine and the renal system. *J Biomed Sci*. 2010 Aug 24;17 Suppl 1(Suppl 1):S4.
5. Premanath M, Mahesh M, Babu M, et al. Can N acetyl cysteine - Taurine provide additional reduction in microalbuminuria in type 2 diabetic patients already on optimum doses of Angiotensin converting enzyme inhibitors?. *International Journal of Health & Allied Sciences*. 2019 2019 October-December//;8:236.
6. Suliman ME, Barany P, Filho JC, et al. Accumulation of taurine in patients with renal failure. *Nephrol Dial Transplant*. 2002 Mar;17(3):528-9.
7. Schaffer S, Kim HW. Effects and Mechanisms of Taurine as a Therapeutic Agent. *Biomol Ther (Seoul)*. 2018 May 1;26(3):225-41.
8. Available at: <https://www.newscientist.com/article/2377645-taurine-supplements-extend-lifespan-and-health-in-old-age-in-mammals/>. Accessed August 11, 2023.
9. Available at: https://www.wsj.com/articles/is-taurine-the-key-to-longer-life-it-made-monkeys-healthier-d26a4cb4?st=mccjs5wn8isx31r&reflink=article_gmail_share. Accessed August 11, 2023.
10. Available at: <https://www.bbc.com/news/health-65810138>. Accessed August 11, 2023.
11. Available at: https://www.nbcrightnow.com/lifestyles/health/nutrient-taurine-might-help-extend-life-animal-studies-show/article_53e7815f-0808-56ad-bdae-cfd0d79c6948.html. Accessed August 11, 2023.
12. Available at: <https://time.com/6285686/taurine-anti-aging-supplement-science/>. Accessed August 11, 2023.
13. Available at: <https://www.sciencenews.org/article/taurine-slows-aging-mice-energy-drinks>. Accessed August 11, 2023.
14. Available at: <https://www.cuimc.columbia.edu/news/taurine-may-be-key-longer-and-healthier-life>. Accessed August 11, 2023.
15. Available at: <https://www.onjcri.org.au/latest-news/molecule-produced-in-bodies-taurine-may-be-key-to-longer-and-healthier-life/>. Accessed August 11, 2023.
16. Available at: <https://www.cnn.com/2023/06/08/health/taurine-longevity-wellness/index.html>. Accessed August 11, 2023.
17. Available at: <https://www.nytimes.com/2023/06/08/health/taurine-supplements-aging.html>. Accessed August 11, 2023.
18. Available at: <https://www.medicalnewstoday.com/articles/taurine-may-be-key-to-a-longer-and-healthier-life>. Accessed August 11, 2023.
19. Available at: <https://www.news-medical.net/news/20230616/Does-taurine-deficiency-speed-up-aging.aspx>. Accessed August 11, 2023.
20. Available at: <https://www.usatoday.com/story/news/health/2023/06/08/taurine-supplement-slows-animal-aging/70293740007/>. Accessed August 11, 2023.
21. Available at: https://www.washingtonpost.com/business/2023/06/08/can-taurine-help-you-live-longer-and-healthier/51885dde-062b-11ee-b74a-5bdd335d4fa2_story.html. Accessed August 11, 2023.
22. Available at: <https://www.prevention.com/health/a44199292/taurine-dietary-supplement-live-longer/>. Accessed August 11, 2023.



Media Coverage of Taurine Study Published in the Journal Science

“Taurine supplements extend lifespan and health in old age”⁸

Source: *New Scientist*- June 8, 2023

“Is taurine the key to longer life? It made monkeys healthier”⁹

Source: *Wall Street Journal*- June 9, 2023

“Taurine may extend life and health, scientists find”¹⁰

Source: BBC- June 8, 2023

“Nutrient Taurine Might Help Extend Life, Animal Studies Show”¹¹

Source: NBC News, June 9, 2023

“Can taurine slow aging? Here’s what the latest science says...”¹²

Source: *Time Magazine*, June 8, 2023

“Taurine slows aging in mice. Will it ever work for people?”¹³

Source: *Science News*, June 8, 2023

“Taurine may be a key to longer and healthier life”¹⁴

Source: Columbia University, June 8, 2023

“A molecule already produced in our bodies, taurine, may be the key to a longer and healthier life”¹⁵

Source: Olivia Newton-John Cancer Research Institute- June 13, 2024

“Is taurine the ‘elixir of life’? Maybe, if you’re a worm, mouse, or monkey”¹⁶

Source: CNN- June 9, 2023

“Can Taurine, Found in Energy Drinks, Slow Down Aging?”¹⁷

Source: *The New York Times*- June 8, 2023

“Taurine may be key to a longer and healthier life”¹⁸

Source: *Medical News Today*- June 13, 2023

“Does taurine deficiency speed up aging?”¹⁹

Source: *News Medical Life Sciences*- June 16, 2023

“Taurine supplement: It can slow aging in animals. But ...”²⁰

Source: *USA Today*- June 8, 2023

“Taurine’s Astounding Anti-Aging Powers Raise New Questions”²¹

Source: *Washington Post*- June 8, 2023

“Study: Taurine May Lead to a Longer, Healthier Life”²²

Source: *Prevention*- June 17, 2023

D EFEND YOUR HEALTH

Vitamin D3

Systemic support for immune
function and bone health.



Item #01713
125 mcg (5000 IU)
60 softgels

1 bottle \$7.50
4 bottles \$6.50 each



"One of my main daily
'go to' supplements."

Lew

VERIFIED CUSTOMER REVIEW

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

For full product description and
to order Vitamin D3,
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.

Feel like a Kid Again

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

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

NAD⁺ Cell Regenerator™ formulas help maintain *youthful* levels of NAD⁺.

NAD⁺ Cell Regenerator™ and Resveratrol Elite™

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

Item #02348 • 30 veg. caps.

*

NAD⁺ Cell Regenerator™

300 mg of nicotinamide riboside per capsule.

Item #02344 • 30 veg. caps.

*



* For pricing available to readers of this magazine, call 1-800-544-4440 or visit LifeExtension.com/NAD

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

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

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

2 WAYS TO SAVE



**PREMIER
REWARDS**

Get 4% Back on Every Purchase
Earn LE Dollars you can use on any Life Extension® product & lab services!

Unlimited Free Shipping
No matter how big or small the order, U.S. shipping is always free.

Exclusive Savings
Get sneak peeks into sales & special pricing.

Premium Content
Exclusive webinars, plus a free subscription to *Life Extension Magazine*®.

Rewards Galore
Earn rewards for taking surveys, plus get rewarded on your birthday month.

Costs \$49.95 a year...Instant \$50 sign-up credit means zero cost to enroll!

LifeExtension.com/YourPremier



**AUTOSHIP
& SAVE**

Save an average of 16% on your supplements!*

Free Shipping
We ship to any address in the United States (including Alaska and Hawaii) regardless of order size.

Lowest Prices
Always pay the lowest price for your favorite Life Extension® products.

Newest Formulations
Always receive the latest version of our innovative formulas.

Complimentary program! Cancel any time
LifeExtension.com/AutoShip

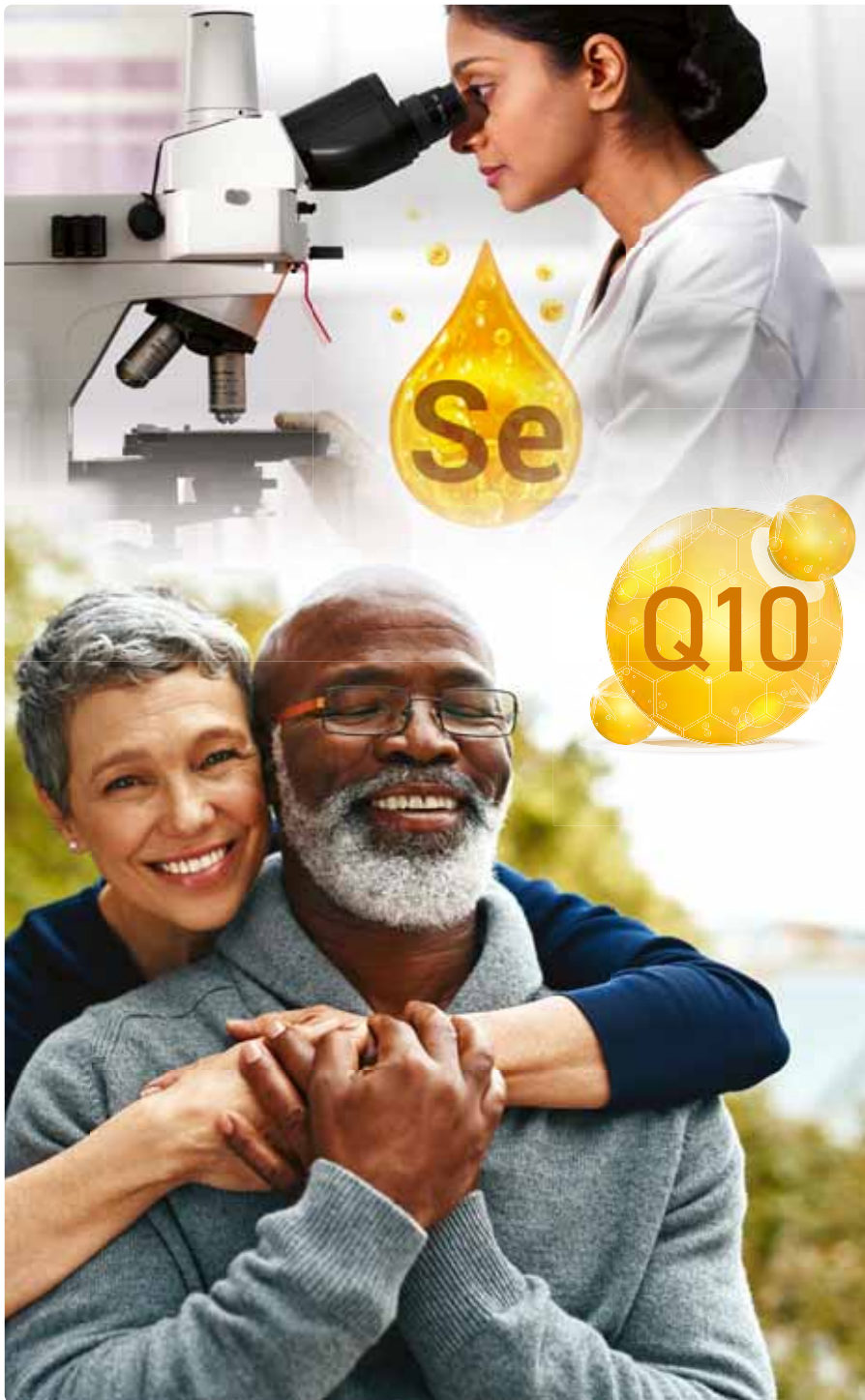
Call 1-855-867-9361
Please use code **REWARDS**

*Average savings based on the average AutoShip discount across all products.



Premier service expires 12 months after date of purchase or renewal and can only be renewed 6 months after Premier purchase or renewal. Includes FREE standard delivery (3 to 5 business days) to any mailing address within the United States, excluding U.S. territories. Discounts on non-standard and international shipping also available. International customers pay \$59.95 for Premier. During checkout, redeem LE Dollars (one is equal to \$1 U.S. Dollar) to purchase products, blood tests, sale items, and shipping fees.

In the News



CoQ10 Plus Selenium Linked to Lower Biomarkers of Aging

People who received the combination **CoQ10** plus **selenium** experienced beneficial changes in biomarkers of **aging**, while the placebo group had unfavorable modifications. These findings were from a sub-study of a previous prospective double-blind placebo controlled randomized clinical trial.*

The trial included 441 older individuals with low selenium levels who received a placebo or **200 mg** per day **CoQ10** plus **200 mcg** per day **selenium** for 48 months. Blood samples were analyzed before and after the treatment period.

At the end of the trial, five aging-associated biomarkers were significantly lower among participants who received **CoQ10** plus **selenium**, and higher in the **placebo** group.

Editor's Note: "Supplementation with selenium/Q10 influenced the analyzed biomarkers in ways indicating an anti-ageing effect," the researchers concluded.

* *Cells*. 2023 Jul; 12(13): 1773.

Quercetin Supports Post-Exercise Muscle Recovery

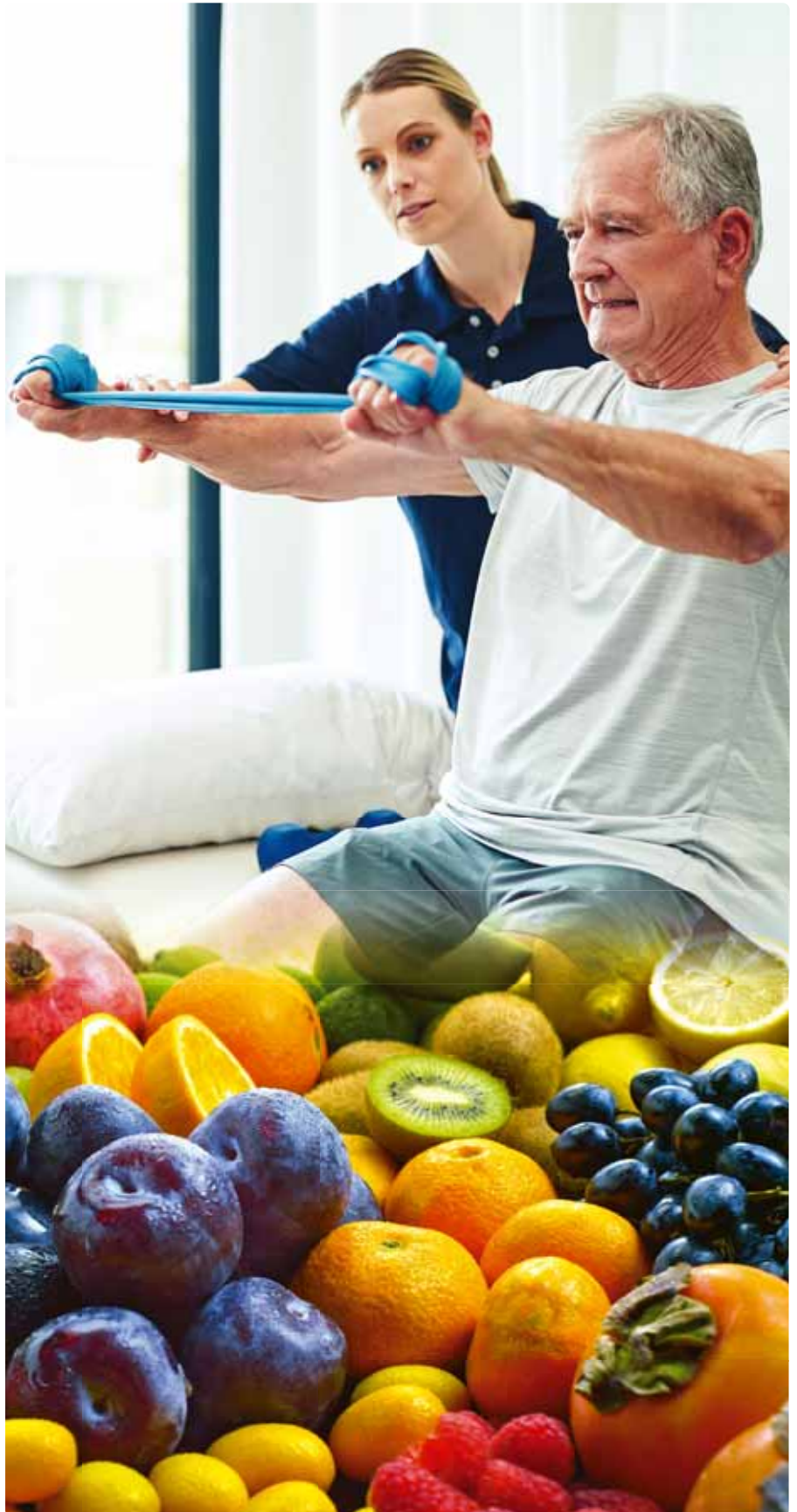
A review and meta-analysis concluded that supplementing with the plant compound quercetin speeds muscle-function recovery and reduces muscle soreness following exercise.*

The researchers selected 13 studies that included 249 sedentary to well-trained participants. The studies compared the effects of quercetin supplementation to a placebo or control when administered prior to an exercise protocol designed to induce muscle damage. All but one study used a supplementation dosage of **1,000 mg** per day.

Among the five studies that assessed muscle function, four studies found significant improvement among groups that received quercetin compared with the control groups. Meta-analysis of the four studies that evaluated muscle soreness revealed a decrease in association with quercetin supplementation.

Editor's Note: Pooled analysis of six studies that measured creatine kinase, a marker of muscle tissue damage, found a significant decrease 24 hours to 48 hours after exercise among participants who received quercetin.

* *Biol Sport*. 2023 Jul;40(3):813-825.





Healthy Eating Lowers Risks of Disease and Mortality

Greater adherence to several healthy eating patterns was associated with a lower risk of disease and mortality, according to an article published in *JAMA Internal Medicine*.*

The participants in the cohort study, with up to 36 years of follow-up, included 44,085 men enrolled in the Health Professionals Follow-up Study, and 75,230 women who took part in the Nurses' Health Study. Their responses to questionnaires were scored for adherence to the **Healthy Eating Index 2015**, **Alternative Mediterranean Diet**, **Healthful Plant-based Diet Index**, and **Alternate Healthy Eating Index**.

Individuals whose adherence scores to these four healthy diets were among the top **20%** of subjects had **19%**, **18%**, **14%**, and **20%** lower risks of mortality, respectively, compared to those whose scores were among the lowest **20%**.

Those with the highest **20%** adherence also had lower risks of cardiovascular disease and cancer mortality.

The inverse associations between these scores and risk of mortality were consistent in different racial and ethnic groups.

Editor's Note: "These findings support the recommendations of Dietary Guidelines for Americans that multiple healthy eating patterns can be adapted to individual food traditions and preferences," the researchers stated.

* *JAMA Intern Med.* 2023 Jan 9.

Green Tea Compound Shows Promise Against Uterine Fibroids, Cell Study Shows

Research findings from a cell study, published in *Scientific Reports* suggest that a compound occurring in green tea may be beneficial against benign fibrous uterine tumors that occur in a significant number of women.*

Scientists probed the mechanism of epigallocatechin gallate (EGCG), a compound in green tea, based on findings of an early phase clinical trial that showed EGCG was effective in reducing fibroid size and associated symptoms.

The investigation utilized lab-grown human fibroid cells that were treated with EGCG. The researchers observed that EGCG disrupted fibroid tumor cell growth, movement, signaling and metabolism, and reduced specific proteins (fibrotic).

When compared with five synthetic inhibitors of fibrosis, EGCG's ability was more effective than three and equal to that of two.

Editor's Note: "These results provide insight into mechanisms behind the observed clinical efficacy of EGCG against uterine fibroids," the researchers concluded.

* *Sci Rep.* 2023 May 25;13(1):8492.



Keep Your Heart Healthy and Your Brain Sharp

Taurine has a range of potential anti-aging benefits, but levels in our body decline over time.



Item #01827
1000 mg
90 vegetarian capsules

1 bottle **\$9.75**
4 bottles \$9 each



Item #00133
300 grams

1 bottle **\$15**
4 bottles \$12.66 each



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

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

Now Recruiting Study Participants —Apply Online!



MKCRSY210702

Participate in a clinical research study today!
Learn more at LifeExtension.com/CL114

Enrolling Now:

STRESS Relief Study

Feeling frazzled? Is
stress keeping you up
at night?

Participants will receive:

- Study product provided at no cost
- Up to **\$275** for your time
- Referral Bonus available: **\$50***

*If you refer someone who completes the study, you will be compensated \$50.

Visit LifeExtension.com/CL114

Who We Are

Life Extension Clinical Research, Inc. is a dedicated research arm of Life Extension. We research innovative dietary supplements and anti-aging regimens for their potential to influence everything from medical treatments to nutritional protocols, disease prevention, diagnostic processes and even genetic studies.

How to Participate

Be the first to potentially benefit from new protocols and supplement formulations by participating in our studies! You can join a clinical research study either at Life Extension's Ft. Lauderdale, FL location or virtually from the comfort of your own home.



Results from Past Studies

Inflammation and Discomfort:

This virtually conducted study found that a marine oil/curcumin combo significantly reduced pain severity, intensity, and total pain scores over the course of 60 days.

Men's Bladder Clinical Study:

This study showed promise for men seeking non-pharmaceutical therapies for frequent, sleep-disrupting nighttime urination.



Life Extension Clinical Research, Inc.

For more information, contact us at LifeExtension.com/CL114 or call us at 1-866-517-4536

B12

B12

B

SMART

Body & Brain

B12

B12

B12

BIOACTIVE FORMS OF VITAMIN B12

Only two **bioactive** coenzyme forms of vitamin B12 can be used directly by the body and brain.

This **B12 Elite** provides both:

ADENOSYLCOBALAMIN

- Active in brain cell mitochondria.
- Preclinical evidence suggests that it may support already healthy levels of dopamine.
- Supports cellular energy production.

METHYLCOBALAMIN

- Supports cognition within brain cells.
- Promotes red blood cell production.
- Helps maintain healthy homocysteine levels.

Dissolve in the mouth or chew one vegetarian lozenge daily.



Item #02419 • 60 vegetarian lozenges

1 bottle \$8.25

4 bottles \$7.50 each



For full product description and to order **B12 Elite**, 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.



Protect Your **CANINE** Companion's Health





BY MICHAEL DOWNEY

About **65 million** American households include at least one canine member.¹

Many dog owners feel their pet is part of the family.

Less known are health benefits that dogs provide to owners, from reduced anxiety to lower blood pressure.²

Dogs have unique nutritional needs that may not be met by commercial foods.

Commercial pet foods do not always provide nutrients that dogs need. Many contain cost-cutting “fillers” that along with inadequate nutrition can trigger health issues.

That’s why more **veterinarians** are recommending a mix of vitamins, minerals, probiotics, and other compounds that address the health concerns of **dogs**.

These nutrients can contribute to a pet’s overall vitality as well as address specific concerns such as behavioral and joint issues.³



Choose the Best Formula

How can you be sure you're giving your dog optimal nutrition beyond providing high-quality food? Simple. Choose a formula that is scientifically **targeted** for specific canine health issues.

Dog supplements fall into four main categories: Overall health, skin and coat, hip and joint structure, as well as stress.

To select an ideal supplement:

- Avoid cheap fillers, such as soy, grain, and gluten,
- Choose clinically validated ingredients,
- Stick with a **science-based** manufacturer known for top-quality products,
- Opt for **human-grade** ingredients,
- Use dosages appropriate for your dog's weight, and
- Select a **chewable** format, since dogs don't like swallowing pills or capsules.



Overall Health

Just like humans, dogs can benefit from a good **multivitamin** with **probiotics**. Most dog multivitamins may leave out vital, but little-known ingredients such as **colostrum** for immunity, **turmeric** for inflammation, and a blend of **probiotics** for digestive health.

VITAMINS AND MINERALS:

Your dog benefits from the “insurance policy” afforded by a **multivitamin**. However, canine nutrient requirements are different from yours.

As opposed to humans, dogs are able to synthesize vitamin C on their own. Fortifying their diet with vitamin C may offer additional health benefits.⁴

Dogs need dietary sources of vitamins A, D, E, B6, B12, niacin, folic acid, and pantothenic acid,⁵ plus the mineral manganese.^{5,6}

COLOSTRUM:

Human trials show that bovine colostrum supports **immunity**, gastrointestinal balance, and microbial infection resistance.⁷

Colostrum is the early milk mothers produce after a baby is born. For puppies it is an important source of key nutrients such as lipids, carbohydrates, immunoglobulins, and growth-promoting factors.⁸

TURMERIC:

Compounds such as **curcumin** have been shown to improve overall health, suppressing inflammation,⁹ supporting brain/heart function, and promoting longevity.¹⁰

PROBIOTICS:

Many dogs get inflammation in the lining of their stomach or intestines which leads to diarrhea and vomiting. This can result from inadequate nutrition and even food sensitivities.

Adding certain **probiotic strains** to the diet may improve canine gut microbiota and immune response:^{11,12}

- *Lactobacillus acidophilus*,
- *Bifidobacterium bifidum*,
- *Lactobacillus casei*,
- *Lactobacillus fermentum*,
- *Lactobacillus reuteri*, and
- *Lactobacillus plantarum*.



WHAT
YOU
NEED
TO
KNOW



Skin and Coat

A dog's skin and coat are good indicators of its health. A healthy and groomed coat is shiny and smooth, and healthy, well-nourished skin is supple and clear.

Dogs can suffer greatly due to **dry, itchy skin** and patchy fur. The most common cause is allergies.¹³

Fish oil rich in omega-3 fatty acids may help *prevent* these conditions. It delivers an anti-inflammatory effect in dogs.¹⁴

In studies on dogs, **omega-3 intake** resulted in:

- Reduced itchiness,¹⁴
- Less fur loss,¹⁴
- Improved coat character,¹⁴ and
- Overall improvement in skin and coat health.¹⁵

A systematic review of animal studies found that use of **omega-3** fatty acids had therapeutic effects on canine allergic dermatitis, haircoat disorder, and also canine and feline osteoarthritis (among the other benefits).¹⁶

Optimal Canine Care

- **Dogs** can develop joint pain, itchy skin, lackluster coats, stress, diseases, and anxiety-driven behaviors, often as a result of poor nutrition.
- A **multivitamin with probiotics**, designed *specifically* for canines, based on scientific research, can help promote overall health and longevity.
- Additional ingredients may help protect your dog against specific health concerns, including joint degeneration, dry skin and patchy fur, and stress.
- Since dogs don't like tablets or capsules, the best way to deliver vital nutrients is in a **chewable** form.

Hip and Joint Health

Osteoarthritis is chronic, painful, degenerative inflammation of the joints commonly experienced by aging dogs, affecting mobility, and impacting quality of life.

As with most chronic conditions, long-term management of the disease can be challenging for the owners and dogs.^{18,19} Climbing into the car becomes difficult. Your dog may start holding up one limb or holding it oddly and may seem less inclined to run or jump.

Canine joint issues primarily stem from developmental or degenerative problems. Developmental problems include hip or elbow **dysplasia**, when joints don't develop correctly. Degenerative problems include **arthritis**.¹⁷

The following nutrients may help prevent or improve hip and joint problems, decreasing joint pain, swelling, and immobility.

PALMITOYLETHANOLAMIDE (PEA):

Produced by the body, **PEA** supports healthy inflammatory response and has pain-relieving properties.²⁰

In human trials, PEA was shown to reduce pain associated with chronic conditions such as arthritis, migraine headache, carpal tunnel syndrome, and other types of nerve and joint pain.²¹

One human study showed that it reduced temporomandibular-related joint pain (in and around the jaw) **more than ibuprofen**.²⁰

GLUCOSAMINE:

Glucosamine inhibits inflammation, potentially improving joint discomfort.²² It is used in humans, dogs, and other animals to manage damage caused by arthritis. In canines it supports joint wear and pain.

In a review of 16 clinical trials on treatment options of osteoarthritis in **dogs** it was found that preparations containing glucosamine provided a moderate level of comfort.¹⁹

METHYLSULFONYLMETHANE (MSM):

MSM exerts anti-inflammatory effects, which help mitigate joint discomfort, inflammation, and physical function.²³

A clinical trial of humans with osteoarthritis of the knee joint demonstrated improvement in pain and physical function after 12-week supplementation with MSM.²⁴

In veterinary practice MSM is used most often in dogs and horses for its anti-inflammatory and antioxidant properties for conditions such as arthritis.²⁵

Stress and Behavior Problems

Like humans, dogs can experience **anxiety** disorders and behavioral issues (separation anxiety, anxiety on visit to vet, or car ride).

Without intervention, dogs can develop aggressiveness, drooling, excessive barking, panting, trembling, growling, destructive behaviors, pacing, and compulsive actions.²⁶

Two nutrients may help manage canine fear, anxiety, and **stress** problems.²⁷

L-THEANINE:

Found in green tea, **L-theanine** acts on the central nervous system and inhibits the excitatory neurotransmitter **glutamate**, decreasing stress and anxiety.²⁸

Supplementation with L-theanine may help your furry friends deal with their **anxiety** and stress.

MELATONIN:

A narrative review of studies showed that melatonin promotes faster, longer, higher-quality **sleep**.²⁹ Veterinary handbooks mention **melatonin** as beneficial for sleep, **phobias**, and separation anxiety management.³⁰ Melatonin appears to act on the central nervous system to reduce anxiety.³¹ In other words, melatonin will take the edge off your dog's stress.

A targeted combination of beneficial compounds, vitamins, probiotics, and other nutrients can help keep your canine companion healthy and happy.

Summary

Like people, **dogs** are at risk for many ailments, from joint pain to behavioral problems.

Most dogs are missing out on key nutrients necessary to keep degenerative conditions, pain, and diseases at bay.

The best solution is to give your dog high-quality vitamins, probiotics, and other health-promoting compounds scientifically targeted for **canine health** issues. •

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

Scientists Have Embarked on Dog Longevity Study³²

Researchers are tracking genetic, metabolic, and microbiotic factors in **tens of thousands of dogs** in a massive bid to learn more about **aging**—both for the dogs and for us.³³

The **Dog Aging Project** may reveal secrets about healthy canine **longevity**. It could also generate insights into human longevity.³³

Among the specific aims for the project are to identify **biomarkers** of canine aging. The project team hopes to better understand the mechanisms by which genetic, environmental, and lifestyle variation influence aging.

Studying **dogs** could greatly boost our understanding of **human** aging. Their lifespans are shorter than ours. And instead of living in a cold and sterile lab, they largely share our lifestyle, environment, and daily routines.³⁴

Owners track their dogs' diet, exercise, and other factors **at home**. They periodically fill out surveys and take measurements of their dogs for the duration of the **multi-year project**.

The dogs periodically have blood drawn to investigate factors relating to their genes, molecules, microbiome, and other biological factors. Some owners may be asked to collect cheek swabs for **DNA** sampling.

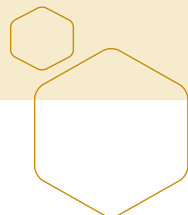
Over a **dozen** research institutions have partnered to enroll companion dogs for the project, which is expected to run for at least **10 years**.³³ Initiated in 2018, the ongoing **Dog Aging Project** is well short of its goal of **60,000 dogs**.

The researchers are still actively seeking canines of *all* breeds, sizes, ages, and U.S. locations—as well as **donations** of funds that could ultimately determine the number and full extent of the data sets investigated and analyzed.

Because the **Dog Aging Project** is an open data study, scientists around the world will have access to the vast amounts of data generated. The implications for human longevity could be substantial.³⁵

For more information on the **Dog Aging Project**, enrolling your dog, or making a tax-deductible charitable donation, visit:

<https://dogagingproject.org/>



References

1. Available at: <https://www.statista.com/statistics/198095/pets-in-the-united-states-by-type-in-2008/>. Accessed August 8, 2023.
2. Available at: https://www.cdc.gov/healthypets/keeping-pets-and-people-healthy/how.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fhealthypets%2Fhealth-benefits%2Findex.html. Accessed August 17, 2023.
3. Practice TsV. Surveying Supplements: Current Trends, Research, & Recommendations. Vol 20232014.
4. Available at: <https://www.whole-dog-journal.com/food/benefits-of-vitamin-c-to-your-dog/>. Accessed August 18, 2023.
5. Available at: https://sparck.nationalacademies.org/vivisimo/cgi-bin/query-meta?query=YOUR+DOG%E2%80%99S+NUTRITIONAL+N EEDS&v%3Aproject=uweb_proj_ext. Accessed August 18, 2023.
6. Rosendahl S, Anturaniemi J, Vuori KA, et al. Diet and dog characteristics affect major and trace elements in hair and blood of healthy dogs. *Vet Res Commun*. 2022 Feb;46(1):261-75.
7. Mehra R, Garhwal R, Sangwan K, et al. Insights into the Research Trends on Bovine Colostrum: Beneficial Health Perspectives with Special Reference to Manufacturing of Functional Foods and Feed Supplements. *Nutrients*. 2022 Feb 4;14(3).
8. Rossi L, Lumbreras AEV, Vagni S, et al. Nutritional and Functional Properties of Colostrum in Puppies and Kittens. *Animals (Basel)*. 2021 Nov 15;11(11).
9. Finno CJ. Veterinary Pet Supplements and Nutraceuticals. *Nutr Today*. 2020 Mar-Apr;55(2):97-101.
10. Fuloria S, Mehta J, Chandel A, et al. A Comprehensive Review on the Therapeutic Potential of Curcuma longa Linn. in Relation to its Major Active Constituent Curcumin. *Front Pharmacol*. 2022;13:820806.
11. Jang HJ, Son S, Kim JA, et al. Characterization and Functional Test of Canine Probiotics. *Front Microbiol*. 2021;12:625562.
12. Grzeskowiak L, Endo A, Beasley S, et al. Microbiota and probiotics in canine and feline welfare. *Anaerobe*. 2015 Aug;34:14-23.
13. Available at: <https://veterinarypartner.vin.com/default.aspx?pid=19239&id=4951973>. Accessed August 16, 2023.
14. Logas D, Kunkle GA. Double-blinded Crossover Study with Marine Oil Supplementation Containing High-dose icosapentaenoic Acid for the Treatment of Canine Pruritic Skin Disease. *Vet Dermatol*. 1994 Sep;5(3):99-104.
15. Combarros D, Castilla-Castano E, Lecru LA, et al. A prospective, randomized, double blind, placebo-controlled evaluation of the effects of an n-3 essential fatty acids supplement (Agepi(R) omega3) on clinical signs, and fatty acid concentrations in the erythrocyte membrane, hair shafts and skin surface of dogs with poor quality coats. *Prostaglandins Leukot Essent Fatty Acids*. 2020 Aug;159:102140.
16. Magalhaes TR, Lourenco AL, Gregorio H, et al. Therapeutic Effect of EPA/DHA Supplementation in Neoplastic and Non-neoplastic Companion Animal Diseases: A Systematic Review. *In Vivo*. 2021 May-Jun;35(3):1419-36.
17. Available at: <https://www.webmd.com/pets/dogs/features/dog-joint-health-pain-osteoarthritis-and-other-joint-problems>. Accessed August 9, 2023.
18. Comblain F, Serisier S, Barthelemy N, et al. Review of dietary supplements for the management of osteoarthritis in dogs in studies from 2004 to 2014. *J Vet Pharmacol Ther*. 2016 Feb;39(1):1-15.
19. Aragon CL, Hofmeister EH, Budsberg SC. Systematic review of clinical trials of treatments for osteoarthritis in dogs. *J Am Vet Med Assoc*. 2007 Feb 15;230(4):514-21.
20. Marini I, Bartolucci ML, Bortolotti F, et al. Palmitoylethanolamide versus a nonsteroidal anti-inflammatory drug in the treatment of temporomandibular joint inflammatory pain. *J Orofac Pain*. 2012 Spring;26(2):99-104.
21. Lang-Ilievich K, Klivinyi C, Lasser C, et al. Palmitoylethanolamide in the Treatment of Chronic Pain: A Systematic Review and Meta-Analysis of Double-Blind Randomized Controlled Trials. *Nutrients*. 2023 Mar 10;15(6).
22. Al-Saadi HM, Pang K-L, Ima-Nirwana S, et al. Multifaceted Protective Role of Glucosamine against Osteoarthritis: Review of Its Molecular Mechanisms. *Scientia Pharmaceutica*. 2019;87(4):34.
23. Butawan M, Benjamin RL, Bloomer RJ. Methylsulfonylmethane: Applications and Safety of a Novel Dietary Supplement. *Nutrients*. 2017 Mar 16;9(3).
24. Debbi EM, Agar G, Fichman G, et al. Efficacy of methylsulfonylmethane supplementation on osteoarthritis of the knee: a randomized controlled study. *BMC Complement Altern Med*. 2011 Jun 27;11:50.
25. Available at: <https://veterinarypartner.vin.com/default.aspx?pid=19239&id=4951467>. Accessed August 16, 2023.
26. Available at: <https://veterinarypartner.vin.com/default.aspx?pid=19239&id=10438238>. Accessed August 16, 2023.
27. Available at: <https://veterinarypartner.vin.com/default.aspx?pid=19239&id=10160693>. Accessed August 16, 2023.
28. Wang L, Brennan M, Li S, et al. How does the tea L-theanine buffer stress and anxiety. *Food Science and Human Wellness*. 2022 2022/05/01;11(3):467-75.
29. Xie Z, Chen F, Li WA, et al. A review of sleep disorders and melatonin. *Neurol Res*. 2017 Jun;39(6):559-65.
30. Cavanagh K. Plumb's Veterinary Drug Handbook. Pocket — 7th edition. *Can Vet J*. 2012 Dec;53(12):1284.
31. Hansen MV, Halladin NL, Rosenberg J, et al. Melatonin for pre- and postoperative anxiety in adults. *Cochrane Database Syst Rev*. 2015 Apr 9;2015(4):CD009861.
32. Available at: <https://dogagingproject.org/about-project/>. Accessed August 16, 2023.
33. Available at: <https://www.nia.nih.gov/research/dab/dog-aging-project>. Accessed August 16, 2023.
34. Available at: <https://dogagingproject.org/dogs-are-sciences-best-friend/>. Accessed August 16, 2023.
35. Available at: <https://dogagingproject.zendesk.com/hc/en-us/articles/360057966833-Are-your-scientific-protocols-available-for-review->. Accessed August 16, 2023.



Re-Energize Heart and Brain Cells

"My gift to my heart."

Donna

VERIFIED CUSTOMER
REVIEW

**Three Choices of
Superior
Ubiquinol CoQ10
Mitochondrial
Delivery System**



100 mg CoQ10

Item #01426 • 100 mg, 60 softgels

1 bottle **\$47.25**

4 bottles \$40 each



200 mg CoQ10

Item #01431 • 200 mg, 30 softgels

1 bottle **\$45**

4 bottles \$38.50 each



100 mg CoQ10 + 10 mg PQQ

Item #01733 • 100 mg, 30 softgels

1 bottle **\$38.25**

4 bottles \$31 each

#1 Rated CoQ10 Products - 5 Time Winner!*



For full product description and to order **Super Ubiquinol CoQ10 with Enhanced Mitochondrial Support™**, or **Super Ubiquinol CoQ10 with PQQ**, call 1-800-544-4440 or visit www.LifeExtension.com

PrimaVie® is a registered trademark of Natreon, Inc. Q+®, Kaneka Ubiquinol™, and the quality seal™ are registered or pending trademarks of Kaneka Corp.

*2023 Consumer Satisfaction, Rated #1 Catalog/Internet Merchant. Ratings based on results of the 2023 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com/survey.



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

different IS good



Quercetin

For immune support and more

Bio-Quercetin is encased in a **phytosome** that makes it 50 times more **absorbable** than standard quercetin supplements.

Ultra-absorbable, once-daily Bio-Quercetin.

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

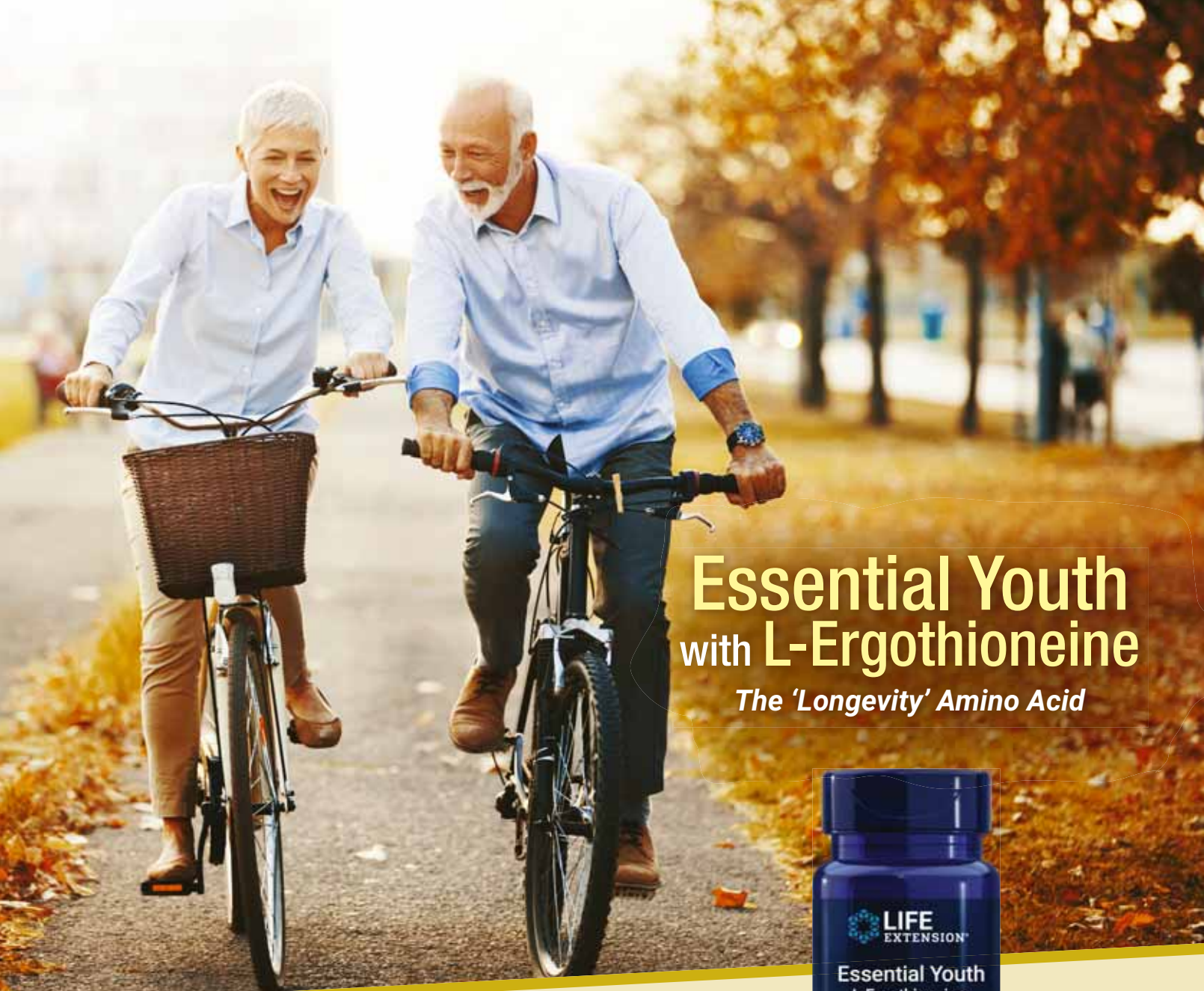


Item #02302 • 30 vegetarian capsules

1 bottle \$9 | 4 bottles \$8 each



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



Essential Youth with L-Ergothioneine

The 'Longevity' Amino Acid



L-ergothioneine is an amino acid found in **mushrooms**.

Cell-based studies suggest that **L-ergothioneine** may support healthy longevity by:

- Protecting **mitochondrial DNA** function¹
- Delaying **telomere** shortening²
- Supporting **DNA function** in cells subjected to UV exposure³

One daily capsule of **Essential Youth** provides **5 mg** of **L-ergothioneine**.

One daily capsule provides as much **L-ergothioneine** as 2 to 5 cups of white button mushrooms.^{4,5}

References

1. *Cell Death Differ.* 2010 Jul;17(7):1134-40.
2. *J Diet Suppl.* 2020 Dec 7:1-14.
3. *Free Radic Biol Med.* 2009 Apr 15;46(8):1168-76.
4. *FEBS Lett.* 2018 Oct;592(20):3357-66.
5. *Food Chem.* 2017 Oct 15;233:429-33.

Item #02431
30 vegetarian capsules
1 bottle **\$19.50**
4 bottles \$17.50 each



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

ErgoActive® is a registered mark of Blue California.

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.

Low-Cost
Biologically
Active

B

COMPLEX

Enzymatically Active Vitamins

BioActive Complete B-Complex provides *enzymatically active forms* of meaningful potencies of each B vitamin.

This includes the *pyridoxal 5'-phosphate* form of vitamin B6 shown to protect lipids and proteins against **glycation** and the most biologically active form of **folate** called **5-methyltetrahydrofolate (5-MTHF)**, which is up to **7 times more** bioavailable than folic acid.*

Item #01945 • 60 vegetarian capsules

1 bottle \$9 • 4 bottles \$8 each

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

Caution: Temporary flushing, itching, rash, or gastric disturbances may occur.



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

Fur Ever Healthy



NO
ARTIFICIAL
COLORS

NO
ARTIFICIAL
FLAVORS

MANUFACTURED
IN THE
USA

Introducing Life Extension® DOG

We've been passionate about health for over 40 years. We're now proud to offer soft chews for dogs, made with the same quality and attention to detail as all our supplements.

Multivitamin & Probiotics

Vitamins,¹ manganese,² colostrum,³ turmeric,¹ and 6 probiotics^{1,4,5} in this **chicken-flavored** soft chew supplement helps support a dog's overall health and diverse microbiome.



Item #02524 • 90 soft chews
Food Supplement
1 jar \$29.25 | 4 jars \$27.50 each

Stress & Behavior

L-theanine¹ and melatonin¹ in this **bacon-flavored** soft chew supplement helps promote calmness and relaxation so your dog can keep an even keel.



Item #02525 • 120 soft chews
Health Supplement
1 jar \$31.50 | 4 jars \$28.50 each

Hip & Joints

In human and animal studies PEA,⁹ glucosamine,^{1,10} and MSM¹ supplementation have been shown to promote healthy, comfortable joints. This **beef-flavored** soft chew supplement is just what your dog needs to keep moving comfortably.



Item #02523 • 90 soft chews
Health Supplement
1 jar \$36 | 4 jars \$34 each

Skin & Coat

This **salmon-flavored** soft chew supplement contains **omega-3**-rich fish oil for healthy coat and skin. This has been shown in clinical studies to help promote skin and coat health for dogs with sensitive skin⁹ and to maintain a healthy coat.⁶⁻⁸



Item #02522 • 90 soft chews
Food Supplement
1 jar \$29.25 | 4 jars \$27.50 each

For full product description and to order **Life Extension® DOG**, call **1-800-544-4440** or visit **www.LifeExtension.com/PetCare**

References

1. *Practice TsV*. Surveying Supplements: Current Trends, Research, & Recommendations. Vol 20232014.
2. *Vet Res Commun*. 2022 2;46(1):261-75.
3. *Nutrients*. 2022 2 4;14(3):659
4. *Anaerobe*. 2015 8;34:14-23.

5. *Front Microbiol*. 2021;12:625562.
6. *Vet Dermatol*. 1994 9;5(3):99-104.
7. *Prostaglandins Leukot Essent Fatty Acids*. 2020 8;159:102140.
8. *In Vivo*. 2021 5-6;35(3):1419-36.
9. *Nutrients*. 2023, 15(6), 1350;
10. *J Am Vet Med Assoc*. 2007 2 15;230(4):514-21.



PROBIOTICS

Just for Women





SARAH LOBISCO, ND, IFMCP

A healthy balance of **vaginal flora** can support gynecological health.¹⁻³

Unhealthy flora, on the other hand, can increase risk of **vaginal** bacterial, yeast and sexually transmitted infections and may influence fertility outcomes.²

Approximately **29%** of U.S. girls and women aged 14–49 suffer from **bacterial vaginosis** (imbalance of good and harmful bacteria in the vagina).²

Researchers have identified two specific **strains of probiotics** that can help improve vaginal health.

One strain *helps* balance the **vaginal microbiome** by out-populating the unhealthy microorganisms that can cause **infections** and discomfort.³⁻⁶

A second strain has been found to reduce common gastrointestinal disturbances, enhance immune function, and defend against various infectious agents.⁷⁻¹⁰

Together, these two **probiotics** can help support women's vaginal, gastrointestinal, and immune health.

The Importance of Vaginal Microbe Balance

A healthy vaginal microbiome is characterized by the dominance of *Lactobacillus* species.³ These bacteria produce **lactic acid**, which *reduces* pathogen invasion, blocks the spread of harmful organisms, and assists with a well-balanced vaginal environment and microbiome.¹⁻³

When there is a *decrease* in *Lactobacillus* species in the vagina, harmful pathogens can outnumber healthy microflora. This is known as **vaginal dysbiosis**, and it can lead to **yeast infections, bacterial infections**, increased risk for sexually transmitted infections, and fertility problems.^{2,3}

Women of all ages can suffer from **bacterial vaginosis**. Many women will have no symptoms with this condition, but those who do could experience abnormal vaginal discharge, “fishy” odor, burning with urination, and vaginal itching and irritation.¹¹

In standard medical practice **bacterial vaginosis** is treated with antibiotics. The dysbiosis also increases risk of developing **pelvic inflammatory disease**, an infection of the upper reproductive tract that, left untreated, can cause fertility problems.

Microbial risk factors for pelvic inflammatory disease include sexually transmitted infections and bacterial vaginosis.²

Recurrences of these infections are common.¹²⁻¹⁴

Recurrent yeast infections of the vagina (candidiasis) affect about **138 million** women globally, mostly aged 25-34, every year.¹² At the current rate of recurrence, the repeated **yeast infections** are expected to affect **158 million** women worldwide by 2030.¹²

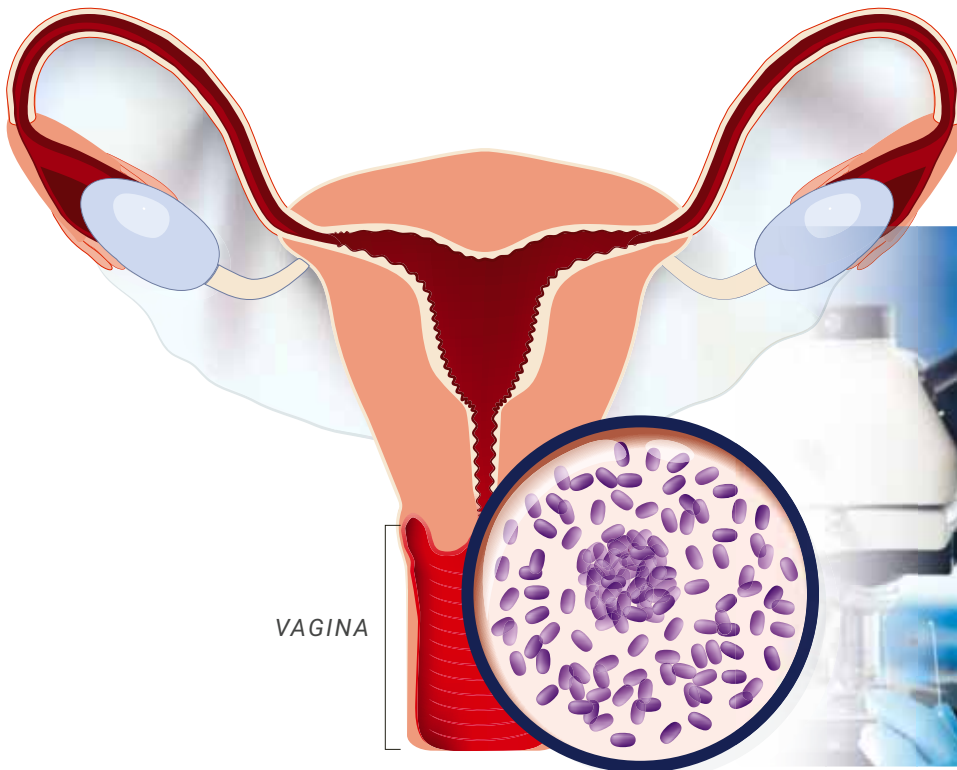
Maintaining a vaginal microbiota dominated by ***Lactobacillus*** could provide support against these common infections and reinfections.²⁻⁴

A Healthy Vaginal Microbiome

Lactobacillus plantarum is prevalent in a healthy vaginal microbiome. Research has shown that these beneficial bacteria can adhere to vaginal tissue and hinder the growth of *Candida* yeast, responsible for most **yeast infections**.^{4,15,16}

L. plantarum may provide protection by blocking the growth of other vaginal pathogens.¹⁶ In a cell study on vaginal epithelial cells, four strains of ***L. plantarum***, isolated from yogurt, were found to have antibacterial activity against *E. coli* and *Gardnerella vaginalis* (which may cause **bacterial vaginosis**).^{17,18}

Cell studies also demonstrated that a species of ***Lactobacillus plantarum P17630*** was also able to adhere to the vaginal wall.^{15,19} It was observed that ***L. plantarum P17630*** adheres to vaginal epithelial cells and significantly inhibits the adhesion of *C. albicans* in a competitive manner. This action may help support better colonization of the vagina with protective strains, thus providing protection to the vagina.¹⁹



WHAT
YOU
NEED
TO
KNOW



Clinical studies in women also showed impressive benefits from oral *L. plantarum P17630* intake as follows:^{4,5,15,16}

- *L. plantarum P17630* colonization of the vagina was associated with an improvement in the vaginal **microbiome**.
- There was significant improvement in Lactobacillary grade scores, which evaluate healthy *Lactobacillus* levels in the vagina.
- Women prone to recurrent **yeast** infections experienced a significant *reduction* of symptoms, including redness and swelling.

Supporting Gut and Immune Function

Probiotics also assist with common **gastrointestinal** and **immune** issues.^{4,20,21}

According to a study, **73%** of women experience at least one gastrointestinal symptom, most commonly abdominal pain, and diarrhea, before or during **menstruation**.²²

Women also have higher rates of **irritable bowel syndrome** than men. Symptoms include diarrhea, constipation, and abdominal pain.^{23,24}

L. helveticus, another *Lactobacillus* species, has been found to inhibit pathogens that can colonize in the gastrointestinal tract and vagina.^{6,25} It can also enhance immune function by reducing inflammation.^{26,27}

Probiotic Support for Women's Health

- As in the gut, **vaginal health** is dependent on a healthy balance of bacteria to protect it from pathogens, infections, and other disorders.
- *Lactobacillus plantarum P17630*, taken orally, can adhere to the vaginal wall where it improves vaginal health and reduces the growth of organisms that cause yeast infections and bacterial vaginosis.
- Another *Lactobacillus* strain, *L. helveticus L10*, has been shown to reduce common gastrointestinal disturbances, enhance immune function, and defend against various infectious agents.
- A blend of these strains of *Lactobacillus* bacteria can help women improve their vaginal, gastrointestinal, and immune health, and enhance overall wellness.

In preclinical studies, ***L. helveticus*** has been shown to:

- Inhibit overgrowth of harmful *Listeria*, *Candida*, and *E. coli* bacteria,^{8,28,29}
- Reduce production of pro-inflammatory mediators, including several related to chronic inflammation, autoimmune disease, and cancer in the gut,^{30,31}
- Increase an immune-balancing and anti-inflammatory mediator (interleukin-10) believed to help prevent inflammatory bowel disease,⁹
- Promote interferon and IgA antibodies, which support immune health and fight gut infections,³¹ and
- Reduce gastrointestinal inflammation and markers of systemic inflammation and oxidative stress.³⁰



Participants in a clinical study reported the beneficial effects on health after taking the probiotic, with significant improvement in average scores of **gastrointestinal symptoms** including diarrhea, constipation, crampy abdominal pains, and flatulence.³²

L. helveticus L10 has also been shown to improve **immune function** in human trials with regular subjects, and with fatigued, elite athletes.^{7,10,33}

Elite athletes often experience a depletion in immunity related to their intense training. But ***L. helveticus L10*** was found to promote protective **antibodies** to ward off gastrointestinal pathogens and support respiratory health.^{7,10,33}

A combination of ***L. helveticus*** and ***L. plantarum*** can help support women's vaginal, gastrointestinal, and immune health.

Summary

Maintaining a healthy balance of ***Lactobacilli*** species supports vaginal health and protects against bacterial and yeast infections, sexually transmitted infections, and fertility issues.

Lactobacillus plantarum P17630 has been shown to prevent harmful bacteria and yeast from adhering to the vagina, and decrease the risk for vaginal infections.

Lactobacillus helveticus L10 was shown to improve immune function and decrease gastrointestinal problems such as cramps, diarrhea, and constipation.

Together, these probiotic strains provide women with comprehensive gynecological, immune, and digestive support. •

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. Chen X, Lu Y, Chen T, et al. The Female Vaginal Microbiome in Health and Bacterial Vaginosis. *Front Cell Infect Microbiol.* 2021;11:631972.
2. Kroon SJ, Ravel J, Huston WM. Cervicovaginal microbiota, women's health, and reproductive outcomes. *Fertil Steril.* 2018 Aug;110(3):327-36.
3. Tachedjian G, Aldunate M, Bradshaw CS, et al. The role of lactic acid production by probiotic *Lactobacillus* species in vaginal health. *Res Microbiol.* 2017 Nov-Dec;168(9-10):782-92.
4. Vladareanu R, Mihiu D, Mitran M, et al. New evidence on oral *L. plantarum* P17630 product in women with history of recurrent vulvovaginal candidiasis (RVVC): a randomized double-blind placebo-controlled study. *Eur Rev Med Pharmacol Sci.* 2018 Jan;22(1):262-7.
5. Lallemand Internal Reports. 2014.



6. Salari S, Ghasemi Nejad Almani P. Antifungal effects of *Lactobacillus acidophilus* and *Lactobacillus plantarum* against different oral *Candida* species isolated from HIV/ AIDS patients: an in vitro study. *J Oral Microbiol.* 2020 May 25;12(1):1769386.
7. Michalickova D, Minic R, Dikic N, et al. *Lactobacillus helveticus* Lafti L10 supplementation reduces respiratory infection duration in a cohort of elite athletes: a randomized, double-blind, placebo-controlled trial. *Appl Physiol Nutr Metab.* 2016 Jul;41(7):782-9.
8. Johnson-Henry KC, Hagen KE, Gordonpour M, et al. Surface-layer protein extracts from *Lactobacillus helveticus* inhibit enterohaemorrhagic *Escherichia coli* O157:H7 adhesion to epithelial cells. *Cell Microbiol.* 2007 Feb;9(2):356-67.
9. Kim J-E, Chae CS, Kim G-C, et al. *Lactobacillus helveticus* suppresses experimental rheumatoid arthritis by reducing inflammatory T cell responses. *Journal of Functional Foods.* 2015 2015/03/01/;13:350-62.
10. Michalickova DM, Kostic-Vucicevic MM, Vukasinovic-Vesic MD, et al. *Lactobacillus helveticus* Lafti L10 Supplementation Modulates Mucosal and Humoral Immunity in Elite Athletes: A Randomized, Double-Blind, Placebo-Controlled Trial. *J Strength Cond Res.* 2017 Jan;31(1):62-70.
11. Available at: https://www.uptodate.com/contents/bacterial-vaginitis-clinical-manifestations-and-diagnosis?topicRef=131928&source=related_link. Accessed August 28, 2023.
12. Denning DW, Kneale M, Sobel JD, et al. Global burden of recurrent vulvovaginal candidiasis: a systematic review. *Lancet Infect Dis.* 2018 Nov;18(11):e339-e47.
13. Blostein F, Levin-Sparenberg E, Wagner J, et al. Recurrent vulvovaginal candidiasis. *Ann Epidemiol.* 2017 Sep;27(9):575-82 e3.
14. Available at: <https://www.uptodate.com/contents/bacterial-vaginitis-recurrent-infection>. Accessed August 28, 2023.
15. Bonetti A, Morelli L, Campominosi E, et al. Adherence of *Lactobacillus plantarum* P 17630 in soft-gel capsule formulation versus Doderlein's bacillus in tablet formulation to vaginal epithelial cells. *Minerva Ginecol.* 2003 Jun;55(3):279-84, 84-7.
16. Montella R, Malfa P, Giuliano A, et al. Vaginal adhesion of *Lactobacillus plantarum* P17630 after probiotic food supplement oral administration: a preliminary in vivo study. *Nutrafoods.* 2013;12(2): 35-42.
17. Qian Z, Zhao D, Yin Y, et al. Antibacterial Activity of *Lactobacillus* Strains Isolated from Mongolian Yogurt against *Gardnerella vaginalis*. *Biomed Res Int.* 2020;2020:3548618.
18. Ong JS, Taylor TD, Yong CC, et al. *Lactobacillus plantarum* USM8613 Aids in Wound Healing and Suppresses *Staphylococcus aureus* Infection at Wound Sites. *Probiotics Antimicrob Proteins.* 2020 Mar;12(1):125-37.
19. Culici M. Adhesion of *Lactobacillus plantarum* P 17630 to vaginal epithelial cells and its influence on *Candida albicans* adhesion. *GIM-MOC.* 2004;VIII(1):34-41.
20. Siddiqui R, Mungroo MR, Alharbi AM, et al. The Use of Gut Microbial Modulation Strategies as Interventional Strategies for Ageing. *Microorganisms.* 2022 Sep 19;10(9).
21. Mazziotta C, Tognon M, Martini F, et al. Probiotics Mechanism of Action on Immune Cells and Beneficial Effects on Human Health. *Cells.* 2023 Jan 2;12(1):184.
22. Bernstein MT, Graff LA, Avery L, et al. Gastrointestinal symptoms before and during menses in healthy women. *BMC Womens Health.* 2014 Jan 22;14:14.
23. Houghton LA, Lea R, Jackson N, et al. The menstrual cycle affects rectal sensitivity in patients with irritable bowel syndrome but not healthy volunteers. *Gut.* 2002 Apr;50(4):471-4.
24. Lovell RM, Ford AC. Effect of gender on prevalence of irritable bowel syndrome in the community: systematic review and meta-analysis. *Am J Gastroenterol.* 2012 Jul;107(7):991-1000.
25. Giraffa G. *Lactobacillus helveticus*: importance in food and health. *Front Microbiol.* 2014;5:338.
26. Taverniti V, Guglielmetti S. Health-Promoting Properties of *Lactobacillus helveticus*. *Front Microbiol.* 2012;3:392.
27. Rocha-Ramirez LM, Perez-Solano RA, Castanon-Alonso SL, et al. Probiotic *Lactobacillus* Strains Stimulate the Inflammatory Response and Activate Human Macrophages. *J Immunol Res.* 2017;2017:4607491.
28. Elahi S, Pang G, Ashman R, et al. Enhanced clearance of *Candida albicans* from the oral cavities of mice following oral administration of *Lactobacillus acidophilus*. *Clin Exp Immunol.* 2005 Jul;141(1): 29-36.
29. Mahoney M, Henriksson A. The effect of processed meat and meat starter cultures on gastrointestinal colonization and virulence of *Listeria monocytogenes* in mice. *International Journal of Food Microbiology.* 2003 2003/08/01/;84(3):255-61.
30. Peran L, Camuesco D, Comalada M, et al. A comparative study of the preventative effects exerted by three probiotics, *Bifidobacterium lactis*, *Lactobacillus casei* and *Lactobacillus acidophilus*, in the TNBS model of rat colitis. *J Appl Microbiol.* 2007 Oct;103(4):836-44.
31. Paturi G, Phillips M, Jones M, et al. Immune enhancing effects of *Lactobacillus acidophilus* LAFTI L10 and *Lactobacillus paracasei* LAFTI L26 in mice. *Int J Food Microbiol.* 2007 Apr 1;115(1):115-8.
32. Welin A, Henriksson A. Survival of *Lactobacillus acidophilus*. 2005:9-14.
33. Clancy RL, Gleeson M, Cox A, et al. Reversal in fatigued athletes of a defect in interferon gamma secretion after administration of *Lactobacillus acidophilus*. *Br J Sports Med.* 2006 Apr;40(4):351-4.

NUTRITIONAL SUPPORT FOR A HEALTHY URINARY TRACT

OPTIMIZED CRAN-MAX[®] WITH ELLIROSE[™]

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

For full product description and to order **Optimized Cran-Max[®]**, call **1-800-544-4440** or visit **www.LifeExtension.com**

Cran-Max[®] and Bio-Shield[®] are registered trademarks of Pharmachem Laboratories, Inc. Ellirose[™] is a trademark of Naturex, Inc.

Optimized Cran-Max[®] provides benefits similar to cranberry juice cocktail in each daily dose, but without the calories.



GLUTEN
FREE

NON
GMO
LE CERTIFIED

Item #01424

60 vegetarian capsules

1 bottle **\$13.50**

4 bottles **\$12 each**

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

LEARN, RETAIN and Think FAST!

QUICK BRAIN

"This supplement
is amazing."

Linda

VERIFIED CUSTOMER
REVIEW



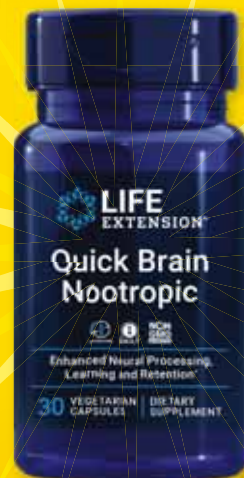
Nootropics speed up information processing in the brain, resulting in **faster thinking**.

Quick Brain Nootropic provides extracts from **bacopa**, **gotu kola**, and a **lutein-zeaxanthin** blend that have **clinical support** for:

- **Cognitive enhancement** and processing **speed**
- **Learning** function
- Healthy **memory**

Just one capsule daily to help stay "in the zone."

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



Item #02406 • 30 vegetarian capsules
1 bottle \$17.25 • 4 bottles \$15.50 each



BACOGNIZE® ULTRA is a registered trademark of Verdure Sciences, Inc. FloraGLO® is a registered trademark of Kemin Industries, Inc.

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

A Therapeutic Foot Massage with every step

Wearing Kenkohs daily, even for short periods, can help improve blood circulation, keep your body aligned, relieve pain in the feet, ankles, knees, legs, hips and back, reduce swelling, relieve stress and enhance your overall mood. Kenkoh revitalizes and rejuvenates your whole body!

Chai V Champagne



Relieve pain & improve your health now!

"Massage Improves Circulation..."

UNIVERSITY OF MIAMI
SCHOOL OF MEDICINE

Take the
14 day
Kenkoh
challenge

"Massage aids muscle recovery and speeds recovery times..."

McMASTER UNIVERSITY, ONTARIO

When wearing a Kenkoh, the soles of your feet will rest on roughly 1000 natural rubber "fingers" that will massage and stimulate key reflex points. This targeted therapy, known as reflexology, has long been practiced in Eastern cultures as a way of reducing pain, stress and anxiety.



Spirit V
Silver Metallic

HappyFeet.com/KENKOH
1-800-336-6657

Kenkoh®
The Original Massage Sandal

BROAD-SPECTRUM SUPPORT FOR OPTIMAL BREAST HEALTH

Life Extension®'s phyto-nutrient-based formula helps support healthy estrogen activity and detoxification to preserve optimal breast health.



Breast Health FORMULA

Item #01942 • 60 capsules

1 bottle **\$25.50**

4 bottles \$22.50 each



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

Contains soybeans.

Novasoy® is a registered trademark of
Archer Daniels Midland Company.

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.

ZINC

UP

YOUR IMMUNE HEALTH

"It gives my immune system an extra kick when needed."

Tina

VERIFIED CUSTOMER REVIEW



Item #01813

50 mg • 90 vegetarian capsules

1 bottle **\$6.75** • 4 bottles \$6 each



OptiZinc® is a Lonza trademark, registered in the USA.

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

Zinc promotes critical **immune** functions and healthy **bones**.

This formula provides **50 mg** of zinc in a convenient, vegetarian capsule.

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

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

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.

Healthy
Vaginal
Flora

Female- Targeted Probiotic

Vaginal, Digestive,
and Immune Support

FLORASSIST® PROBIOTIC Women's Health contains two probiotic strains.

One promotes microbial flora for **vaginal** health.

The other supports **digestive** and **immune functions**.

Several clinical trials have shown that:

- ***L. plantarum* ROSELL®A** oral intake helps restore and maintain a microbiome to support proper **vaginal** health.^{1,2}
- ***L. helveticus* LAFTI® L10** promotes **digestive** health³ and encourages a healthy **immune** response.⁴

Just one capsule daily provides the broad and **targeted probiotic** support a woman needs.

References

1. *Nutrafoods*. 2013;12:35-42.
2. *Eur Rev Med Pharmacol Sci*. 2018 Jan;22(1):262-7.
3. *Nutrafoods*. 2005;4:2-3.
4. *J Strength & Conditioning Res*. 2017;31(1):62-70.

L. plantarum ROSELL®A is *L. plantarum* P17630 (Proge P17630®), licensed from PROGE FARM®, Italy.



Item #02505

30 vegetarian capsules

1 bottle \$24 • 4 bottles \$22 each

Contains soybeans.

For full product description and to order **FLORASSIST® PROBIOTIC Women's Health**, 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.

TAURINE

Improves Health
and May
SLOW AGING





BY PAUL RANKIN

A study on the connection between **taurine** and **longevity** made major headlines around the world, from the BBC to the *New York Times*.^{1,2}

Published in the prestigious medical journal **Science**, an international collaboration of researchers discovered that older adults suffer a dramatic decrease in levels of **taurine**. On average, they have levels **80%** below those found in *younger* people.³⁻⁶

These *declining* taurine levels have been tied, in preclinical models, to **rapid aging** and increased rates of age-related disease.^{6,7}

In clinical trials, **taurine** has been shown to blunt **inflammation** as well as improve **cardiometabolic** health—actions that would be expected to help defer aging.^{6,7}

In **humans**, *lower* levels of taurine-related metabolites are associated with age-related conditions such as obesity, chronic inflammation, and metabolic disease such as **type II diabetes**.⁶

Clinical intervention studies have demonstrated that taurine supplementation can benefit cholesterol and lipid levels, the stress hormone norepinephrine, and body weight.⁸

In the June 2023 published study that made headline news worldwide, daily **oral taurine** intake increased the **life expectancy** of elderly mice by up to **25%** while reducing body weight, improving strength and brain function, lowering inflammation, and boosting function of energy-generating **mitochondria**.⁶

Maintaining youthful **taurine** levels into older age may help to **slow aging** and promote **healthy longevity**.

What is Taurine?

Taurine is an amino acid found in the diet.

Most taurine in the human body, however, is synthesized internally from the amino acid cysteine. With age, the *enzyme* that transforms cysteine into taurine declines.

The result is sharply lower taurine levels as people age.

As far back as the 1990s, taurine was used in Japan to improve **heart function** and **exercise capacity** in patients with **heart failure**.⁹⁻¹²

Scientists have also discovered that cells contain dedicated **protein transporters** that are *specific* to taurine.^{3,4} These transporters actively move taurine into cells where it is required for numerous processes.¹³

In addition, experimental animals that are missing taurine transporters develop significant health problems and have a **shortened lifespan**.^{3,4}

Another clue to taurine's importance comes from animals like cats and foxes, that cannot synthesize it in sufficient quantities. If they do not get enough taurine from diet, they may develop heart disease, blindness, **impaired immune function**, neurological abnormalities, and other disorders.⁴

In an animal model, taurine injection into the peritoneum in the abdomen prevented **sarcopenia**, likely through an anti-inflammatory effect and by preserving the quality of muscle fibers.¹⁴

Young humans are able to produce abundant taurine. But as the study in *Science* found, production rapidly drops in later life, with the elderly having taurine levels that are about **80% lower** than in youth.^{6,7}

Human Studies on Taurine and Aging

In animals, taurine deficiency results in health problems and shorter lifespan.

Findings in **humans** suggest adequate taurine may be essential for optimal health.

One observational study compared elderly individuals with and without **dementia**. Those with **dementia** reported consuming significantly **less taurine** in their diets. Among all the participants, those with a history of **more taurine** in their diet had better **cognition**.^{4,15}

A study in a Japanese population found that **greater** taurine consumption is associated with **reduced** rates of cardiovascular problems, metabolic disorders including obesity, and other common age-related disorders.^{6,7}

As part of the study published in *Science*, levels of taurine, its precursor, and its metabolites were measured in a large cohort of European adults, and an association analysis was performed.

Higher blood taurine and related compounds were associated with lower body mass index (BMI), waist-to-hip ratio, and **less abdominal obesity**, as well as **lower levels** of the inflammatory marker **C-reactive protein (CRP)**.

Higher taurine metabolite levels were associated with less chance of type II diabetes as well as with lower glucose levels.⁶

Prolonging Healthy Life

Low taurine levels may contribute to human aging and disease. Some evidence suggests that increasing **oral intake** of taurine may prevent or *reverse* these problems.





WHAT
YOU
NEED
TO
KNOW

In the study published in *Science*, giving mice daily taurine increased **median lifespan** by **10%-12%** and increased life expectancy in **elderly mice** by **18%-25%**, compared to a placebo.^{6,7}

Taurine intake also improved the **health** and **functioning** of bone, muscle, brain, the gastrointestinal system, the immune system, and more.^{6,7} Similar results were observed in monkeys given taurine.

Several **human** trials have demonstrated positive impacts on health:

- Daily doses of taurine improved exercise capacity and several markers of **heart function** in patients with heart failure.⁹⁻¹²
- In subjects with **hypertension** (high blood pressure) or prehypertension, taurine intake lowered blood pressure and improved blood vessel function.^{16,17}
- In obese women, oral taurine reduced markers of harmful **inflammation** and **oxidative stress**, which are normally elevated in obesity.¹⁸
- In people with **type II diabetes**, taurine also reduced inflammation and oxidative stress. Even more impressively, there was a *reduction* in common diabetic complications, including kidney, eye, and nerve disease.¹⁹⁻²¹

Although further human studies are warranted to fully explore the benefits of taurine, evidence strongly suggests it can improve health and may increase lifespan.

Taurine's Longevity Benefits

- A recent study found that elderly humans on average have **80%** lower levels of the amino acid **taurine** than young adults.
- These lower levels of taurine correlate with higher rates of obesity, chronic inflammation, and type **II** diabetes.
- In animals, daily taurine intake extends **longevity** by as much as **25%** while improving muscle and brain health, immune function, and more.
- Early **human** studies of taurine have shown that it can improve heart and blood vessel function, reduce chronic inflammation and oxidative stress, boost exercise capacity, and help prevent diabetic complications.

How It Works

Exactly *how* taurine promotes **longevity** is still being studied, but it has benefits at a **cellular level**.

In animal models, taurine *deficiency* mimics the aging process.

Factors that are associated with **aging**—including reduced mitochondrial health, cellular stress, shortening of telomeres (protective caps on the ends of chromosomes), and chronic inflammation—are all *accelerated* with taurine depletion.⁵

Preclinical and clinical studies show that *increasing* taurine intake impacts biological functions that promote **longevity** and **health**, including:^{4-7,22}

- Improving mitochondrial function and cellular energy metabolism,
- Stabilizing telomeres and reducing DNA damage,
- Reducing cellular senescence, when cells become old and dysfunctional,
- Increasing antioxidant capacity and protection against oxidative damage,
- Reducing dangerous chronic inflammation,
- Improving neurotransmitter function in the nervous system, and
- Facilitating absorption of nutrients and improving gastrointestinal health.

Together, these effects may slow the aging process, leading to better health and **longer life**.

Summary

Research has found that the amino acid **taurine** may impact several distinct aspects of health.

Levels of taurine tend to drop by as much as **80%** in older adults. These lower levels are hypothesized to contribute to **rapid aging** and increased risk for age-related disease.

In animals, daily taurine intake **extends lifespan** and improves health.

Studies in **humans** have also shown health benefits from taurine intake, including improved heart and metabolic function, reduced oxidative stress and chronic inflammation, and lower blood pressure. ●

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. Available at: <https://www.bbc.com/news/health-65810138>. Accessed August 11, 2023.
2. Available at: <https://www.nytimes.com/2023/06/08/health/taurine-supplements-aging.html>. Accessed August 11, 2023.
3. Ito T, Yoshikawa N, Inui T, et al. Tissue depletion of taurine accelerates skeletal muscle senescence and leads to early death in mice. *PLoS One*. 2014;9(9):e107409.
4. Jong CJ, Sandal P, Schaffer SW. The Role of Taurine in Mitochondria Health: More Than Just an Antioxidant. *Molecules*. 2021 Aug 13;26(16).
5. Schaffer SW, Ramila KC, Jong CJ, et al. Does taurine prolong lifespan by improving heart function? *Adv Exp Med Biol*. 2015;803:555-70.
6. Singh P, Gollapalli K, Mangiola S, et al. Taurine deficiency as a driver of aging. *Science*. 2023 Jun 9;380(6649):eabn9257.
7. McGaunn J, Baur JA. Taurine linked with healthy aging. *Science*. 2023 Jun 9;380(6649):1010-1.
8. Bae M, Ahmed K, Yim JE. Beneficial Effects of Taurine on Metabolic Parameters in Animals and Humans. *J Obes Metab Syndr*. 2022 Jun 30;31(2):134-46.
9. Azuma J, Hasegawa H, Sawamura A, et al. Therapy of congestive heart failure with orally administered taurine. *Clin Ther*. 1983;5(4):398-408.
10. Azuma J, Sawamura A, Awata N. Usefulness of taurine in chronic congestive heart failure and its prospective application. *Jpn Circ J*. 1992 Jan;56(1):95-9.
11. Azuma J, Sawamura A, Awata N, et al. Therapeutic effect of taurine in congestive heart failure: a double-blind crossover trial. *Clin Cardiol*. 1985 May;8(5):276-82.
12. Beyranvand MR, Khalafi MK, Roshan VD, et al. Effect of taurine supplementation on exercise capacity of patients with heart failure. *J Cardiol*. 2011 May;57(3):333-7.
13. Mercck C, De Paepe B. The Role of Taurine in Skeletal Muscle Functioning and Its Potential as a Supportive Treatment for Duchenne Muscular Dystrophy. *Metabolites*. 2022 Feb 19;12(2).
14. Barbiera A, Sorrentino S, Fard D, et al. Taurine Administration Counteracts Aging-Associated Impingement of Skeletal Muscle Regeneration by Reducing Inflammation and Oxidative Stress. *Antioxidants (Basel)*. 2022 May 21;11(5).
15. Yamori Y, Sagara M, Arai Y, et al. Taurine Intake with Magnesium Reduces Cardiometabolic Risks. *Adv Exp Med Biol*. 2017;975 Pt 2:1011-20.
16. Militante JD, Lombardini JB. Treatment of hypertension with oral taurine: experimental and clinical studies. *Amino Acids*. 2002;23(4):381-93.
17. Sun Q, Wang B, Li Y, et al. Taurine Supplementation Lowers Blood Pressure and Improves Vascular Function in Prehypertension: Randomized, Double-Blind, Placebo-Controlled Study. *Hypertension*. 2016 Mar;67(3):541-9.
18. Rosa FT, Freitas EC, Deminice R, et al. Oxidative stress and inflammation in obesity after taurine supplementation: a double-blind, placebo-controlled study. *Eur J Nutr*. 2014 Apr;53(3):823-30.
19. Esmaeili F, Maleki V, Kheirouri S, et al. The Effects of Taurine Supplementation on Metabolic Profiles, Pentosidine, Soluble Receptor of Advanced Glycation End Products and Methylglyoxal in Adults With Type 2 Diabetes: A Randomized, Double-Blind, Placebo-Controlled Trial. *Can J Diabetes*. 2021 Feb;45(1):39-46.
20. Maleki V, Alizadeh M, Esmaeili F, et al. The effects of taurine supplementation on glycemic control and serum lipid profile in patients with type 2 diabetes: a randomized, double-blind, placebo-controlled trial. *Amino Acids*. 2020 Jul;52(6-7):905-14.
21. Maleki V, Mahdavi R, Hajizadeh-Sharafabad F, et al. The effects of taurine supplementation on oxidative stress indices and inflammation biomarkers in patients with type 2 diabetes: a randomized, double-blind, placebo-controlled trial. *Diabetol Metab Syndr*. 2020;12:9.
22. El Idrissi A, Shen CH, L'Amoreaux W J. Neuroprotective role of taurine during aging. *Amino Acids*. 2013 Oct;45(4):735-50.

Dryness and loss of firmness are outward signs of normal aging.

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

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

Restore Smoother,
Youthful-Looking
Skin from the
Inside Out



Item #02096

30 liquid vegetarian capsules

1 bottle **\$18.75**

4 bottles \$17.25 each

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

Contains wheat. Gluten free.

Ceratiq® is a registered joint-trademark of PLT Health Solutions and Arco, Robertet Group, France.



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.

STRESSED??

Stress releases the hormone **cortisol** throughout the body. Maintaining healthy cortisol levels promotes healthy **mood** and **stress response**.

Cortisol-Stress Balance for a greater sense of calm amid today's stressful challenges.

Item #02312
30 vegetarian capsules
1 bottle **\$33.75**
4 bottles \$30 each



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

Relora® is a trademark of Lonza or its affiliates. Oligonol® is a registered trademark of Amino Up Chemical Co., Ltd.

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.

Support **Bone Health** with Super Absorbable Tocotrienols

TOCOTRIENOLS PROMOTE HEALTHY BONE SUPPORT

"I really like this product."

Mark

VERIFIED CUSTOMER REVIEW



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

Item #01400
60 softgels
1 bottle \$22.50
4 bottles \$21 each



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

EVNoI SupraBio™ is a trademark of ExcelVite Inc. and protected by US Patent Nos: 6,596,306 and 7,544,822.

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 product—don't want to be without it."

Ingrid

VERIFIED CUSTOMER REVIEW

HIGHER POTENCY CARNOSINE



Carnosine is a unique dipeptide that can inhibit *glycation* throughout the body, thereby helping to slow normal aging processes. Suggested dose is one **500 mg** Carnosine capsule taken once or twice daily.

Item #01829 • 60 vegetarian capsules

1 bottle **\$27** • 4 bottles \$24 each

Life Extension® was the first to introduce high-dose (**500 mg**) carnosine back in **1999**.



Super Carnosine provides **500 mg** of carnosine per capsule along with fat-soluble vitamin B1 (**benfotiamine**) to further impede glycation reactions.

Item #02020 • 60 vegetarian capsules

1 bottle **\$30** • 4 bottles \$27 each

Life Extension® **carnosine** is available in *different* formulas including **Mitochondrial Energy Optimizer** to allow you to customize your longevity program

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



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

Get More FIBER the *Easy* Way

ENJOY FIBER BENEFITS
with SMALLER DOSES



Most soluble fiber products contain *psyllium* husk that requires higher doses to deliver benefits.

The side effect is often unpleasant bloating.

Konjac root contains a soluble fiber that provides benefits at smaller doses than psyllium, so it's much less filling.

New **Easy Fiber** provides **1,000 mg** of *glucomannan* from **konjac root** in each dose to support:¹⁻⁵

- Satiety and weight management†
- Regularity
- Digestion
- Heart health and already healthy cholesterol levels
- Prebiotic fiber
- Already healthy blood sugar and insulin levels

*Natural orange flavor with other natural flavors and sugar free!
Do not take if you have difficulty swallowing.*



References:

1. *Nutrition* 22 (2006) 1112-1119.
2. *J Am Coll Nutr.* 2008 Feb;27(1):102-8.
3. *Med Sci Monit.* 2005 Jan;11(1):PI5-8.
4. *Ann Nutr Metab* 2020;76:259-267.
5. *Am J Clin Nutr* 2017; 1239-1247.

† This supplement should be taken in conjunction with a healthy diet and regular exercise program. Individual results are not guaranteed, and results may vary.

Item #02514
167 G (0.368 lb. or 5.89 oz.)
1 jar **\$22.50** 4 jars \$20 each

For full product description
and to order **Easy Fiber**
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.

Whole- Body Support

Everything good
takes time.

Magnesium is essential for a healthy heart and sturdy bones; it's even great for your mood. But, most of us don't get enough from our diets.

Our innovative formula delivers both immediate and extended-release magnesium, so you get the maximum benefits—for the long haul.



Item #02107

60 250 mg vegetarian capsules

1 bottle \$9.75 • 4 bottles \$8.75 each



#1 Rated
Magnesium
Products*

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

ZümXR® is a registered trademark and protected by patents. See www.ZümXR.com

*Ratings based on results of the 2022 ConsumerLab.com Survey of Supplement Users. More information at www.consumerlab.com/survey

"I love that it's
extend release."

Carol

VERIFIED CUSTOMER
REVIEW

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

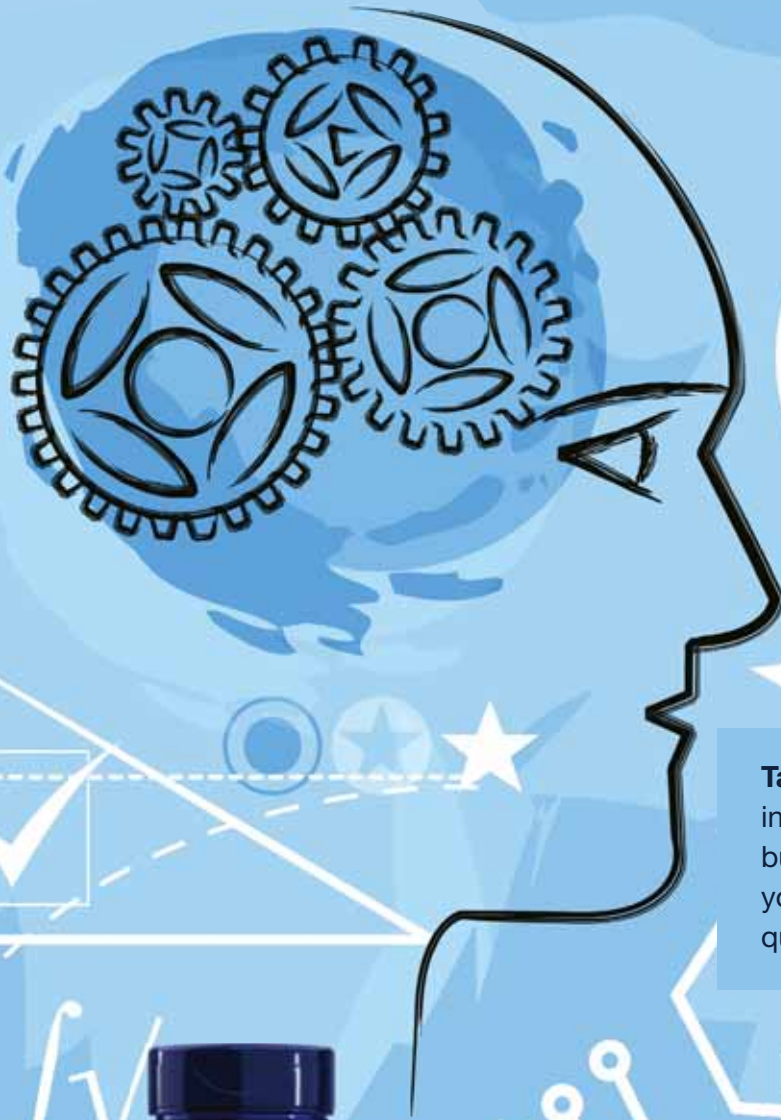
These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Keep Your Heart Healthy & Your Brain Sharp

"A little extra help for our stressed hearts these days."

Diana

VERIFIED CUSTOMER REVIEW



Taurine is one of the most abundant amino acids in your body, with a range of anti-aging benefits, but levels decline over time. Be proactive and give your heart and brain powerful support with high-quality Taurine from **Life Extension!**



Item #01827
1000 mg
90 vegetarian capsules
1 bottle **\$9.75**
4 bottles \$9 each



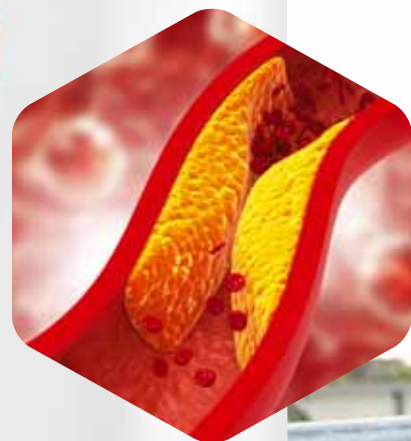
Item #00133
300 grams
1 bottle **\$15**
4 bottles \$12.66 each

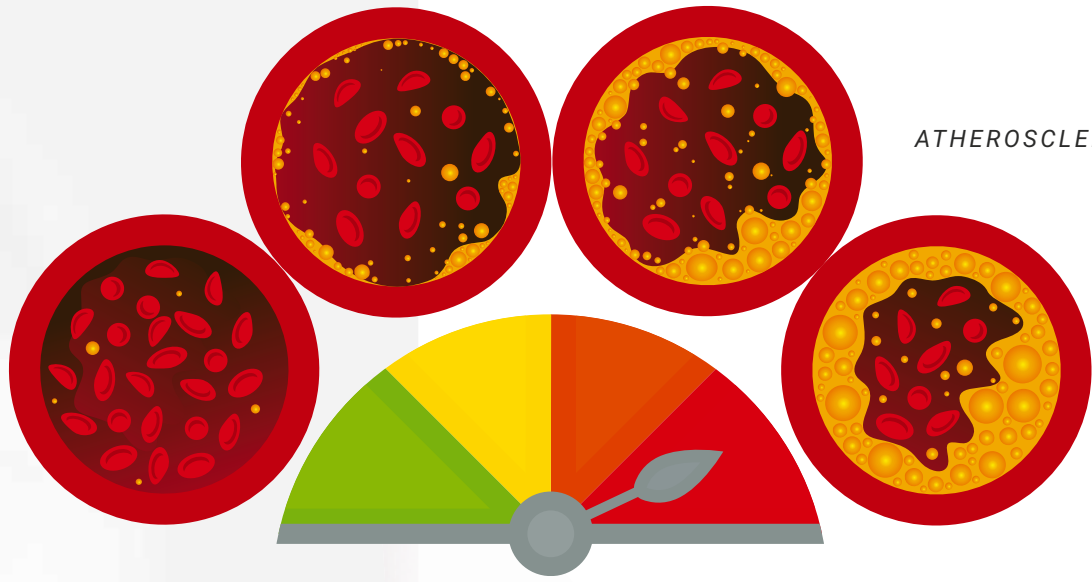


For full product description and to order **Taurine**, call **1-800-544-4440** or visit www.LifeExtension.com

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

VITAMIN K2 and Arterial Calcification





ATHEROSCLEROSIS

BY ERIC BLANCO

Atherosclerosis is the thickening and hardening of **arteries**.

As plaque accumulates inside arteries, blood flowing to the heart, brain and other organs is diminished or blocked.

Occlusive atherosclerosis is an underlying cause of many **heart attacks** and **strokes**.¹

An underlying factor is **arterial calcification**.

Deposition of **calcium** crystals into arteries can be impeded.²

Research shows that **vitamin K2** activates proteins that help keep calcium out of blood vessels.²⁻⁶

What Is Vitamin K2?

There are two main forms of vitamin K: **K1** and **K2**.

Vitamin **K1** is found in green, leafy vegetables. It is necessary for normal healthy blood clotting.⁷

Vitamin **K2**, also known as **menaquinones**, has long been known to be essential for **bone** health.⁸

K2 vitamins are present in small amounts in a few foods, including some types of dairy and cheeses, egg yolk, and meats. It occurs at higher concentrations in **natto** (fermented soybeans).^{5,6,9}

Vitamin K2 plays a crucial role in activating proteins that help keep calcium within the bones and out of blood vessels where it can cause problems.^{7,8,10}

A large proportion of individuals suffer from vitamin K2 **insufficiency**, especially among people consuming a western diet,⁸ and the elderly.^{8,11,12}

Studies over the past several years show that *higher* vitamin K2 intake is associated with *decreased* risk for **atherosclerosis**.^{2,4-6,8,13}

Heart Benefits

Atherosclerosis is a *major driver* of **cardiovascular disease**. If its progression is not prevented, it can lead to angina (chest pain), heart attack, and stroke.¹⁴

A component of atherosclerosis is the abnormal deposition of **calcium** into the walls of arteries, known as **vascular calcification**.¹⁴ This is where vitamin K2 plays a pivotal role.

Vitamin K2 activates a specific protein such as **osteocalcin**. Activated osteocalcin binds to bone minerals, helping to incorporate them into bone structure.⁸ In an animal model, activated osteocalcin also reduced arterial stiffness.¹⁵

In a human study, *higher* levels of active osteocalcin were associated with a lower progression rate of arterial calcification and a lower rate of **mortality**.¹⁶



Osteocalcin along with another vitamin K-dependent protein, Gas 6, acts as an inhibitor of vascular **calcification**.¹⁷ In addition, active Gas 6 protects against **endothelial dysfunction**, another driver of cardiovascular disease and atherosclerosis.⁴

Vitamin K2 is also *required* to activate a protein called **matrix Gla protein (MGP)**.^{17,18} MGP is a strong inhibitor of **calcification** in soft tissues, including blood vessels.^{3-6,17}

Like osteocalcin, once activated, MGP binds to calcium and escorts it out of blood vessels.¹³

The inactive form of MGP is generally regarded as a biomarker of vitamin K deficiency and risk of vascular calcification.² Mice that are missing the gene for MGP die prematurely due to massive amounts of calcification in arteries.¹⁹

Human Studies

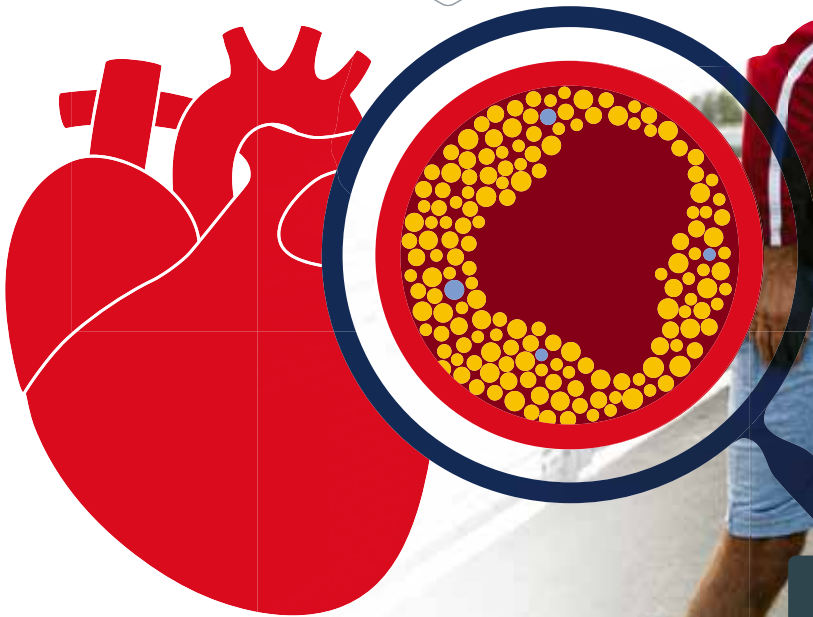
Low **vitamin K2** levels have consistently shown a link to *poor* cardiovascular health.

Research has associated low levels of vitamin K2 with arterial stiffness, more severe blood vessel calcification, calcification of the heart valves, and heart failure.^{3-6,13}

The end result is a *higher* rate and faster progression of **cardiovascular disease** and **increased rate of death** due to any cause.³⁻⁶

On the other hand, increased intake of **vitamin K2** is associated with *improved* cardiovascular health. These are some key findings from the scientific literature:³⁻⁶

- Epidemiological studies suggest that higher intake of vitamin K is linked to lower rates of cardiovascular disease, cardiovascular-related death,⁴ and death from any cause.^{3,6}
- Higher intake of vitamin K2 is associated with reduced calcification in the coronary arteries and lower risk of cardiovascular disease.^{3,4,6}
- Intake of vitamin K2-rich natto was associated with less cardiovascular-related death in a large Japanese population study.⁴
- Increased intake of vitamin K2 may help to improve arterial stiffness^{4,5,20} and heart function, reduce incidence of type II diabetes,⁴ and reduce calcification of heart valves.³



Promote Heart Health with Vitamin K2

A randomized controlled trial in postmenopausal women in Asia found that **1,500 mg** of calcium along with **45 mg** of vitamin K2 daily resulted in an increase in bone mineral density and a **55.9%** reduction in **inactive** osteocalcin levels.²¹

Another study showed that **180 mcg** of vitamin K2 daily for three years resulted in an increase of activated osteocalcin and produced significant improvements in bone mineral density and strength.²²

In a large prospective cohort study of Danish individuals, vitamin K intake (both K1 and K2) was independently associated with a lower risk of **atherosclerotic** cardiovascular disease hospitalizations. The combination of **both** forms was associated with a **21%** lower risk, while K2 alone was associated a **14%** lower risk.²³

In one observational study, women with the *highest* K2 intake were found to be at a **20%** lower risk for coronary artery **calcification** than women who had the lowest intake.²⁴

In another study, adults 55 and older were followed for up to **10 years**. Those with the *highest* intake of **vitamin K2** had a **57%** lower risk of death from coronary heart disease and a **26%** lower risk of death **from any cause** than those with the *lowest* K2 intake.¹⁰

- **Vitamin K2** is a form of vitamin K found in most dairy, cheese, meats, and fermented foods. Dietary intake is often low, and insufficiency may get worse with age.
- Vitamin K2 is *required* to activate proteins that defend against the deposition of calcium in blood vessels. **Vascular calcification** is a major part of **atherosclerosis**, the number one contributor to heart attack and stroke.
- Low vitamin K2 levels have been tied to higher risk for cardiovascular disease and higher rates of mortality.
- In observational studies, *higher* intake of vitamin K2 is associated with *reduced* rates of cardiovascular disease and as much as a **57%** lower risk of death from coronary heart disease.

Summary

Scientific research shows that **vitamin K2** plays a key role in supporting **cardiovascular health**.

By activating proteins that protect against **calcification**, it can help reduce the progression and severity of **atherosclerosis**.

Studies in animals and humans show that vitamin K2 intake correlates with improved markers of cardiovascular health and reduced risk of death from *any cause*. •

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. Libby P. The changing landscape of atherosclerosis. *Nature*. 2021 2021/04/01;592(7855):524-33.
2. Shioi A, Morioka T, Shoji T, et al. The Inhibitory Roles of Vitamin K in Progression of Vascular Calcification. *Nutrients*. 2020 Feb 23;12(2).
3. Fusaro M, Gallieni M, Porta C, et al. Vitamin K effects in human health: new insights beyond bone and cardiovascular health. *J Nephrol*. 2020 Apr;33(2):239-49.
4. Hariri E, Kassir N, Iskandar JP, et al. Vitamin K(2)-a neglected player in cardiovascular health: a narrative review. *Open Heart*. 2021 Nov;8(2).
5. Stepień A, Kozłowska-Roszciszewska M, Rysz J, et al. Biological Role of Vitamin K-With Particular Emphasis on Cardiovascular and Renal Aspects. *Nutrients*. 2022 Jan 8;14(2).
6. van Ballegooyen AJ, Beulens JW. The Role of Vitamin K Status in Cardiovascular Health: Evidence from Observational and Clinical Studies. *Curr Nutr Rep*. 2017;6(3):197-205.
7. Sato T, Inaba N, Yamashita T. MK-7 and Its Effects on Bone Quality and Strength. *Nutrients*. 2020 Mar 31;12(4).
8. Maresz K. Proper Calcium Use: Vitamin K2 as a Promoter of Bone and Cardiovascular Health. *Integr Med (Encinitas)*. 2015 Feb;14(1):34-9.
9. Available at: <https://ods.od.nih.gov/factsheets/VitaminK-HealthProfessional/#h3>. Accessed August 23, 2023.
10. Geleijnse JM, Vermeer C, Grobbee DE, et al. Dietary intake of menaquinone is associated with a reduced risk of coronary heart disease: the Rotterdam Study. *J Nutr*. 2004 Nov;134(11):3100-5.
11. Riphagen IJ, Keyzer CA, Drummen NEA, et al. Prevalence and Effects of Functional Vitamin K Insufficiency: The PREVEND Study. *Nutrients*. 2017 Dec 8;9(12).
12. Theuvsen E, Magdeleyns EJ, Braam LA, et al. Vitamin K status in healthy volunteers. *Food Funct*. 2014 Feb;5(2):229-34.
13. Vik H. Highlighting The Substantial Body Of Evidence Confirming The Importance Of Vitamin K(2) As A Cardio-Support Nutrient, And How The Right K(2) Makes All The Difference. *Integr Med (Encinitas)*. 2019 Dec;18(6):24-8.
14. Jebari-Benslaïman S, Galicia-García U, Larrea-Sebal A, et al. Pathophysiology of Atherosclerosis. *Int J Mol Sci*. 2022 Mar 20;23(6).
15. Huang L, Yang L, Luo L, et al. Osteocalcin Improves Metabolic Profiles, Body Composition and Arterial Stiffening in an Induced Diabetic Rat Model. *Exp Clin Endocrinol Diabetes*. 2017 Apr;125(4):234-40.
16. Confavreux CB, Szulc P, Casey R, et al. Higher serum osteocalcin is associated with lower abdominal aortic calcification progression and longer 10-year survival in elderly men of the MINOS cohort. *J Clin Endocrinol Metab*. 2013 Mar;98(3):1084-92.
17. Xiao H, Chen J, Duan L, et al. Role of emerging vitamin K-dependent proteins: Growth arrest-specific protein 6, Gla-rich protein and periostin (Review). *Int J Mol Med*. 2021 Mar;47(3).
18. Kristensen JSS, Melholt L, Kristensen KL, et al. Vitamin K(2) Dependent Matrix Gla Protein Relating to Abdominal Aortic Aneurysm and Overall Mortality: A Combined Case Control and Cohort Study. *Eur J Vasc Endovasc Surg*. 2021 Aug;62(2):267-74.
19. Luo G, Ducey P, McKee MD, et al. Spontaneous calcification of arteries and cartilage in mice lacking matrix GLA protein. *Nature*. 1997 Mar 6;386(6620):78-81.
20. Kurnatowska I, Grzelak P, Masajtis-Zagajewska A, et al. Effect of vitamin K2 on progression of atherosclerosis and vascular calcification in nondialyzed patients with chronic kidney disease stages 3-5. *Pol Arch Med Wewn*. 2015;125(9):631-40.
21. Purwosunu Y, Muharram, Rachman IA, et al. Vitamin K2 treatment for postmenopausal osteoporosis in Indonesia. *J Obstet Gynaecol Res*. 2006 Apr;32(2):230-4.
22. Knapen MH, Drummen NE, Smit E, et al. Three-year low-dose menaquinone-7 supplementation helps decrease bone loss in healthy postmenopausal women. *Osteoporos Int*. 2013 Sep;24(9):2499-507.
23. Bellinge JW, Dalgaard F, Murray K, et al. Vitamin K Intake and Atherosclerotic Cardiovascular Disease in the Danish Diet Cancer and Health Study. *J Am Heart Assoc*. 2021 Aug 17;10(16):e020551.
24. Beulens JW, Bots ML, Atsma F, et al. High dietary menaquinone intake is associated with reduced coronary calcification. *Atherosclerosis*. 2009 Apr;203(2):489-93.



HIGHLY PURIFIED

Fish Oil

Super Omega-3 provides components found in **Mediterranean diets**, including **sesame lignans** to enhance the health benefits of fish oil.



SUPER OMEGA-3 PLUS
EPA/DHA Fish Oil, Sesame Lignans,
Olive Extract, Krill & Astaxanthin
(2,520 mg of EPA + DHA in four softgels)

Item #01988 • 120 softgels
1 bottle **\$38.25**
4 bottles \$34 each



SUPER OMEGA-3*
EPA/DHA Fish Oil,
Sesame Lignans & Olive Extract
(2,400 mg of EPA + DHA in four softgels)

Item #01982 • 120 softgels
1 bottle **\$28.50**
4 bottles \$26.50 each

*IFOS™ certification mark is a registered trademark of Nutrasource Diagnostics, Inc. This product has been tested to the quality and purity standards of the IFOS™ program conducted at Nutrasource Diagnostics, Inc.

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



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

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



BREATHE EASY

Lung health is adversely impacted by aging and environmental exposures.

Healthy Lungs contains **four** plant-derived compounds to support **optimal lung** function:¹

- ***Boswellia serrata***^{1,2}
- **Bael fruit**^{1,2}
- **Saffron**^{3,4}
- **Andrographolide**^{5,6}

Studies have shown these nutrients can:

- Improve breathing capacity.^{1,2,4}
- Assist healthy adults sensitive to environmental exposure.¹
- Promote lung function.²⁻⁴



Healthy Lungs • Item #02512

30 vegetarian capsules

1 bottle **\$24** • 4 bottles \$22 each

(one capsule per day)

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

References: 1. PLT Study. 2022. Unpublished. Data on file. 2. *Phytother Res.* 2018 Jan;32(1):140-50.
3. *Respir Res.* 2019 Feb 22;20(1):39. 4. *Respir Med.* 2018 Dec;145:28-34.
5. *Pharmacol.* 2020 Aug;177(16):3662-3673. 32335896; PMID: PMC7393195.
6. *PLoS One.* 2013;8(2):e56407.

AlvioLife® is a registered trademark of PLT Health Solutions-Laila Nutraceuticals LLC.



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.

Support Your Body With LACTOFERRIN



Lactoferrin is a component of **milk protein** best known for its **immune benefits**.

An array of published studies also describes how **lactoferrin** may provide cell regenerative proprieties and support bone, cartilage, and tendon health.

Item #01681

300 mg, 60 vegetarian capsules

1 bottle **\$45** • 2 bottles **\$40** each

Two-Month Supply

Contains milk.

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

"Excellent product,
high quality."

Gil

VERIFIED CUSTOMER REVIEW



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.

Liposomal-Hydrogel™

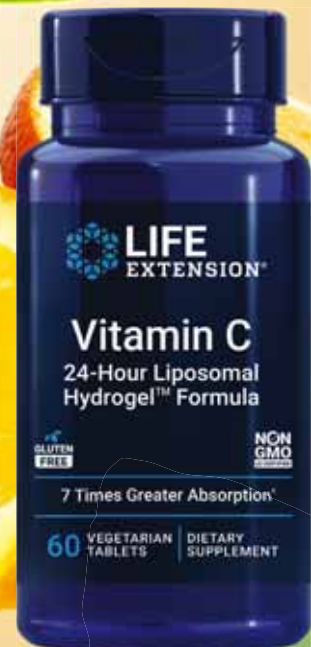


VITAMIN

"I feel better about my immune system with it."

Mary

VERIFIED CUSTOMER REVIEW



Item #02501 • 60 vegetarian tablets

1 bottle \$25.50 • 4 bottles \$23 each

For full product description and to order **Vitamin C 24-Hour Liposomal Hydrogel™ Formula**, call 1-800-544-4440 or visit www.LifeExtension.com

Buffered **ascorbate** encased in two plant extracts (liposomes plus hydrogel fenu-greek) increases blood (plasma) exposure nearly **seven times more** compared to an equivalent dose of regular vitamin C.

It also maintains *higher* vitamin levels throughout the day.¹

Just **one** vegetarian tablet daily provides **around-the-clock** vitamin C support.

1. Akay Internal Study. Liposomal hydrogel vitamin C pharmacokinetics. Data on file. 2021.

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.



SUPER K

A Healthy Kick for Your Heart & Bones

Just one daily softgel of
Super K provides:

Vitamin K1	1,500 mcg
Vitamin K2 (MK-4)	1,000 mcg
Vitamin K2 (<i>trans</i> MK-7)	100 mcg

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



Item #02334

90 softgels

1 bottle **\$22.50**

4 bottles \$20.25 each

Each bottle lasts for
three months.



For full product description and to order **Super K**,
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.





Brain and Whole-Body Effects of **LITHIUM**

BY STAN RICHARDS

In population studies, trace levels of **lithium** in drinking water correlate with enhanced **longevity**.¹

One study found that long-term lithium exposure from drinking water may be associated with a *lower risk* of being diagnosed with **dementia**.²

In observational studies, **lithium** use was associated with decreased dementia risk,³⁻⁵ and improved cognitive performance in people with mild cognitive impairment and Alzheimer's dementia.^{6,7}

A growing number of scientists believe that small, trace doses of lithium may have a wide-ranging impact on health and should be considered an **essential micronutrient**.⁸⁻¹⁰



What is Lithium?

Lithium is a mineral that is found in some natural water sources and in small amounts in some foods, including tomatoes, potatoes, and cabbage.⁸

People have made pilgrimages to lithium-rich mineral springs throughout history.¹¹ Drinking from these waters was considered a tonic to support mood and overall health.

While *high* doses of lithium have long been used to treat bipolar disorder and other psychiatric illnesses,¹¹⁻¹³ trace amounts of lithium in drinking water are associated with a wide range of benefits throughout the body.^{14,15}

Current literature shows that low-dose lithium may be supportive of cardiovascular, musculoskeletal, metabolic, and cognitive functions of the aging body.⁹

The evidence supporting lithium's importance is so strong that some scientists now propose that it may be an **essential micronutrient**.^{8-10,14} Essential micronutrients are required for normal and healthy—not to mention optimal—function. This would mean lithium must be consumed in the diet or through direct oral intake and is required for normal bodily function.



How It Works

Lithium serves many distinct functions throughout the body.⁹

Its greatest benefits may result from its ability to inhibit an *enzyme* known as **glycogen synthase kinase-3 (GSK-3)**.^{9,12}

GSK-3 controls several essential functions in cells, but excessive GSK-3 activity has been linked in preclinical settings to aging and metabolic disorders.¹⁶

Clinical and preclinical evidence suggests that GSK-3 activity is poorly regulated in mild cognitive impairment and neurodegenerative diseases.^{12,17} There is evidence that implicates GSK-3 in other common conditions.^{12,17}

In animal model studies, GSK-3 is involved in the production of **beta-amyloid** and **hyperphosphorylated tau** in the brain. These two abnormal protein accumulations are involved in the development and progression of **Alzheimer's disease**.¹²

By *inhibiting* GSK-3, low-dose lithium acts as a **neuroprotectant**, potentially shielding the brain from neurodegenerative disease.¹⁸

It also increases levels of **brain-derived neurotrophic factor (BDNF)**, a signaling compound that is required for the survival and optimal function of brain cells.^{9,19}

Implications for Chronic Diseases

Although lithium is most recognized for its effects on mental health, its actions on GSK-3 and other regulatory proteins impact health body-wide.

Epidemiological studies from around the world have evaluated the impact of varying intakes of **lithium** through drinking water.^{9,12}

Many of these studies have found that in places with *more* lithium present in the water, there are *lower* rates of several negative outcomes.

Specifically, higher lithium intake was associated with lower rates of:⁹

- Hospital admissions and deaths related to mental illness,
- Metabolic diseases, including obesity and diabetes,
- Death due to cardiovascular disease,
- Death due to Alzheimer's disease, and
- Death due to *any cause*.

WHAT
YOU
NEED
TO
KNOW

Experimental data demonstrate several other benefits of lithium intake, including:^{9,12}

- Improved heart and blood vessel function,
- Improved muscle and bone health,
- Reduced inflammation, and
- Antiviral effects.

Lithium may also improve general **metabolism** throughout the body.

Some epidemiologic evidence has shown that trace amounts of lithium in tap water are associated with a reduced prevalence of obesity.

Evidence from rodent models has shown that low-dose lithium may prevent diet-induced obesity. Both clinical and animal models suggest that lithium can enhance insulin function and improve **glucose control**.

However, various lines of animal models and clinical evidence are inconsistent on this topic, so more research is needed.⁹

Brain Benefits

Pre-clinical and clinical studies of low-dose lithium have evaluated its use in preventing or managing age-related brain dysfunction, including **mild cognitive impairment** and **Alzheimer's disease**.

These studies have shown a number of improvements in brain function, including:

- Improved or maintained cognitive function compared to deterioration in a placebo group,^{7,15}
- Improved or maintained cognitive function in mild cognitive impairment and Alzheimer's patients,^{6,20} and
- Reduced abnormal protein accumulations in the brain.^{7,21}

In one clinical study, taking just **300 mcg** of **lithium** daily was found to **decrease cognitive decline** in patients with Alzheimer's disease, compared to a placebo.¹⁵

A review of four clinical studies published in **2022** compared higher-dose **lithium** use to **aducanumab**, a new drug recently approved for the treatment of mild cognitive impairment and Alzheimer's disease.²²



3
Li
Lithium
6.94

A Health-Boosting Mineral

- **Lithium** is a mineral found in small amounts in natural bodies of water and some plant-based foods.
- Lithium inhibits the **GSK-3** enzyme. *Excessive GSK-3* activity has been linked to aging, metabolic disease and diabetes, and dementia.
- Trace intake of lithium in drinking water has been tied to *reduced* rates of metabolic diseases, including obesity and diabetes, death due to Alzheimer's disease, hospital admissions, death due to mental illness, and all-cause mortality.
- In clinical studies on patients with **mild cognitive impairment** or **Alzheimer's disease**, low-dose lithium intake was *more effective* than a new drug in improving cognitive function scores.
- Growing evidence supports treating low-dose lithium as an essential nutrient that should be consumed daily for optimum health.

This review found that lithium was **significantly more effective** than the expensive drug aducanumab in improving cognitive function scores in patients with mild cognitive impairment or Alzheimer's disease.

However, this was a small, pooled analysis of four studies, none of which directly compared lithium to aducanumab (two studies compared lithium to placebo, and two studies compared aducanumab to placebo), so formal studies are needed before any firm conclusions can be reached as to direct comparative effectiveness in this context.

These studies add to the growing body of evidence that lithium intake is necessary for optimum health.

Summary

Intake of the mineral **lithium** has been linked to **lower** rates of many chronic health problems, including cognitive decline, cardiovascular disease, obesity, and diabetes, along with lower rates of **death from any cause**.

In clinical studies, low-dose lithium helps improve **cognitive function** scores in patients with mild cognitive impairment or Alzheimer's disease.

Growing numbers of scientists believe **low-dose lithium** intake can help improve health and stave off chronic disease. ●



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. Araldi E, Jutzeler CR, Ristow M. Lithium treatment extends human lifespan: findings from the UK Biobank. *Aging (Albany NY)*. 2023 Jan 11;15(2):421-40.
2. Kessing LV, Gerds TA, Knudsen NN, et al. Association of Lithium in Drinking Water With the Incidence of Dementia. *JAMA Psychiatry*. 2017 Oct 1;74(10):1005-10.
3. Chen S, Underwood BR, Jones PB, et al. Association between lithium use and the incidence of dementia and its subtypes: A retrospective cohort study. *PLoS Med*. 2022 Mar;19(3):e1003941.
4. Kessing LV, Søndergård L, Forman JL, et al. Lithium Treatment and Risk of Dementia. *Archives of General Psychiatry*. 2008;65(11):1331-5.
5. Ishii N, Terao T, Hirakawa H. The Present State of Lithium for the Prevention of Dementia Related to Alzheimer's Dementia in Clinical and Epidemiological Studies: A Critical Review. *International Journal of Environmental Research and Public Health*. 2021;18(15):7756.
6. Matsunaga S, Kishi T, Annas P, et al. Lithium as a Treatment for Alzheimer's Disease: A Systematic Review and Meta-Analysis. *J Alzheimers Dis*. 2015;48(2):403-10.
7. Forlenza OV, Radanovic M, Talib LL, et al. Clinical and biological effects of long-term lithium treatment in older adults with amnesic mild cognitive impairment: randomised clinical trial. *Br J Psychiatry*. 2019 Nov;215(5):668-74.
8. Szklarska D, Rzymiski P. Is Lithium a Micronutrient? From Biological Activity and Epidemiological Observation to Food Fortification. *Biol Trace Elem Res*. 2019 May;189(1):18-27.
9. Hamstra SI, Roy BD, Tiidus P, et al. Beyond its Psychiatric Use: The Benefits of Low-dose Lithium Supplementation. *Curr Neuropharmacol*. 2023;21(4):891-910.
10. Marshall TM. Lithium as a Nutrient. *Journal of American Physicians and Surgeons*. 2015;20(4):104-9.
11. Shorter E. The history of lithium therapy. *Bipolar Disord*. 2009 Jun;11 Suppl 2(Suppl 2):4-9.
12. Rybakowski JK. Antiviral, immunomodulatory, and neuroprotective effect of lithium. *J Integr Neurosci*. 2022 Mar 23;21(2):68.
13. Pacholko AG, Bekar LK. Lithium orotate: A superior option for lithium therapy? *Brain Behav*. 2021 Aug;11(8):e2262.
14. Schrauzer GN. Lithium: occurrence, dietary intakes, nutritional essentiality. *J Am Coll Nutr*. 2002 Feb;21(1):14-21.
15. Nunes MA, Viel TA, Buck HS. Microdose lithium treatment stabilized cognitive impairment in patients with Alzheimer's disease. *Curr Alzheimer Res*. 2013 Jan;10(1):104-7.
16. Liu X, Yao Z. Chronic over-nutrition and dysregulation of GSK3 in diseases. *Nutr Metab (Lond)*. 2016;13:49.
17. Beurel E, Grieco SF, Jope RS. Glycogen synthase kinase-3 (GSK3): regulation, actions, and diseases. *Pharmacol Ther*. 2015 Apr;148:114-31.
18. Won E, Kim YK. An Oldie but Goodie: Lithium in the Treatment of Bipolar Disorder through Neuroprotective and Neurotrophic Mechanisms. *Int J Mol Sci*. 2017 Dec 11;18(12).
19. Leyhe T, Eschweiler GW, Stransky E, et al. Increase of BDNF serum concentration in lithium treated patients with early Alzheimer's disease. *J Alzheimers Dis*. 2009;16(3):649-56.
20. Matsunaga S, Fujishiro H, Takechi H. Efficacy and Safety of Glycogen Synthase Kinase 3 Inhibitors for Alzheimer's Disease: A Systematic Review and Meta-Analysis. *J Alzheimers Dis*. 2019;69(4):1031-9.
21. Forlenza OV, Diniz BS, Radanovic M, et al. Disease-modifying properties of long-term lithium treatment for amnesic mild cognitive impairment: randomised controlled trial. *Br J Psychiatry*. 2011 May;198(5):351-6.
22. Terao I, Honyashiki M, Inoue T. Comparative efficacy of lithium and aducanumab for cognitive decline in patients with mild cognitive impairment or Alzheimer's disease: A systematic review and network meta-analysis. *Ageing Res Rev*. 2022 Nov;81:101709.

Relief for Dry Eyes

BY LAURIE MATHENA



Dry eye syndrome is an increasingly common condition that causes stinging, itching, and light sensitivity.^{1,2}

Left untreated, chronic dry eyes can eventually cause **permanent eye damage** in severe cases.³

While moisturizing **eye drops** provide relief to many, they do not address the long-term risks of dry eyes. Frequent use is needed to get satisfactory relief.

In addition, it is impossible to replicate the complex structure of **real tears**.

Scientists have found a way to boost the body's own production of natural tears.

An extract from **maqui berries**, a fruit native to Chile and Argentina, has been shown to *increase* natural tear production when taken orally.^{4,5}

Studies show that maqui berry extract produces:

- A **45% increase** in the production of **tear fluid** in both eyes,⁶ and
- A **72% improvement** in dry eye symptoms after 60 days (about two months).⁴

By delivering relief for dry and irritated eyes, maqui berries can help protect against potential long-term eye and vision damage.⁴

Discomfort and Eye Damage

Advancing age, along with the widespread use of smart phones, tablets, computers, and other screens, may lead to increased **dry eye symptoms**.⁷

Use of these electronic devices can result in a decreased blink rate and a fast rate of tear evaporation.⁷

Tears are essential for lubricating and protecting the **cornea**, the front central surface of the eye. They protect the eye from infection, wash away foreign matter, and deliver critical nutrients to its surface.⁸

People suffering from **dry eye syndrome** produce either too few tears or tears that are of *poor quality*.²

As a result, the **cornea** can become damaged (ulcerated or scarred), and vision can become **impaired**.⁹

Maqui berry extract does what eye drops *cannot*: They boost the body's own production of natural tears.^{4,5}

How Maqui Berry Works

Maqui berries contain bioactive pigments called **delphinidins**. Researchers found in preclinical studies that these compounds:⁵

- Protect eye structures, including the tear-producing **lacrimal gland**, by reducing levels of free radicals,⁵
- Inhibit damage from light exposure to the eye's delicate cells and tissues,¹⁰ and
- Help restore the production of high-quality tears.⁵

In these ways, delphinidins can reduce damage to the glands that produce tears and help protect the cells of our eyes critical for vision.

Impressive Results

In a pilot clinical study, 13 volunteers with moderate eye dryness took either **30 mg** or **60 mg** of **maqui berry extract** daily.

Eye dryness was tested by Schirmer's test which evaluates how much **tear fluid** is produced by the tear glands and if that amount is sufficient.⁴

- After 30 days, both dosage groups had about a **50%** improvement in tear production.
- After 60 days, the **30 mg** group's tear production declined to a **26%** improvement, while the **60 mg** group continued to have about a **45%** improvement in tear production.

Participants also completed the **Dry-Eye Related Quality-of-Life Score** test to assess symptoms and their impact on daily life. A lower score reflects **fewer problems** and improved **quality of life**.

- The **60 mg** group had a **72%** improvement in dry eye symptoms after two months, and
- A substantially improved result on the **Dry Eye-Related Quality-of-Life Score** test, dropping from a 40 down to an astoundingly low 11.

Controlled Clinical Trials

Scientists next moved on to the gold standard of human studies, a **randomized, controlled trial**.⁶

They enlisted 74 healthy participants (aged 30 to 60) who had moderate eye dryness and eye fatigue and were exposed to video display screens for at least four hours daily.

Half the volunteers took **60 mg** of **maqui berry extract** daily, while the other half took a **placebo**.



Both groups started with the same degree of eye dryness.

After **four weeks**, the maqui berry group had:

- A **45%** increase in the production of **tear fluid** in both eyes,
- Substantially improved values for **ocular symptoms** (such as grittiness or dry eyes), and
- Significant improvements in **eye fatigue** as well as **stiff shoulders**, which often can occur with eye strain.

This study confirmed that **maqui berry extract** delivers serious relief to those who suffer from dry eyes and related eye fatigue.

In a similar trial of 20 patients with complaints of dry eyes, participants were randomized to receive maqui berry extract or a placebo, for two months. Improved symptoms of dry eye and reduction in inflammatory markers of eyes were seen in the **maqui berry** group as compared to **placebo**.¹¹

By improving tear production, maqui berry may also help protect the eye from long-term damage.

Summary

Dry eye syndrome causes discomfort, reduces quality of life, and can damage eye tissue.

A sufficient amount of high-quality **natural tears** is essential for protecting the eye from infection and delivering critical nutrients.

An oral extract of the **maqui berry** helps the body produce more of its *own* tears. It has been shown to relieve symptoms of dry eyes, including eye discomfort and fatigue, and to boost quality of life. •



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. Dana R, Meunier J, Markowitz JT, et al. Patient-Reported Burden of Dry Eye Disease in the United States: Results of an Online Cross-Sectional Survey. *Am J Ophthalmol*. 2020 Aug;216:7-17.
2. Available at: <https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/dry-eye>. Accessed December 10, 2021.
3. Verjee MA, Brissette AR, Starr CE. Dry Eye Disease: Early Recognition with Guidance on Management and Treatment for Primary Care Family Physicians. *Ophthalmol Ther*. 2020 Dec;9(4):877-88.
4. Hitoe S, Tanaka J, Shimoda H. Maqui-Bright standardized maqui berry extract significantly increases tear fluid production and ameliorates dry eye-related symptoms in a clinical pilot trial. *Panminerva Med*. 2014 Sep;56(3 Suppl 1):1-6.
5. Nakamura S, Tanaka J, Imada T, et al. Delphinidin 3,5-O-diglucoside, a constituent of the maqui berry (*Aristotelia chilensis*) anthocyanin, restores tear secretion in a rat dry eye model. *Journal of Functional Foods*. 2014 9//;10:346-54.
6. Yamashita SI, Suzuki N, Yamamoto K, et al. Effects of MaquiBright(R) on improving eye dryness and fatigue in humans: A randomized, double-blind, placebo-controlled trial. *J Tradit Complement Med*. 2019 Jul;9(3):172-8.
7. Al-Mohtaseb Z, Schachter S, Shen Lee B, et al. The Relationship Between Dry Eye Disease and Digital Screen Use. *Clin Ophthalmol*. 2021;15:3811-20.
8. Chang AY, Purt B. Biochemistry, Tear Film. StatPearls. Treasure Island (FL): StatPearls Publishing Copyright © 2023, StatPearls Publishing LLC.; 2023.
9. Golden MI, Meyer JJ, Patel BC. Dry Eye Syndrome. *StatPearls*. Treasure Island (FL): StatPearls Publishing Copyright © 2023, StatPearls Publishing LLC.; 2023.
10. Tanaka J, Kadekaru T, Ogawa K, et al. Maqui berry (*Aristotelia chilensis*) and the constituent delphinidin glycoside inhibit photoreceptor cell death induced by visible light. *Food Chem*. 2013 Aug 15;139(1-4):129-37.
11. Kundu G, Shetty R, D'Souza S, et al. Effect of maqui-berry extract in dry eye disease - A clinical and molecular analysis. *Indian J Ophthalmol*. 2023 Apr;71(4):1613-8.



Avoid the Spikes!

Don't let post-meal sugar spikes burst your bubble.



Glycemic Guard™ contains Delphinol® maqui berry extract and Clovinol® clove extract, which affect the way your body processes sugars from food. That way, you can keep your healthy after-meal blood sugar where it needs to be.

Item #02122

30 vegetarian capsules

1 bottle **\$31.50**

4 bottles \$28 each

Suggested dose is one capsule a day or as recommended by a healthcare practitioner.

If you are taking blood glucose lowering medication, consult your healthcare provider before taking this product.

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



Delphinol® is a registered trademark of MNL. Clovinol® is a registered trademark of Akay USA LLC.

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.

"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.

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

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

(1,000 mcg of lithium per tiny cap)

Item #02403

100 vegetarian capsules

1 bottle \$12

4 bottles \$10.50 each

Each bottle lasts 100 days.



GLUTEN
FREE

NON
GMO
LE CERTIFIED

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

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.

ACTIVE LIFESTYLE & FITNESS

- 01529 Creatine Capsules
- 02020 Super Carnosine
- 02023 Tart Cherry with CherryPURE®
- 02186 Wellness Bar - Chocolate Brownie
- 02518 Wellness Bar - Peanut Butter Chocolate Chip
- 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
- 02497 Endothelial Defense™ Pomegranate Plus
- 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
- 02123 Bone Restore Chewable Tablet
- 02416 Bone Restore Elite with Super Potent K2
- 01727 Bone Restore with 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® Basics
- 02396 Cognitex® Elite
- 02397 Cognitex® Elite Pregnenolone

- 01540 DMAE Bitartrate
- 02006 Dopa-Mind™
- 02413 Dopamine Advantage
- 01658 Ginkgo Biloba Certified Extract™
- 01527 Huperzine A
- 00020 Lecithin
- 02101 Memory Protect
- 00709 Migra-Eeze™
- 01603 Neuro-Mag® Magnesium L-Threonate Caps
- 02032 Neuro-Mag® Magnesium L-Threonate Powder
- 00888 Optimized Ashwagandha
- 01676 PS (Phosphatidylserine) Caps
- 02406 Quick Brain Nootropic
- 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
- 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, 30 vegetarian capsules
- 01647 PQQ Caps • 20 mg, 30 vegetarian capsules
- 00889 Rhodiola Extract
- 02003 Triple Action Thyroid

EYE HEALTH

- 01923 Astaxanthin with Phospholipids
- 00893 Brite Eyes III
- 02323 Digital Eye Support
- 01514 Eye Pressure Support with Mirtogenol®
- 01992 MacuGuard® Ocular Support with Saffron
- 01993 MacuGuard® Ocular Support with Saffron & Astaxanthin
- 01873 Standardized European Bilberry Extract
- 01918 Tear Support with MaquiBright®

FISH OIL & OMEGAS

- 01937 Mega EPA/DHA
- 02218 Mega GLA Sesame Lignans
- 01983 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 softgels
- 01988 Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill & Astaxanthin
- 01982 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 softgels
- 01985 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 enteric coated softgels
- 01984 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 enteric coated softgels
- 01986 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 240 softgels
- 01812 Provinal® Purified Omega-7
- 01640 Vegetarian DHA

FOOD

- 02008 California Estate Extra Virgin Olive Oil
- 02170 Rainforest Blend Decaf Ground Coffee
- 02169 Rainforest Blend Ground Coffee
- 02171 Rainforest Blend Whole Bean Coffee

GLUCOSE MANAGEMENT

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

HEART HEALTH

- 01066 Aspirin (Enteric Coated)
- 01842 BioActive Folate & Vitamin B12 Caps
- 01700 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 and Cruciferous Blend
- 00302 Pregnenolone • 50 mg, 100 capsules
- 00700 Pregnenolone • 100 mg, 100 capsules
- 01468 Triple Action Cruciferous Vegetable Extract
- 01469 Triple Action Cruciferous Vegetable Extract and Resveratrol

IMMUNE SUPPORT

- 02411 Day Elderberry Immune
- 02302 Bio-Quercetin
- 02410 Black Elderberry + Vitamin C
- 02433 Echinacea Elite
- 01961 Enhanced Zinc Lozenges
- 01704 Immune Modulator with Tinofend®
- 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
- 01097 Ultra Soy Extract
- 01561 Zinc Lozenges

INFLAMMATION MANAGEMENT

- 01639 5-LOX Inhibitor with AprèsFlex®
- 02324 Advanced Curcumin Elite™ Turmeric Extract, Ginger & Turmerones
- 01709 Black Cumin Seed Oil
- 02310 Black Cumin Seed Oil and Curcumin Elite™
- 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

- 02404 Arthro-Immune Joint Support
- 02238 ArthroMax® Advanced NT2 Collagen™ & AprèsFlex®
- 01617 ArthroMax® with Theaflavins & AprèsFlex®
- 02138 ArthroMax® Elite
- 00965 Fast-Acting Joint Formula
- 02430 Fast Acting Relief
- 00522 Glucosamine/Chondroitin Capsules
- 02420 Glucosamine Sulfate
- 02424 Joint Mobility
- 01600 Krill Healthy Joint Formula
- 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™
- 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
- 01625 AppleWise
- 02414 Bio-Fisetin
- 01214 Blueberry Extract
- 01438 Blueberry Extract and Pomegranate
- 02270 DNA Protection Formula
- 02431 Essential Youth - L-Ergothioneine
- 02119 GEROPROTECT® Ageless Cell™
- 02415 GEROPROTECT® Autophagy Renew
- 02401 GEROPROTECT® Stem Cell
- 02211 Grapeseed Extract
- 00954 Mega Green Tea Extract (decaffeinated)
- 00953 Mega Green Tea Extract (lightly caffeinated)
- 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

- 02209 Male Vascular Sexual Support
- 00455 Mega Lycopene Extract
- 02306 Men's Bladder Control
- 02515 Men's Vitality Packs
- 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)
- 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
- 00657 Solarshield® Sunglasses

MOOD & STRESS MANAGEMENT

- 02519 Ashwagandha Plus
- 02434 Calm-Mag
- 02312 Cortisol-Stress Balance
- 00987 Enhanced Stress Relief
- 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
- 02428 Plant-Based Multivitamin
- 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

NERVE & COMFORT SUPPORT

- 02202 ComfortMAX™
- 02303 Discomfort Relief

PERSONAL CARE

- 02322 Hair, Skin & Nails Collagen Plus Formula
- 01278 Life Extension Toothpaste
- 00408 Venotone
- 02304C Youthful Collagen
- 02252 Youthful Legs

PET CARE

- 01932 Cat Mix
- 01931 Dog Mix
- 02523 DOG™ Hip & Joints
- 02524 DOG™ Multivitamin & Probiotics
- 02522 DOG™ Skin & Coat
- 02525 DOG™ Stress & Behavior

PROBIOTICS

- 01622 Bifido GI Balance
- 01825 FLORASSIST® 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
- 02505 FLORASSIST® Probiotic Women's Health

SKIN CARE

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

SLEEP

- 01512 Bioactive Milk Peptides
- 02300 Circadian Sleep
- 01551 Enhanced Sleep with Melatonin
- 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
- 02503 Melatonin • 3 mg, 60 gummies
- 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
- 01721 Optimized Tryptophan Plus
- 01445 Quiet Sleep Melatonin • 5 mg, 60 veg capsules
- 02502 Rest & Renew

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 Phytosome

- 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 Phytosome
60 veg tablets
- 02227 Vitamin C and Bio-Quercetin Phytosome
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
- 01626 Enhanced Sex for Women 50+
- 01894 Estrogen for Women
- 02204 Menopause 731™
- 02319 Prenatal Advantage
- 01649 Soy Isoflavones
- 02513 Women's Bladder Support

Cry Out Loud

go ahead,
shed a tear.



Item #01918
30 vegetarian capsules

1 bottle \$13.50
4 bottles \$12 each

Tears are a good thing—until you don't have enough.

Maqui berries (*Aristotelia chilensis*) produce compounds called **delphinidins** that encourage tear production—an up to **45%** increase in one study. So where can you get a delphinidin-rich maqui extract?

Tear Support with MaquiBright®.

For full product description and to order **Tear Support with MaquiBright®** call **1-800-544-4440** or visit **LifeExtension.com**

MaquiBright® is a registered trademark of MAQUI NEW LIFE S.A, Chile and ORYZA OIL & FAT CHEMICAL CO., LTD., Japan.



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.

45 TIMES GREATER BIOAVAILABILITY *Curcumin*



Patented **turmeric** and **fenugreek blend** (500 mg) results in **45 times** greater bioavailability of free **curcuminoids**.



Item #02407

500 mg, 60 vegetarian capsules

1 bottle \$24 • 4 bottles \$22 each



Same 500 mg potency of patented **turmeric** and **fenugreek blend** with added benefits of **ginger** and other **turmeric** actives.

Item #02324

500 mg curcumin + gingerol, 30 softgels

1 bottle \$20 • 4 bottles \$18 each

For full product description and to order **Curcumin Elite™** or **Advanced Curcumin Elite™**, call **1-800-544-4440** or visit **www.LifeExtension.com**

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



IN THIS EDITION OF *LIFE EXTENSION* MAGAZINE[®]



7 **DIETARY SUPPLEMENT OF YEAR 2023**

A major study published in **Science** in 2023 describes **taurine** as a possible “**antiaging intervention**.” Taurine stands out for its affordability, widespread availability, and exciting new longevity data.

20 **PROTECT YOUR CANINE COMPANION**

Like people, **dogs** face age-related ailments, from joint pain to behavioral issues. More veterinarians today recommend specific **nutrients** to address dog health.



32 **PROBIOTICS JUST FOR WOMEN**

Two specific **probiotics** provide women with comprehensive **gynecological health** by improving **vaginal flora**, along with immune and digestive support.

44 **TAURINE SHOWN TO IMPROVE HEALTHY AGING**

Taurine levels drop by as much as **80%** in older people, which may contribute to **rapid aging** and degenerative disorders. Restoring *youthful* **taurine** levels may enable healthier aging.



56 **VITAMIN K AND ATHEROSCLEROSIS**

Vitamin K helps reduce progression and severity of **atherosclerosis**.

66 **BRAIN-BODY BENEFITS OF LOW-DOSE LITHIUM**

Trace levels of **lithium** in drinking water correlate with enhanced **longevity** and reduced risk of **dementia**.