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The Science of a Healthier Life®
LifeExtension.com September 2022

FEATURE ARTICLES

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PLUS: Page 20
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1. **Bone Restore** helps maintain healthy bone density with three different forms of **calcium** plus vitamin D3 and magnesium, boron, zinc, manganese, and silicon.

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Sonia

VERIFIED CUSTOMER REVIEW

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LIFE EXTENSION®

The Science of a Healthier Life®

LifeExtension.com September 2022

Volume 28 • Number Nine
Publisher • LE Publications, Inc.

LIFE EXTENSION (ISSN 1524-198X) Vol. 28, No. 9 ©2022 is published monthly except bi-monthly in April by LE Publications, Inc. at 3600 West Commercial Blvd., Fort Lauderdale, FL 33309-3338. 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. For Canadian customers send change of address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON L2A 6C7.

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MEDICAL ADVISORY BOARD

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.

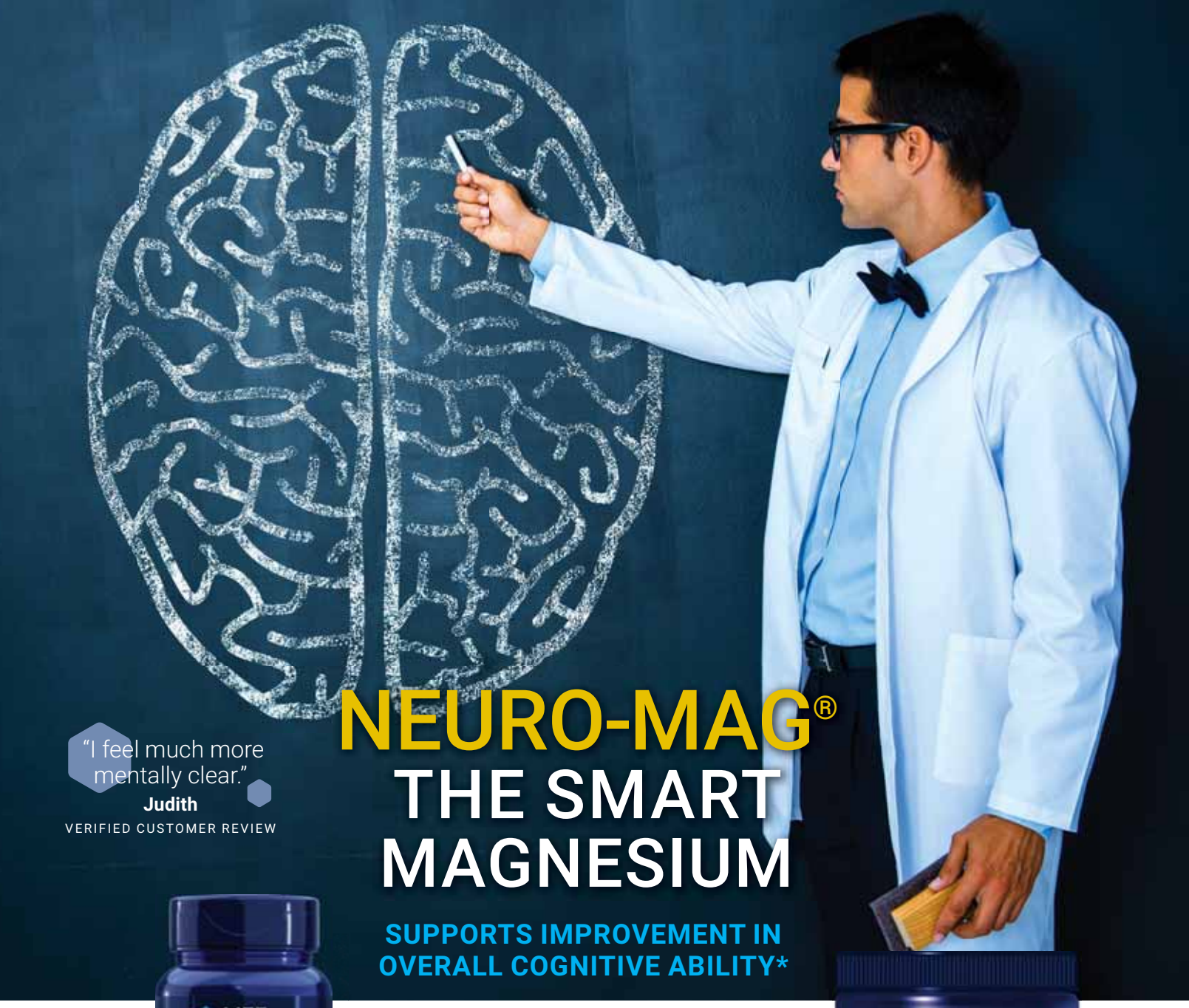
L. Ray Matthews, MD, FACS, is a professor of surgery and director of Surgical Critical Care at Morehouse School of Medicine in Atlanta, GA, and a trauma and critical care surgeon at Grady Memorial Hospital. He has published widely and is known as one of the top vitamin D experts. Dr. Matthews has spoken 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 *The Great American Heart Hoax*,*The Complete Mediterranean Diet* and *Heart Attack Proof*. 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.



"I feel much more mentally clear."
Judith
VERIFIED CUSTOMER REVIEW

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.

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Item #02032 • 93.35 grams of powder
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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.

Too Many Needless Deaths!

WILLIAM FALOON

I keep losing friends and acquaintances at the peak of their careers to preventable diseases.

One reason is failure to control elevated **blood pressure**.

For most people, just one anti-hypertensive medication taken at bedtime will slash their risk of **heart disease**, **stroke**, and **kidney failure**.

A question some people ask is:
"How long do I have to take that one pill every night?"

My response:
"As long as you need it to optimize your blood pressure."

Inane rebuttals include:
"I don't want to take a pill every night."

I derive no pleasure when these people are stricken with a catastrophic illness and say, ***"I should have listened to you years ago."***

Instead, I blame myself for **failing** to convey the lifesaving message.

A similar situation occurs in relation to **prostate cancer**.

The number of American men **dying** of metastatic **prostate cancer** has increased significantly according to a March 2022 *JAMA* report.[1]

This increase appears to have begun after **2008** and **2012**, when the **U.S. Preventive Services Task Force** (USPSTF) recommended *against* routine **PSA screening**.

The increase in prostate cancer deaths occurs, in part, due to the lack of preventive measures, the obesity epidemic, and the fact that:

Most men over age 40 don't utilize PSA blood tests to screen for prostate cancer.

One reason for avoiding tests is fear of side-effect-prone treatments. Yet more modern methods are eradicating prostate malignancies without the harsh effects inflicted by surgical removal or intensive radiation therapies.

We describe one of these treatments in this month's issue.

After reading this editorial, I hope readers will not overlook the basics when it comes to preventing needless tragedies.

The **American Cancer Society** estimates that **34,500** men will die of **prostate cancer** this year in the United States.[2]

These deaths are occurring despite the ability to detect **prostate cancer** in an *early* stage when **cure** rates are exceedingly high.[3]

Dietary changes and better medications show promise in the management and treatment of prostate cancer.[4-6] But *early* diagnosis is key and reinforces the importance of **PSA screening** in men aged 40 and older.

Last year, a famous individual who had battled **prostate cancer** for seven years died at the young age of **58**. His status as CEO of **Hasbro®** generated headline news with outpourings of grief that such a talented individual was no longer with us.

Why Hasbro® Is More Than a Toy Company

I suspect everyone reading this article has engaged with a **Hasbro®** product, either playing one of their board games like **Monopoly®**, or purchasing toys for children.

Even with these kinds of brands, there is only so much growth potential.

In **2008**, a dynamic individual named **Brian Goldner** changed that. He executed a strategy that turned toys like **G.I. Joe** and **Transformers** into blockbuster **movies** for children.

Brian Goldner transformed Hasbro® into a multi-media company that won coveted licenses to make toys based on **Star Wars** and **Marvel** franchises.

His tireless work ethic enabled **Hasbro®** to achieve unprecedented growth, but I fear at a personal cost to Brian's health that many of us also confront.

Take a Break from Work

Brian Goldner's family did not openly discuss details of his seven-year ordeal with prostate cancer, but from what I surmise, he put in long hours to achieve remarkable business successes for **Hasbro®**.

In 2014, Brian was diagnosed with prostate cancer around age **51**.

Age **40** is when men should have their initial **PSA screening**.

The challenge many of us confront (including me) is finding time to take a break from work to have important health checkups.

It's not always easy, especially with procedures like **colonoscopies**.

I jokingly state when preparing for my **colonoscopies** that there is "***always something better to do***" than face a two-day colonoscopy ordeal.

Approximately **50,000** colorectal cancer patients are expected to die in **2022**.

Large numbers of needless disabilities and deaths occur because essential **diagnostics** are being delayed or avoided by large segments of the American public.[7-9]

Please don't let this happen to you.

In This Month's Issue...

Life Extension® has published dozens of articles on how to reduce one's risk of contracting **prostate cancer** and how to better treat it.

The article on page 28 of this month's issue describes **dietary patterns** shown to confer **cancer protective** benefits.

Page 56 provides an update about a **cancer treatment** we reported on in **2016** that has now entered a formal **clinical trial**.

Page 72 links to articles for **prostate cancer** patients. They describe how to properly stage a prostate malignancy and what therapies are best suited based on individual need.

For women, the article on page 20 describes a novel way to improve **vaginal health**.

Any form of **cancer treatment** involves disruptive stress, expense, and side effects.

Readers are encouraged to take proactive steps today to reduce their risk of malignancies and other preventable illnesses.

For longer life,

William Faloon, Co-Founder
Life Extension®

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"Friends" Sitcom Actor Dies of Prostate Cancer at age 59

As I was writing this editorial, another noteworthy individual perished after a four-year battle with **prostate cancer**.

James Michael Tyler played "Gunther" in the "**Friends**" television series.

He was diagnosed with **prostate cancer** during a routine health assessment in **2018** and underwent aggressive therapy.

By **June 2021** James announced that he had developed bone metastasis. In **October 2021** he died at **age 59**.

Since his **2018** diagnosis, James Michael Tyler campaigned for *early* testing and documented his treatments.

I applaud celebrities who convey their personal health issues to the public. It motivates people to take preventive actions.

The amount of needless suffering, and number of deaths from metastatic **prostate cancer**, however, have increased significantly.

When it comes to your health.

Go Green

Those who drink green tea enjoy better **cardiovascular health**.[1]

Mega Green Tea Extract provides more of the health-promoting polyphenol **EGCG** than the equivalent of several cups of green tea.

Item #00954 or **Item #00953**
100 vegetarian capsules

1 bottle **$22.50**
4 bottles $18 each

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For full product description and to order either **Mega Green Tea Extract,** call **1-800-544-4440** or visit **www.LifeExtension.com**

Reference: 1. *Mini Rev Med Chem.* 2022 Mar 28.

LOW-COST Blood Testing

Blood tests can detect underlying health issues before serious illness manifests.

Until October 1, 2022, readers of **Life Extension Magazine** can have a **PSA** blood test plus a **CBC/Chemistry** panel for only **$45**.

The **CBC/Chemistry** panel alone provides far more tests than what most conventional labs check for today.

Just $45 measures **cardiovascular** risks, **PSA**, and more including:

➡ Complete Blood Count:
Red blood cell count • Hemoglobin
Hematocrit • MCV (mean corpuscular volume)
MCH (mean corpuscular hemoglobin)
MCHC (mean corpuscular hemoglobin concentration)
RDW (red blood cell distribution)
White blood cell count • Immune Cell Differentiation Count • Platelet count

➡ PSA (prostate-specific antigen)

➡ Liver Function:
Alkaline phosphatase
LDH (lactate dehydrogenase)
AST (aspartate aminotransferase)
ALT (alanine transaminase)
Total protein • Albumin • Globulin
Albumin/globulin ratio
Bilirubin

➡ Lipid Profile:
Total cholesterol • Triglycerides
HDL cholesterol • LDL cholesterol (calc.)
VLDL cholesterol (calc.)
Total cholesterol/HDL ratio
Estimated Coronary Heart Disease risk

➡ Blood Sugar:
Fasting glucose

➡ Kidney Function:
Uric acid • BUN (blood urea nitrogen)
Creatinine • BUN/creatinine ratio
eGFR (estimated glomerular filtration rate)

➡ Electrolytes and Minerals:
Sodium • Potassium
Chloride • Calcium
Phosphorus • Iron

You can place your order by calling **1-800-208-3444** or visit **LifeExtension.com/PSA**

You'll be sent a list of drawing stations in your area along with a pre-paid requisition. You can walk into the drawing station nearest you at your convenience.

These tests cost far less than what commercial labs charge and you get results back fast. You also have free access to our Wellness Specialists to help review your results.

To order this comprehensive CBC/Chemistry blood panel for only **$45**, call **Life Extension** today at **1-800-208-3444** or order online at **LifeExtension.com/PSA**

Blood test services are available only in the continental United States and Anchorage, AK. Not available in Maryland. Restrictions apply for residents of MA, NY, NJ, RI, and PA.

Support Healthy Cell DNA with Super Absorbable TOCOTRIENOLS

Tocotrienols promote HEALTHY DNA function

Super Absorbable Tocotrienols

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1 bottle $22.50

4 bottles $21 each

For full product description and to order **Super Absorbable Tocotrienols**, 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.

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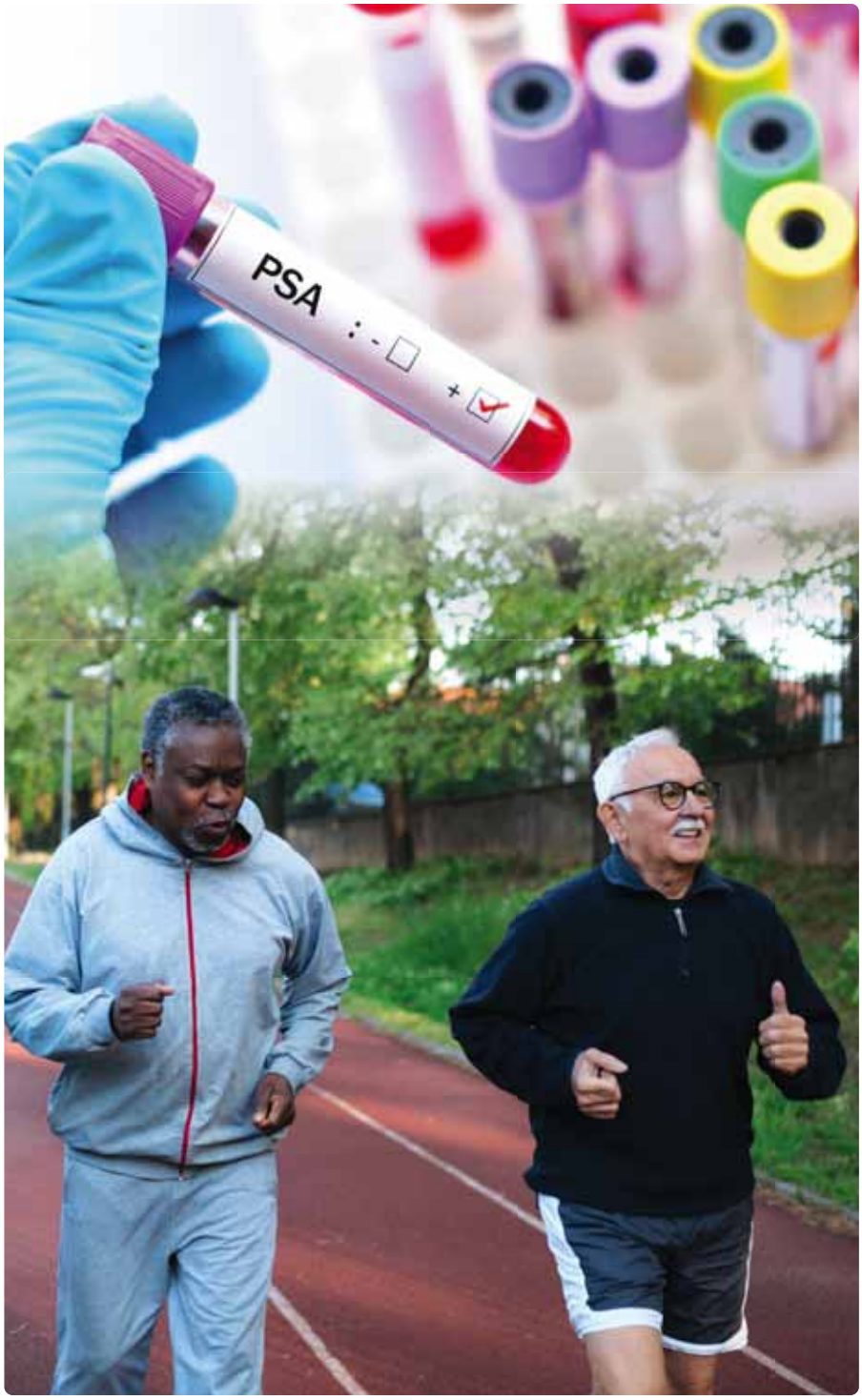
In the News



Rates of PSA Testing Increase After Guidelines are Updated

In 2012, the US Preventive Services Task Force (USPSTF) issued guidelines advising *against* **PSA** screening in **all** men, endorsing, instead, *individual decision-making* in men aged 55-69. That led to a **decrease** in PSA screening.

In 2017, the USPSTF reversed those **guidelines**.

A **2022** review published in *JAMA Oncology* found that updated guidelines for PSA screening, have led to *significant increases* in men diagnosed with this cancer in all age groups having PSA blood tests.*

This translates into more men being diagnosed at an *earlier* stage when intent-to-cure treatments are more effective.

The USPSTF revised its guidelines because of intense efforts by groups like **Life Extension®** that relentlessly advocated for **PSA screening** in men over age 40.

Editor's Note: The Food and Drug Administration first approved PSA testing as a screening aid for the diagnosis of prostate cancer in 1994.

* *JAMA Oncol*. 2022 Jan 1;8(1):41-47.

Tocotrienol Form of Vitamin E Helps Prevent Obesity, Animal Study Finds

The journal *Molecules* reported that members of the vitamin E family known as tocotrienols may play a role in the prevention of weight gain, as shown in a mouse study.*

For 13 weeks, researchers fed mice either a high-fat diet or a control diet that was significantly lower in fat and calories, with or without **tocotrienols**.

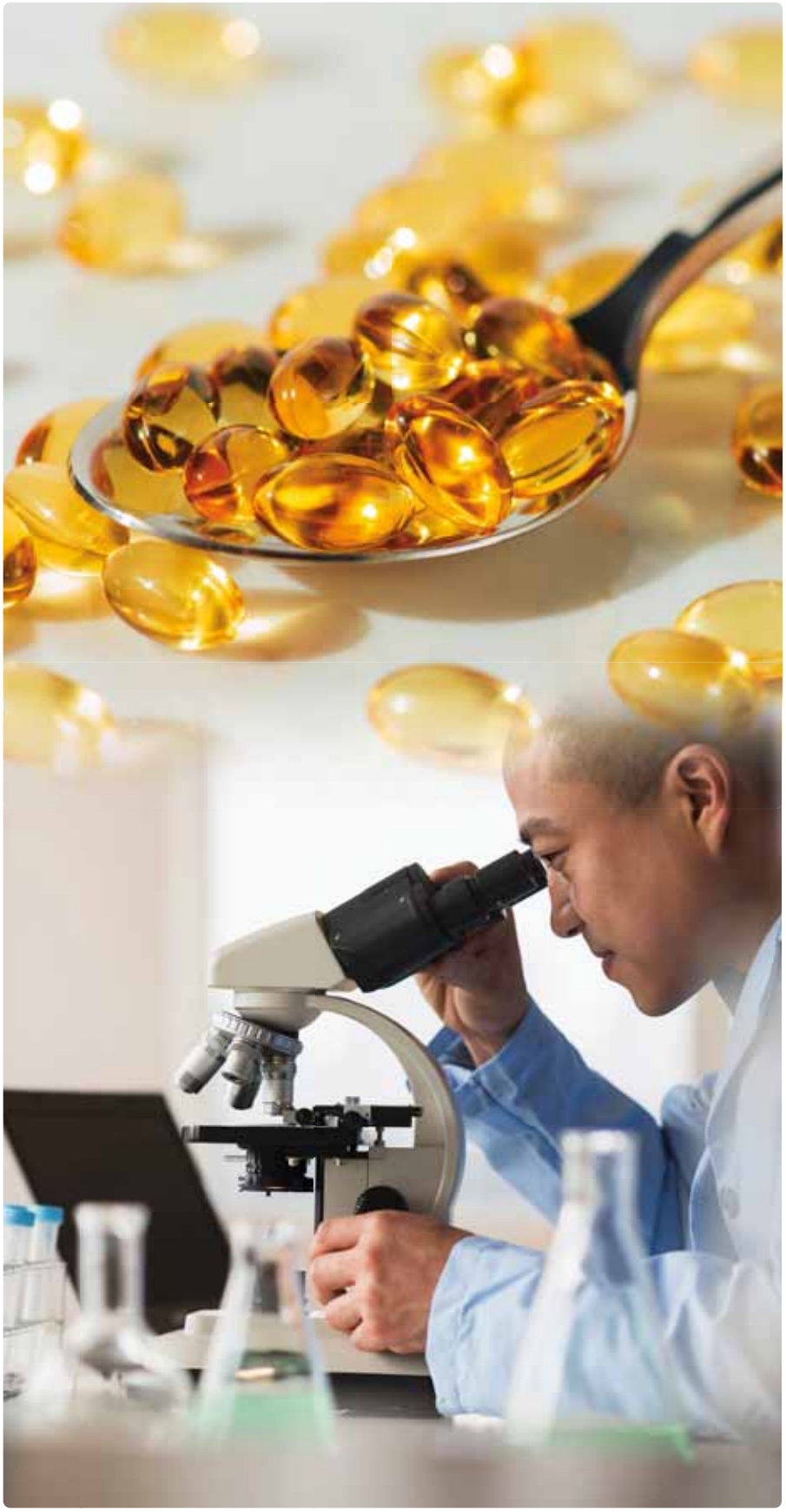
Body weight was measured at the beginning and end of the study.

At the end of the study, animals given a high-fat diet predictably weighed more than those that received a control diet.

Mice that received **tocotrienols** gained less **weight** on the high-fat diet and had less white fat accumulation around the kidneys.

Editor's Note: "Additionally, tocotrienols also inhibited hepatic [liver] damage from obesity," the authors concluded.

* *Molecules*. 2022 Mar 28;27(7):2188.



Ergothioneine Levels Linked to Decrease in Dementia, Cognitive Impairment

Higher plasma levels of ergothioneine, an amino acid that occurs in certain **mushrooms** and other sources, may be associated with less dementia and cognitive impairment, according to an article in *Free Radical Biology & Medicine*.*

Researchers compared ergothioneine levels in plasma samples collected from 496 men and women recruited from memory clinics and the community.

Researchers observed that people with **dementia** had the lowest *plasma ergothioneine* concentrations.

A similar observation was seen in participants with cognitive impairment without dementia who had *intermediate* plasma ergothioneine levels compared to controls.

Low ergothioneine levels were significantly associated with risk of **Alzheimer's disease** with or without cerebrovascular disease determined by MRI. *Decreased* ergothioneine levels were also associated with risk of vascular **dementia**.

Editor's Note: Higher plasma ergothioneine levels were correlated with greater global cortical thickness of the brain, and volume of the brain's hippocampus (involved in memory and learning), indicating less atrophy.

One can boost ergothioneine blood levels by incorporating lots of mushrooms in the diet or taking a **5 mg** ergothioneine supplement daily.

* *Free Radic Biol Med.* 2021 Dec;177: 201-211.

Specialized Pro-Resolving Mediators Show Promise Against MS

Specialized pro-resolving mediators (SPMs) may play a role in the treatment of multiple sclerosis (MS), an autoimmune disease in which chronic inflammation occurs, the *Journal of Neuroinflammation* reported.*

SPMs, produced in the body from fatty acids (including omega-3s), help maintain a healthy post-inflammatory response. Because these fatty acids are not completely converted to SPMs, supplemental SPMs and their precursors may be beneficial.

In a mouse model of MS, SPMs were found to be below the limit of detection, while pro-inflammatory molecules derived from fatty acids were increased. The administration of SPMs to mice suppressed pro-inflammatory molecules, beneficially modified aspects of immune function, enhanced neurologic outcomes, and protected their nerves.

Editor's Note: "When resolution fails, inflammation becomes uncontrolled, leading to chronic inflammation and tissue damage, as occurs in multiple sclerosis (MS)," the authors stated.

* *J Neuroinflammation.* 2022 Feb 2;19(1):27.

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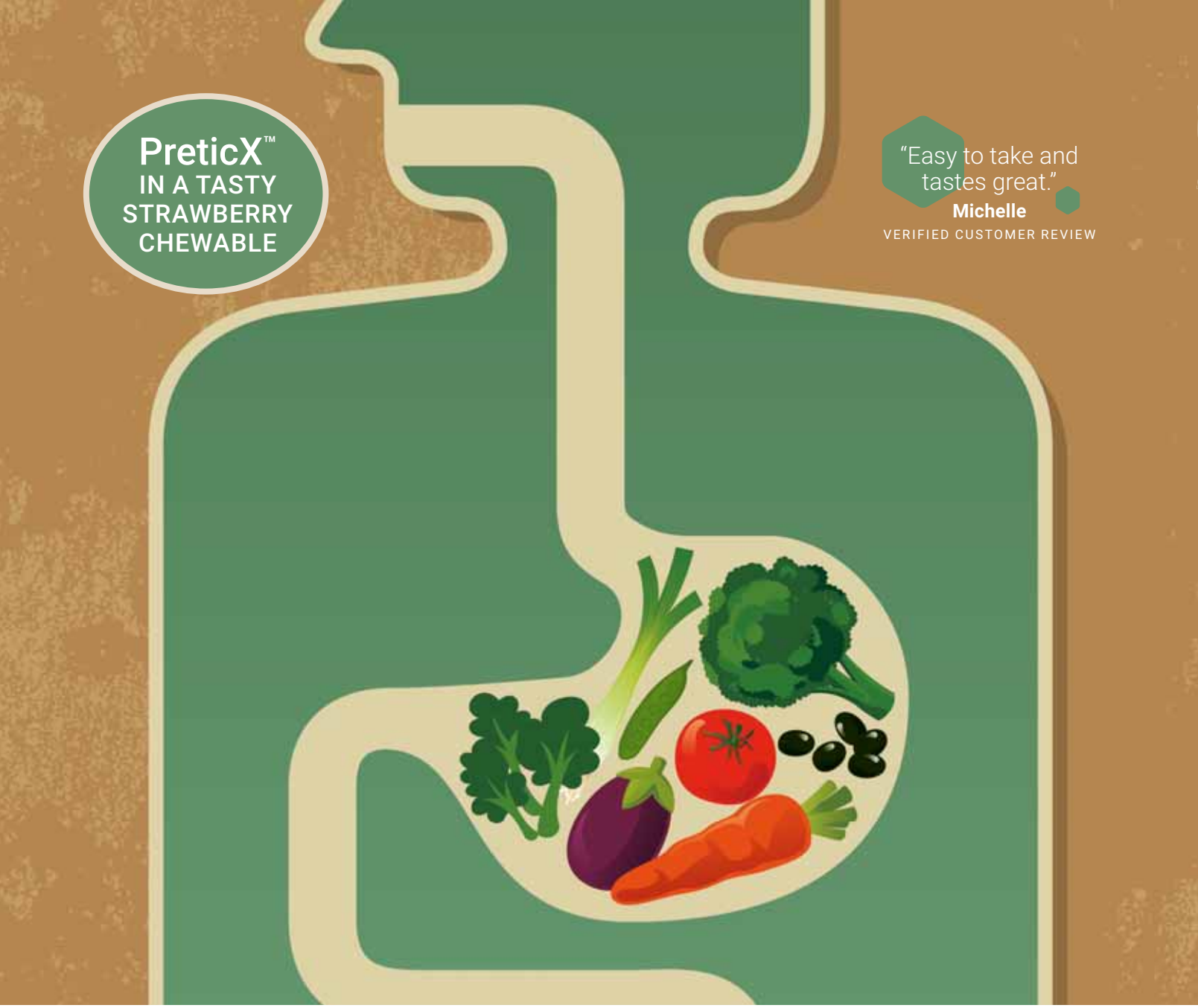
IN A TASTY STRAWBERRY CHEWABLE

"Easy to take and tastes great."
Michelle
VERIFIED CUSTOMER REVIEW



RESTORE YOUTHFUL GUT BALANCE

With Strawberry Flavored FLORASSIST® Prebiotic Chewable

Item #02203 • 60 vegetarian chewable tablets

1 bottle **$15** • 4 bottles $13 each

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- With age, our **bifidobacteria** levels decline to as little as **5%**, creating gut imbalance.[1]
- *Increasing* **bifidobacteria** levels *enhances* digestion and carbohydrate metabolism.
- *Strawberry flavored* **FLORASSIST® Prebiotic Chewable** helps restore healthy **bifidobacteria** levels in as little as 14 days using **XOS** prebiotic.[2]
- **1,000 mg** of **XOS** (xylooligosaccharides) per prebiotic chewable.

References
1. *Front Microbiol.* 2016;7:1204.
2. *Korean J Nutr.* 2007;40(2):154-61.

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

Senolytic

ACTIVATOR® with BIO-FISETIN

With age, our body accumulates **senescent cells** that affect the day-to-day function of the healthy cells around them.

Senolytics are compounds that selectively remove senescent cells.

Senolytic Activator® contains nutrients designed to target senescent cells for normal elimination.

This formula contains a patented **fisetin** that is more **bioavailable** than regular fisetin.

The fisetin dose in **Senolytic Activator®** provides the potency of **7** capsules of **Bio-Fisetin**. (Some people take Bio-Fisetin daily for its other health benefits.)

COMPREHENSIVE SENOLYTIC SUPPORT

The **Senolytic Activator®** formula provides the following nutrients:

- **THEAFLAVINS** (polyphenols from black tea)
- **BIO-QUERCETIN** (ultra-absorbable form)
- **APIGENIN** (a natural flavonoid)
- **BIO-FISETIN** (up to **25 times** greater bioavailability)

The suggested dose of the **Senolytic Activator®** is **3 capsules** once a week. Each bottle lasts 3 months and costs very little.

"Taking this supplement, I feel I will be healthy for the long haul."

Larry

VERIFIED CUSTOMER REVIEW

Item #02301

36 vegetarian capsules

1 bottle **$19.50** • 4 bottles $18 each

(Each bottle lasts 3 months)

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

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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:

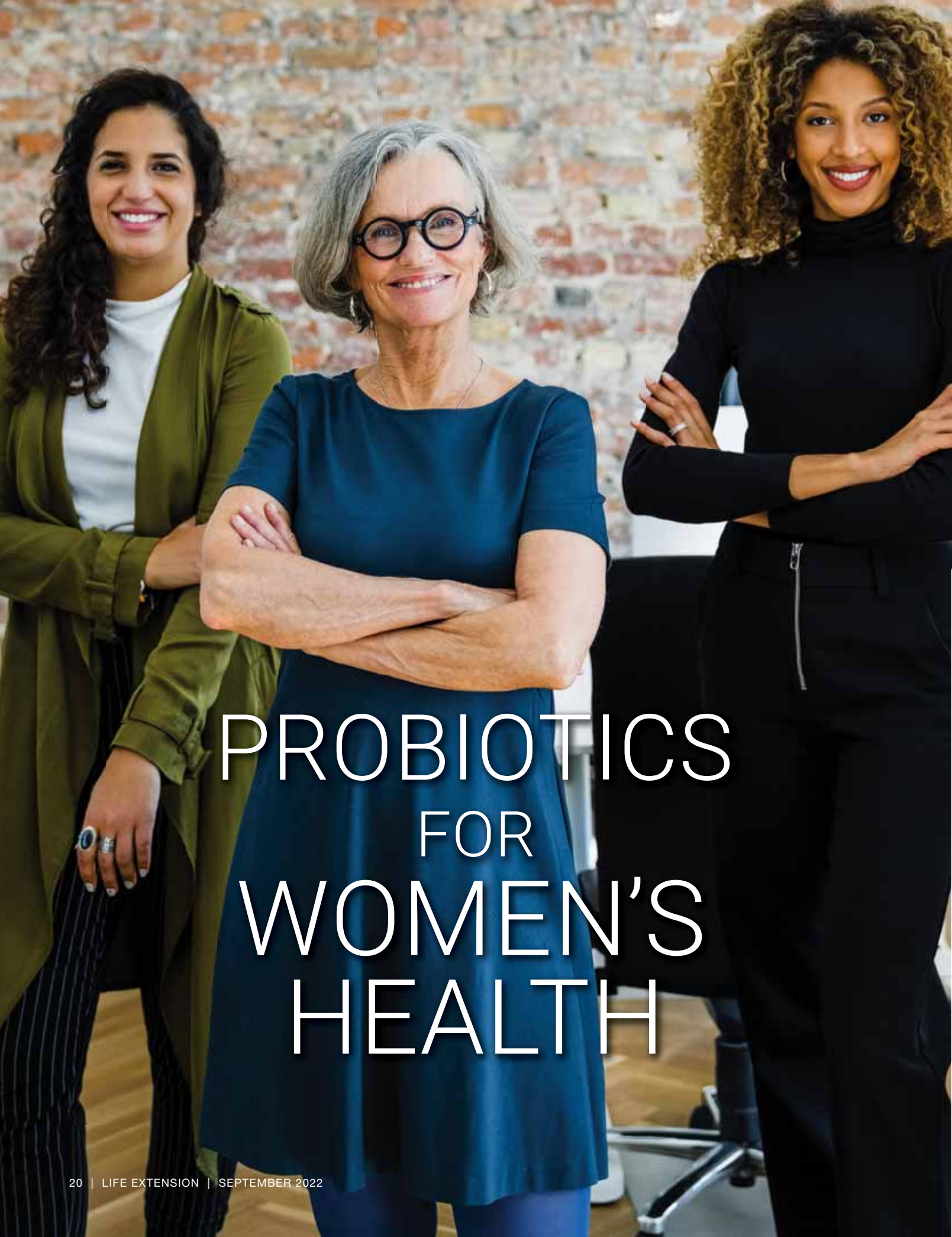
- Support healthy urination
- Promote healthy prostate function
- Support healthy prostate cell division

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

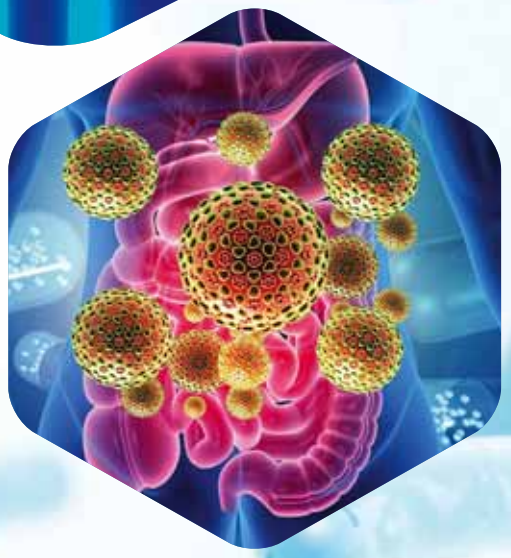
Item #02029 • 60 softgels

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**



PROBIOTICS FOR WOMEN'S HEALTH



BY JUDY RUSSELL

Most people take **probiotics** to improve **immune** and **digestive** function.

But the intestines are not the only place where healthy bacterial **flora** are important.

Another site unique to **women** is the vagina. Healthy **vaginal flora** can support gynecological health.[1,2]

An *unhealthy* mix can increase risk for bacterial, yeast, and sexually transmitted infections, along with fertility problems.[1]

Researchers have identified a specific type of ***Lactobacillus*** bacteria that has been shown to improve the **vaginal microbiome** while reducing colonization by potentially harmful microorganisms.[3-5]

The Importance of Vaginal Health

The predominant bacteria species present in a healthy **vaginal microbiome** are those in the ***Lactobacillus*** genus.[2]

When numbers of *Lactobacillus* drop, it makes room for potentially harmful microorganisms to gain a foothold. **Unhealthy** yeast like ***Candida albicans*** and bacteria such as ***Gardnerella vaginalis*** can grow in numbers.[2]

This shift toward harmful microorganisms in the vagina is referred to as **vaginal dysbiosis**. If it gets severe enough, it can lead to common infections like **bacterial vaginosis** or a **yeast infection**.[2]

It is estimated that as many as **29%** of U.S. women aged 14 to 49 have a vaginal microbiome consistent with **bacterial vaginosis**,[1] which can cause burning during urination, strong "fishy" vaginal odor, vaginal itching, and abnormal vaginal discharge.[6]

Recurrent vaginal **yeast infections** (vulvovaginal candidiasis) are also increasingly common, affecting approximately **138 million** women annually worldwide.[7]

They are associated with increased risk of infections, inflammation, and negative reproductive outcomes.[1,7]

Maintain a Healthy Vaginal Microbiome

Scientists have isolated a specific strain of the probiotic bacteria ***Lactobacillus plantarum*** that is prevalent in a healthy vaginal microbiome.

This strain has been shown to interfere with the growth of pathogens like *Candida* yeast by outcompeting them for the ability to attach and thrive.[8]

A study was conducted using **vaginal epithelial cells** that already contained undesirable microorganisms such as *C. albicans, G. vaginalis, Staphylococcus aureus*, and *Escherichia coli*.

L. plantarum was shown to successfully adhere to and help protect these infected cells.[9]

L. plantarum has also been evaluated in several human trials, with impressive results:[3,5,10]

- Oral intake resulted in ***L. plantarum*** colonization of the vagina and an improvement in the vaginal microbiome.
- Lactobacillary grade scores, used to clinically evaluate vaginal microbiome healthy lactobacillus levels, improved significantly.
- In women with vaginal dysbiosis and a history of **recurrent yeast infections**, there was a significant *reduction* in redness and swelling.

Gastrointestinal and Immune Function

Probiotics have also been found to help address **gastrointestinal issues** and general **immune** function.

Gastrointestinal symptoms such as abdominal cramps, diarrhea, constipation, nausea, and vomiting are frequently reported around the time of menstruation.[11] Irritable bowel syndrome (IBS) is also characterized by symptoms of diarrhea, constipation, and abdominal pain, and is more common in women than men.[12]

Another specific ***Lactobacillus*** strain, ***L. helveticus***, may help address these issues. It supports immune health and a healthy inflammatory response. In preclinical studies, this probiotic:

- Inhibits the growth of common **pathogens** such as *Listeria, Candida,* and *E. coli*,[13-15]
- Reduces production of pro-inflammatory mediators, including those associated with chronic inflammation and risk for autoimmune disease and cancer in the gut,[16-19]

WHAT YOU NEED TO KNOW

- Increases production of **interferon** and cells that produce **IgA antibodies**, which both help the immune system fight infections,[17] and
- Reduces intestinal **inflammation** in animals while reducing markers of systemic inflammation and oxidative stress.[18]

In a study of adults,[20] a majority of subjects believed that this probiotic had a beneficial effect on their health, with a significant improvement in average scores of **gastrointestinal symptoms** including diarrhea, constipation, crampy abdominal pains, and flatulence.

In other studies, ***L. helveticus*** demonstrated an ability to improve **immune function**, both in normal subjects and in elite, fatigued athletes whose immune function can dwindle with intense training.[21-23]

These studies found that this strain boosts components of immune function that are associated with protection from **infectious diseases**, including increasing secretion of interferon and maintenance of salivary IgA antibody levels.

A Probiotic Blend Designed for Women

- Like the gut, the health of the vagina is dependent on the balance of various types of microorganisms living there. Healthy bacteria protect **vaginal health**, while pathogens increase risk for vaginal infections and other disorders.
- Oral intake of the probiotic ***L. plantarum*** has been shown to reach the vaginal environment where it helps outcompete and impair the growth of pathogenic microorganisms, improving vaginal health.
- Another probiotic, ***L. helveticus***, improves gut health, reducing common gastrointestinal symptoms, and boosts immune function and resistance to infection.
- Scientists have formulated a **probiotic blend** of these strains of ***Lactobacillus*** bacteria, which can help women improve their overall health including vaginal, gastrointestinal, and immune health.

In one study, use of the probiotic ***L. helveticus*** led to a significant reduction in the *duration* and *severity* of **upper respiratory tract infections**.[22]

Taking ***L. helveticus*** along with ***L. plantarum*** can support overall optimum women's health.

Summary

A healthy **vaginal flora** can support vaginal health. An *unhealthy* mix can increase risk for bacterial infections, yeast infections, sexually transmitted infections, and even fertility problems.

The probiotic ***Lactobacillus plantarum*** helps ensure a healthy composition of **vaginal** microbiome able to outcompete potential harmful microorganisms that can cause bacterial or yeast infections.

Another probiotic, ***Lactobacillus helveticus***, has been shown to improve common **gastrointestinal** symptoms like cramps, diarrhea, and constipation along with markers of **immune function**.

The combination of these probiotics provides a wide range of benefits for optimal women's health. •

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

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- ***L. helveticus LAFTI® L10*** promotes **digestive** health[3] and encourages a healthy **immune** response.[4]

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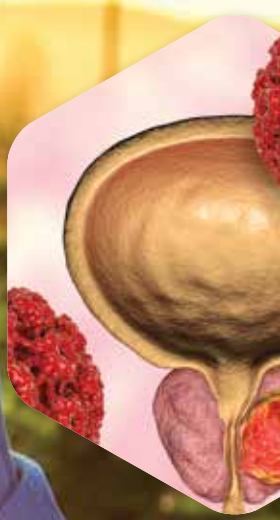
Foods and Nutrients That Help *Prevent* **PROSTATE CANCER**



BY MICHAEL DOWNEY

An estimated 268,000 American men will be **diagnosed** with **prostate cancer** during **2022**.[1]

Most men with **cancer cells** in their **prostate gland** are unaware of it.

Ingesting foods with anti-cancer activities, while avoiding foods that promote cancer propagation may:

- Lower risk of developing prostate cancer,
- Reduce need for aggressive therapies in those with low-grade disease, and
- Improve clinical outcomes in those treated for prostate cancer.

A **2022** meta-analysis found that **meat**, especially processed meat, may be associated with ***increased*** prostate cancer risk.[2]

Another recent study found that a *high* consumption of **vegetables, fruits,** and **whole grains** is strongly linked to ***protective effects*** against prostate cancer.[3]

Previous research has shown that specific foods can ***reduce*** prostate cancer risk and improve outcomes in those following an active surveillance (watchful waiting) program or undergoing curative treatment.

Diet, Nutrients, and Prostate Cancer

About **one in eight** men will be diagnosed with **prostate cancer** during his lifetime.[1]

However, regular consumption of certain **foods** is associated with **lower** rates of prostate cancer. By boosting intake of the following foods, men may significantly lower their risk.

Walnuts

Feeding **walnuts** to mice inhibits the **development** of tumors and decreases tumor **growth** and **size**. It also lowers levels of **IGF-1** (insulin-like growth factor 1), a protein associated with prostate cancer.[4]

Other animal and cell culture research shows that walnuts:[5,6]

- *Inhibit* the growth of prostate cancer **cells**,
- *Lower* **PSA** (prostate-specific antigen) levels, which may indicate prostate cancer when elevated, and
- *Reduce* the size of prostate **tumors**.

In **older men**, walnut intake improved biomarkers related to prostate and vascular health.[4]

Cruciferous Vegetables

Observational studies have found that men with a *high* consumption of **broccoli** and other **cruciferous vegetables** like cabbage, cauliflower, and kale have a lower risk of **invasive** prostate cancer.[7,8]

A meta-analysis concluded that cruciferous vegetable intake is associated with an ***overall reduced risk of prostate cancer***.[9]

These effects may be a result of cruciferous vegetables' abundance of beneficial compounds, including:[10-14]

- Glucosinolates,
- Indole-3-carbinol (I3C),
- 3,3'-diindolylmethane (DIM), and
- Phenethyl isothiocyanate (PEITC).

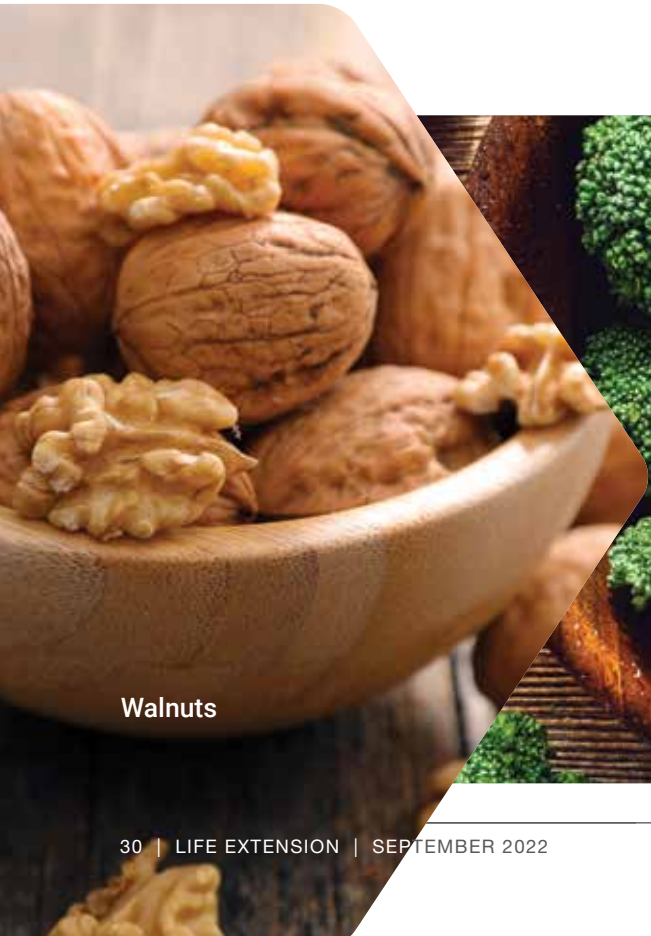
Flaxseed

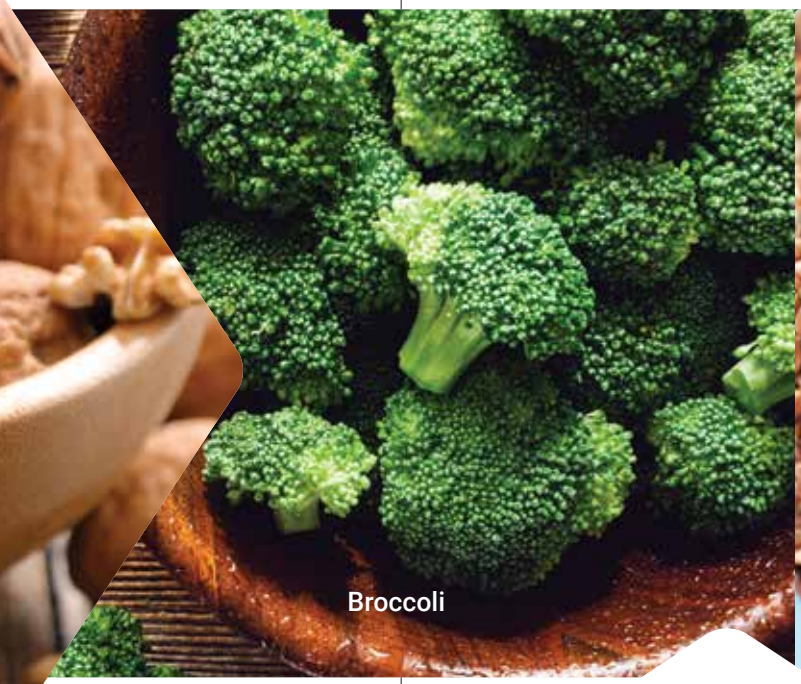
In **human** studies, flaxseed intake has been shown to:[15]

- *Decrease* proliferation of **prostate cancer cells**, and
- *Reduce* proliferation of **tumors** in as few as 30 days.

Flaxseeds contain **lignans**, which are converted in the body into compounds called **enterolactones**.[16]

Men with *higher* levels of **enterolactones** have been shown to be *less likely* to have prostate cancer than men with low levels.[17]


Walnuts


Broccoli


Flaxseed

Coffee

A meta-analysis found that consuming **four** or more cups of coffee daily was linked to a reduced risk of **fatal** and **high-grade** prostate cancer, as well as a lower risk of **overall** prostate cancer.[18]

Additionally, a large epidemiological study found that, compared to drinking no coffee, drinking **six** cups of coffee (including decaffeinated) daily reduced the risk of prostate cancer by **18%** and lowered the risk of **lethal** prostate cancer by **60%**.[19]

Tomatoes

Lycopene is the carotenoid pigment that gives **tomatoes** their red color.

A systematic review of cell and animal studies found that lycopene decreases **androgen** metabolism and signaling, an important factor in prostate cancer growth and progression. [20]

Additional anti-cancer mechanisms of lycopene are believed to include inhibiting **inflammation** and reducing **oxidative stress** within prostate tissue.[21]

Lycopene is known to inhibit the growth of prostate cancer cells in vitro, and higher circulating levels have been associated with ***reduced prostate cancer risk***.[22,23] Above-average consumption of lycopene has been tied to a **59%** reduction in the risk of **death** from aggressive prostate cancers.[24]

A meta-analysis found a significant association between a *lower* risk of prostate cancer and consumption of **tomatoes**, **cooked tomatoes**, and **tomato sauce**. The *greater* the tomato consumption, the *greater* the risk reduction.[25]

To enhance the *absorption* of lycopene from tomatoes, eat them in processed form such as tomato sauce, or process them yourself by cooking and eating them with healthy fat, such as extra virgin olive oil.[26,27]


Coffee


Tomatoes

Prostate-Protecting Foods

- **One in eight** American men will be diagnosed with **prostate cancer** in his lifetime.
- Specific foods have been shown to exert **protective** effects against prostate cancer.
- These foods include walnuts, cruciferous vegetables, flaxseed, coffee, tomatoes, green tea, and pomegranate, supported by supplemental vitamin D and boron.

Pomegranate

In a phase II clinical trial of men with low-risk prostate cancer, prostate tissue samples from those who took **pomegranate fruit extract** daily for one year contained significantly *lower* levels of biochemical markers associated with **DNA damage** and **prostate cancer**.[28]

An earlier phase II trial was undertaken in men who had undergone surgery or radiation for prostate cancer and who subsequently showed rising PSA levels. Patients who consumed **eight ounces** of **pomegranate juice** daily had a delay in **PSA doubling time**, the time it takes for PSA levels to rise.[29]

Preclinical data show that **pomegranate** components **protect** against multiple aspects of prostate cancer including growth, progression, and spread, by inhibiting:[30-35]

- Tumor cell proliferation,
- Cell division,
- Invasiveness,
- Growth of new blood vessels, and
- Metastasis (spread).

A review found that three components of pomegranate exhibit these inhibitory effects on prostate cancer growth and spread: **luteolin**, **ellagic acid**, and **punicic acid**.[36]

Boron

A study found that men with the highest **boron** intake showed a **54%** lower risk of prostate cancer compared to those with the lowest intake. In addition, they reported that increased dietary boron intake was associated with a decreased risk of prostate cancer in a *dose-response* manner. [37]

In an animal model, scientists orally administered various concentrations of a boron-containing solution. This resulted in decreases in prostate tumor size by **25%** to **38%**. Remarkably, PSA levels dropped by an astounding **86%** to **89%** in the animals that received boron.[38]

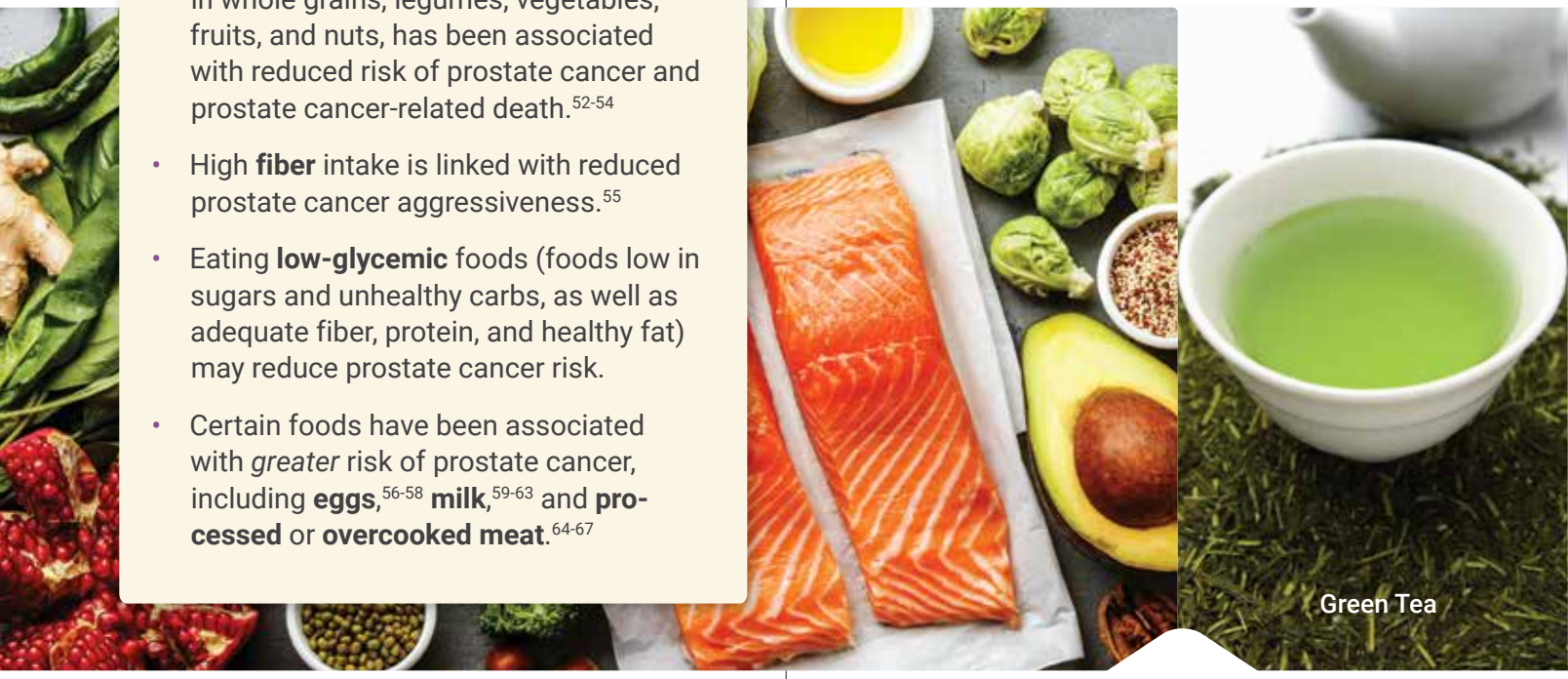
These findings suggest that supplemental boron may have both preventive *and* therapeutic effects—helping both to shrink prostate tumors and to decrease levels of PSA.

Green Tea

One clinical trial found that green tea catechins were **90%** effective in preventing prostate cancer in men with pre-malignant lesions. The researchers recruited 60 men, aged 45-75. Thirty participants received **200 mg** of green tea catechins **three times daily**, while the

More Dietary Tips

- The **Mediterranean diet,** which is rich in whole grains, legumes, vegetables, fruits, and nuts, has been associated with reduced risk of prostate cancer and prostate cancer-related death.[52-54]
- High **fiber** intake is linked with reduced prostate cancer aggressiveness.[55]
- Eating **low-glycemic** foods (foods low in sugars and unhealthy carbs, as well as adequate fiber, protein, and healthy fat) may reduce prostate cancer risk.
- Certain foods have been associated with *greater* risk of prostate cancer, including **eggs**,[56-58] **milk**,[59-63] and **processed** or **overcooked meat**.[64-67]



other 30 subjects received a placebo. Biopsies were conducted at six and 12 months.[39]

Remarkably, only **one** man in this pre-malignant **green tea** group was diagnosed with prostate cancer, compared to **nine** men in the control group who were diagnosed with the disease. No significant side effects or adverse reactions were reported. The lead researcher concluded that "***90%** of chemoprevention efficacy could be obtained by [green tea catechin] administration in men prone to developing prostate cancer*."[39]

Green tea polyphenols have also shown efficacy as an adjunctive therapy. Prostate cancer patients were given **1,300 mg** of green tea polyphenols, mostly EGCG, prior to the time of radical prostatectomy. They showed significant reductions in PSA and other tumor promoters such as ***vascular endothelial growth factor***.[40]

Vitamin D

Observational studies have shown cancer risk reductions of up to **50%** based on *higher* vitamin D status.[41,42] People with higher vitamin D levels have lower odds of ***lethal*** **prostate cancer**.[43]

It's difficult to get enough from food sources and there are risks with sun exposure. Scientists have determined that supplemental doses ranging from **5,000 IU** to **8,000 IU** daily can bring blood levels of vitamin D up to optimal ranges associated with reduced risk for chronic disease.

Regular blood testing is important to guide adjustments to these doses to achieve the maximum benefits.

Grapeseed

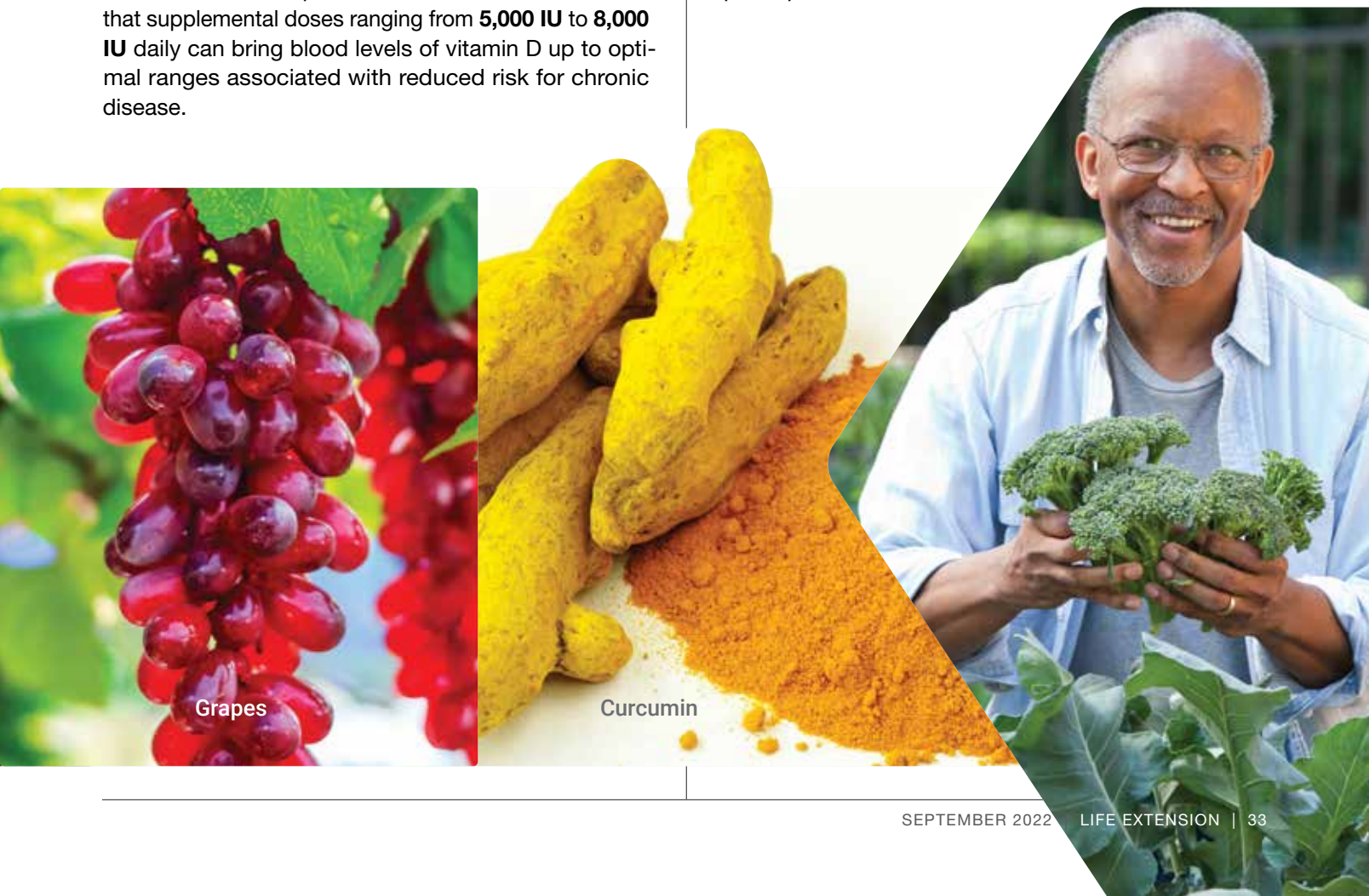
Grapeseed extract induced apoptosis (programmed cell death) in prostate cancer cells.[44] Grapeseed extract inhibited prostate cancer growth and progression in mice.[45]

A study found that men who supplemented with grapeseed extract reduced their risk of prostate cancer by **41%**. Moreover, high 10-year average use of grapeseed extract was associated with a **62%** reduction in prostate cancer risk.[46]

Curcumin

Curcumin induces apoptosis (programmed cell death), interferes with the spread of cancer cells, and regulates inflammatory responses.[47-50]

In one trial, 30 patients with castration-resistant prostate cancer and rising PSA received curcumin while undergoing treatment with docetaxel and prednisone. Improved PSA responses were noted in **59%** of participants.[51]



Summary

Specific foods and drinks have been shown to be associated with a favorable influence on risk factors for, and mechanisms of **prostate cancer**.

Making walnuts, cruciferous vegetables, flaxseed, and other plant foods a consistent part of a healthy diet—further supported by supplemental vitamin D, boron and other nutrients—could potentially save lives and spare men the side effects of conventional treatments.

Consider cutting back or avoiding red meat, especially **processed meat** to further reduce risk of **prostate** and other **cancers**. •

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

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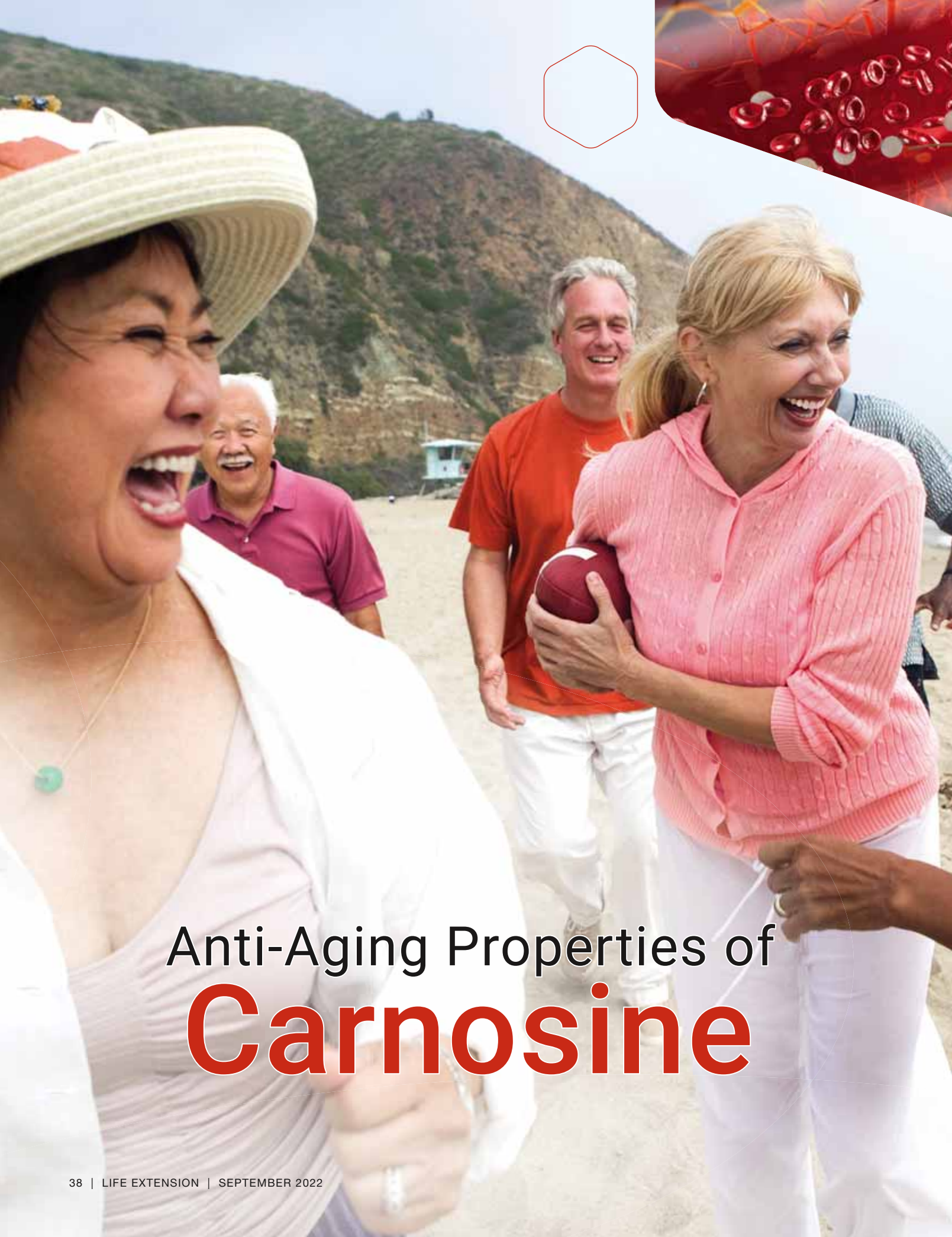
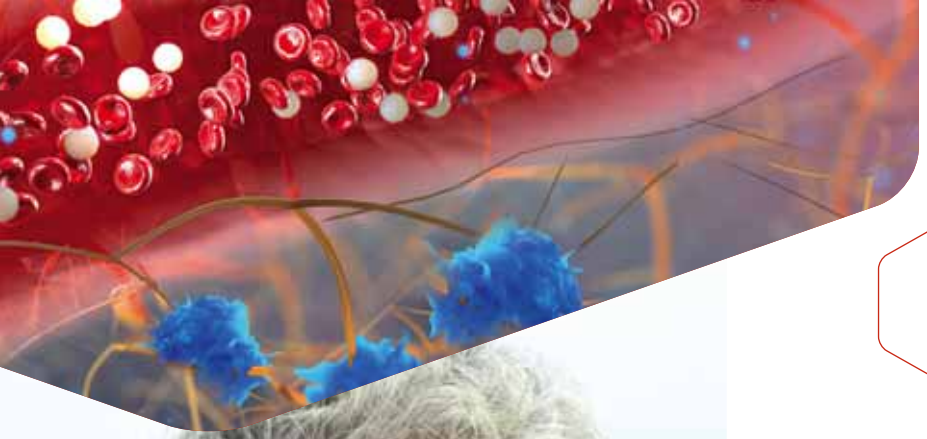


Anti-Aging Properties of Carnosine



BY JACKSON RILEY

On May 20, 2022, a review article was published that described the hidden therapeutic potentials of **carnosine**.[1]

Carnosine was defined as "***a molecule with multimodal mechanisms of action***."

The paper revealed more than **1,000** studies published about the structure, function, and biological activities of **carnosine** under experimental and clinical conditions.

This **2022** published review advocates for more well-defined **clinical trials** to evaluate carnosine's multiple mechanisms.

These human studies include evaluating carnosine's potential to combat disorders as diverse as type II diabetes, Parkinson's, and Alzheimer's.

Twenty-two years ago, **Life Extension**® became the first to introduce the benefits of ***high***-dose **carnosine** supplementation.

Since then, many readers have supplemented daily with **500 mg** to **1,000 mg** of carnosine.

Slow the Aging Process

An often overlooked cause of **accelerated aging** is **glycation**.

Glycation damage occurs when **glucose** interacts with the **body's proteins** to form non-functioning structures.[2,3]

Carnosine is an **anti-glycation** compound that also suppresses free radicals and persistent **inflammatory** reactions.[4]

Daily supplementation with **carnosine** has been found to improve a range of outcomes associated with:[5]

- Cognition and exercise capacity in young and elderly adults,
- Physical performance and quality of life in individuals with heart failure,
- Glucose metabolism in overweight or obese non-diabetic and prediabetic individuals, and
- Neurological outcomes (balance and locomotion) in Parkinson's disease patients and elderly adults.

What is Carnosine?

Carnosine is a compound composed of two amino acids linked together (a dipeptide).

It reduces or blocks **glycation**, rejuvenates aged cells, and more.[4,6]

These actions hinder processes that contribute to **age-related disorders**.

Dangers of Glycation

Glycation occurs when **glucose** (sugar) attaches to proteins, DNA, and lipids (fats), forming **toxic compounds** called **advanced glycation end products** (AGEs).

These AGEs damage cells, tissues, and organs.[4]

Glycation occurs at a faster rate in those suffering from **diabetes** because they have elevated **blood sugar** that binds to the body's **proteins**. But it occurs in *everyone* over time.[7,8]

An Anti-Glycation Nutrient

Carnosine stands out because of its ability to prevent and reduce the impact of **glycation**.

It can inhibit the formation the **toxic compounds** resulting from excessive blood sugar, preventing them from damaging proteins.[9,10]

A systematic review of **36** articles on the impact of **carnosine** presented findings about its anti-glycation properties.[11]

One randomized controlled trial found that compared to placebo, diabetic patients receiving **1,000 mg** of carnosine each day for 12 weeks had significant improvements in fasting blood glucose, serum triglycerides, and **HbA1c** levels.[12]

The **HbA1c** blood test is one way that we can measure the extent of glycation in the body.

Increased Longevity

Carnosine's ability to reduce glycation, oxidative stress, and chronic inflammation[4] makes it a promising candidate to ***slow aging processes***.

In cultured cells, carnosine helped prevent **senescence** and *rejuvenated* the cells that already showed signs of senescence.[6] Cellular senescence is closely linked to accelerated aging and development of disease.

WHAT YOU NEED TO KNOW

It has also been shown, in cultured cells, to *reduce* the shortening of **telomeres**, the protective caps on the ends of chromosomes. Longer telomeres are associated with increased lifespan.[13]

In an animal study, treating aging-accelerated mice with carnosine increased the proportion of mice living into old age.[14]

Promoting Brain Health

Neurodegenerative diseases such as Alzheimer's can result from protein glycation and oxidative stress that lead to the accumulation of toxic proteins.[15]

In models of Alzheimer's, Parkinson's, and aging, carnosine has shown benefits, including:[4]

- Reduction of toxic protein aggregation and inflammation in cell studies,
- Reduction in cognitive impairment, inflammation, and beta-amyloid accumulation in rodents, and
- Increase in antioxidant enzymes in cell and animal models of Parkinson's disease and aging.

Reduce Glycation for Better Health

- **Carnosine** is a compound that is produced in the body. Levels decline with age.
- Carnosine helps block the toxic effects of glucose that drive accelerated aging and risk for age-related disease.
- This compound also reduces **oxidative stress** and **inflammation**. In preclinical trials it has prevented cellular senescence and inhibited the shortening of **telomeres**.
- In one animal study, carnosine increased the proportion of mice living into old age.
- In **human** studies, carnosine has demonstrated the ability to help ward off premature aging and chronic disease.

Controlling Diabetes and Metabolic Disease

According to the ***National Diabetes Statistics Report***, almost **40 million** Americans have diabetes. The numbers are even more worrisome regarding pre-diabetes (fasting blood sugar between **100 mg/dL** to **125 mg/dL**), which is present in almost **100 million** adults 18 years and older.[16]

In animal models, carnosine improves **glucose control** and **insulin sensitivity** and blocks the progression of diabetes complications.[17-21]

In one mouse study, it even reduced or delayed the *initial* development of **diabetes**.[21]

In a randomized controlled clinical study in non-diabetic overweight and obese individuals, 12 weeks of daily **carnosine** improved the glycemic and insulin response to an oral glucose challenge.[22]

Know your numbers...

Here are the blood lab values that **Life Extension** considers **optimal** for three important metabolic parameters:

1. Fasting Glucose: **80-86 mg/dL**
2. Fasting Insulin: **<5 µIU/mL**
3. HbA1c: **5.0%-5.4%**

A meta-analysis of **18** randomized controlled trials of supplements containing carnosine or related compounds found that they improved **triglyceride** and **cholesterol** levels.[23]

Cardiovascular Benefits

Poor glucose control and diabetes increase risk of **heart disease**. By improving metabolic health and shielding tissues from glycation, carnosine *reduces* that risk.

Several reviews have noted that carnosine may improve **cardiac function** and has potential benefits for prevention or treatment of **cardiovascular disease** and **stroke**.[20,24-26]

Congestive heart failure occurs when the heart cannot pump blood sufficiently, resulting in one or more symptoms that can include shortness of breath, fatigue, and accumulation of fluid in the abdomen or extremities.[27] It can limit mobility and physical functioning, and severely impair quality of life.

In a study of patients with **heart failure**, participants were assigned to receive standard congestive heart failure medical therapy alone, or with added carnosine, **500 mg/day** over a six-month period.[28]

Compared with the patients not taking carnosine, the supplemented group significantly *improved* their physical condition in a number of ways. Patients saw improvement in:

- Quality-of-life scores,
- Six-minute walking distance,
- Peak exercise workload, and
- The ability to deliver oxygen for use in tissues during exercise.

Summary

Oxidative stress, **chronic inflammation**, and **glycation** are underlying causes of aging and chronic disease.

Carnosine can fight ***all three***. It is a powerful antioxidant and anti-inflammatory, and also anti-glycation compound.

These actions can benefit **brain**, **heart**, and **metabolic** health.

In an animal study, carnosine extended life. In clinical trials, carnosine has demonstrated improvements against several common chronic degenerative disorders.

We concur with a 2022 published review that advocates for well-defined **clinical trials** to fully evaluate carnosine's multiple effects on human health.

The challenge is where to find funding!

Carnosine is an affordable dietary supplement and not a patented prescription drug. This means there is no financial incentive as there is with pharmaceuticals to spend many $millions of dollars on clinical trials. •

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

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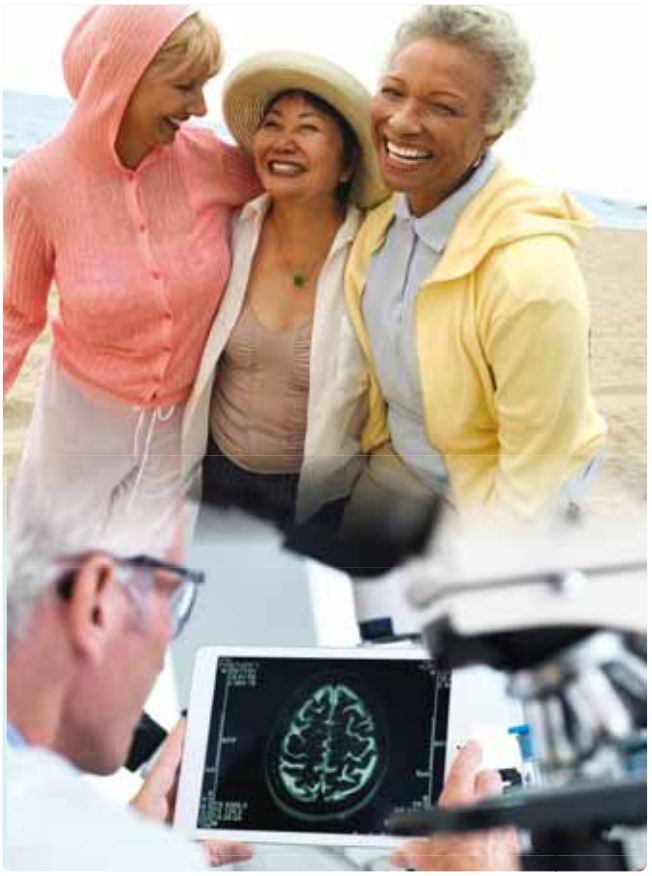

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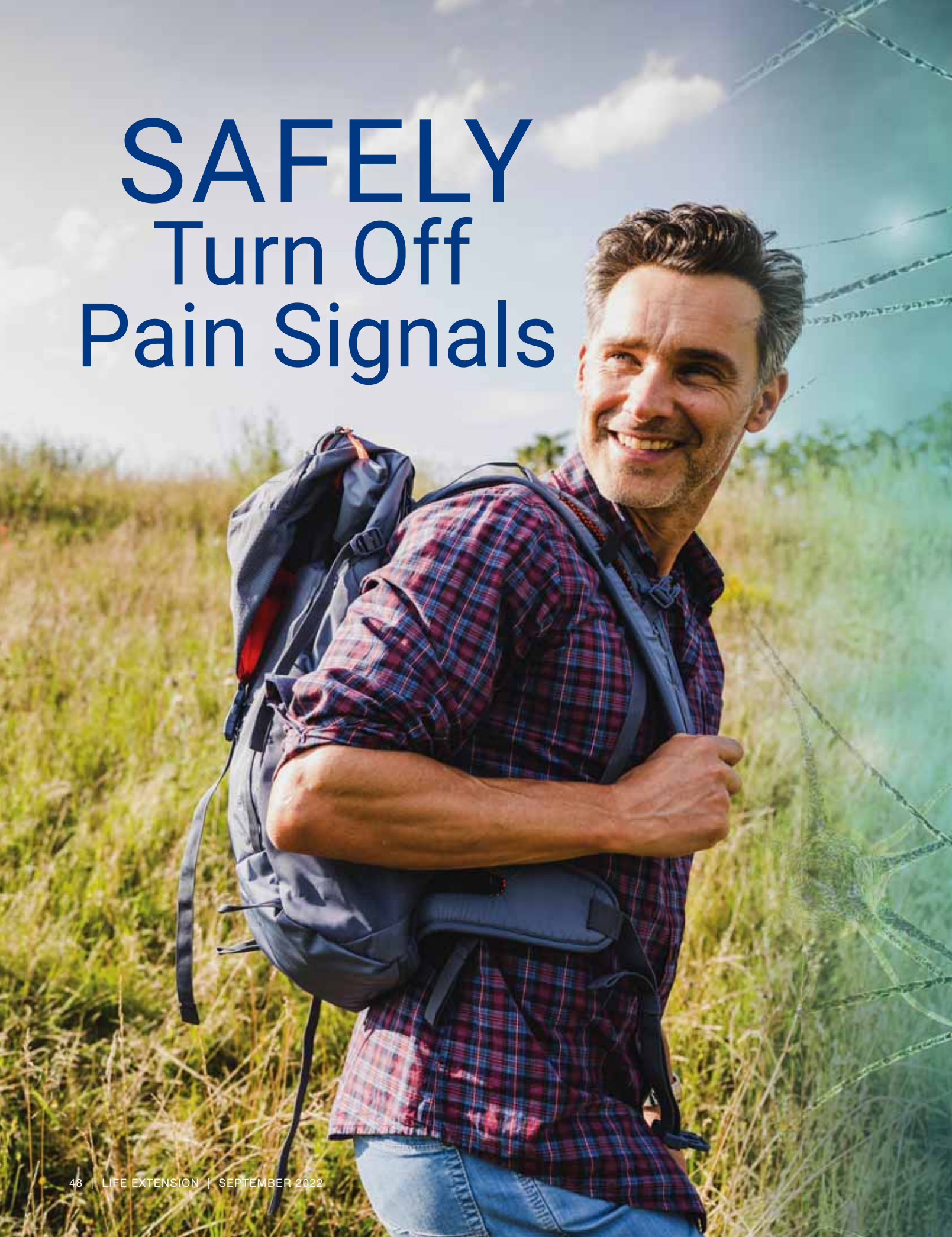

BY NATHAN RAWLING

A **March 2022** study published in the *Pain Journal* revealed a striking statistic:

More than **one in five** U.S. adults reported suffering from **chronic pain**.[1]

Pain medications can help temporarily. But long-term use poses health risks.

A safer alternative is needed. That is where **PEA** comes in.

Palmitoylethanolamide, or **PEA** for short, is a fatty acid made in the body.

Scientists have found that it works in unique ways to ***reduce inflammation*** and ***relieve pain***—without worrisome side effects.[2]

In human trials, **PEA** has been shown to reduce pain associated with common conditions, including:[2-9]

- Arthritis,
- Sciatica,
- Migraine headache,
- Carpal tunnel syndrome, and
- Other types of nerve and joint pain.

In a study of people suffering from jaw joint pain, just ***two weeks*** of PEA use resulted in greater pain reduction and improvement in jaw mobility than high-dose **ibuprofen**.[10]

The Problems with Pain Medications

Two common classes of medication used to treat pain are **non-steroidal anti-inflammatory drugs (NSAIDs)** and **opioids**.

NSAIDs include over-the-counter drugs like **ibuprofen** (**Advil®**, **Motrin®**), **naproxen** (**Aleve®**), and high-dose **aspirin**.

These drugs can be effective at managing some forms of inflammation-related pain, but they come with side-effect risks.

Even *short-term* use of some NSAIDs has been found to be associated with increased risk of **heart attack** and **stroke**.[11-13]

Opioid medications are even *more* problematic because they are side-effect prone and often addictive.[14-16]

The leading cause of acute **liver failure** in the United States is **acetaminophen** toxicity.[17] Regular use of **acetaminophen** is associated with increased risk of **kidney damage**, **kidney cancer**, and **dementia**.[18-20]

Scientists began looking for a safer way of controlling pain. They found it in **palmitoylethanolamide (PEA)**, a compound produced in the body.

PEA and Inflammation

PEA is a fatty acid found in the body that lowers **inflammation**.

Animal studies show that PEA modulates inflammatory and oxidative pathways and significantly relieves chronic inflammatory and neuropathic pain.[21,22]

Several clinical trials have established the validity of PEA as a powerful pain reliever.[8,23]

Unlike commonly used pain-relieving drugs, PEA has no documented cardiovascular or renal risk.[8] Clinical studies on PEA highlight its safety and efficacy even when used in combination with common pain relievers.[4,6]

Reducing Chronic Pain

Several human studies have evaluated the ability of PEA to control **chronic pain**.

One of the most remarkable findings coming out of these studies is that PEA is effective at reducing pain for a *wide range* of underlying conditions, including:

- Headache,
- Nerve pain,
- Joint pain,
- Back pain, and
- Other types of pain.

In patients with knee **osteoarthritis**, both **300 mg** and **600 mg** of PEA taken daily led to significant reductions in **pain scores** compared to a **placebo**.[3] PEA also significantly reduced scores on various scales evaluating joint stiffness, improved knee function, and reduced anxiety.

Sciatica is extremely common. Irritation of the fibers of the **sciatic nerve** running down the back of the leg can cause severe pain in the lower back, leg, and foot.

In a study, 636 patients with sciatica were randomized to receive either **300 mg** or **600 mg** daily of PEA or a placebo.[4] Both groups receiving PEA had improvements in pain and quality-of-life scores compared to placebo. Those taking the *highest* dose improved the *most*.

One study directly pitted **PEA** against **ibuprofen**, one of the most-used NSAIDs.[10]

People suffering from **temporomandibular joint pain** (affecting the joints of the jaw) received either PEA (**300 mg** in the morning and **600 mg** at night for one week, followed by **300 mg** twice a day for the second week) or high-dose ibuprofen.

WHAT YOU NEED TO KNOW

Fighting Pain with PEA

- **Chronic pain** is estimated to affect more than one in five adults in the U.S.
- Common pain medications such as **opioids** and **nonsteroidal anti-inflammatory drugs (NSAIDs)** are associated with serious health risks.
- Researchers have identified the fatty acid **palmitoylethanolamide**, or **PEA** for short, that works to reduce pain and harmful inflammation.
- Clinical studies of a wide range of pain types have shown that PEA intake relieves pain *without* harmful side effects.
- In one head-to-head study, two weeks of PEA intake led to ***greater pain reduction*** than the popular NSAID **ibuprofen**.

After two weeks, PEA resulted in ***greater pain reduction*** and improvement in jaw mobility than **ibuprofen**.

It doesn't stop there. Studies evaluating migraine headaches, carpal tunnel syndrome, arthritis, and a wide range of other types of pain have found that PEA significantly reduces pain intensity.[2,3,5-9]

In one study, patients with chronic pain who could not achieve adequate control using standard pain medications were given **600 mg** of **PEA** twice a day.[2] This treatment reduced pain scores in all patients who completed the study, regardless of their underlying condition.

All these studies found PEA to be well-tolerated with practically **no side effects**.

Summary

Chronic pain is extremely common, but medications to treat it are too often ineffective and carry troublesome side effects.

Three classes of common pain drugs, **NSAIDs**, **acetaminophen**, and **opioids** can have significant and potentially life-threatening side effects.

Scientists have identified a natural fatty acid called **PEA** that acts by several mechanisms to reduce **pain** and **inflammation**.

Several human clinical trials have shown that PEA can help treat a wide range of pain types, without dangerous side effects. •

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

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An *Overlooked* Cancer Therapy and Clinical-Trial Opportunity

BY WILLIAM FALOON AND STEPHEN STRUM, M.D.

In the **June 2016** issue of ***Life Extension Magazine***® we reported on a **prostate cancer** treatment being used on an outpatient basis that was showing good results with minimal side effects in most patients.[1]

The name of this approach is **focal therapy**. It is available in several forms including cryo, laser, ultrasound, and others.

The goal with **focal therapy** is to enable optimal oncological outcomes while reducing side effects, and to improve recovery times compared with conventional treatment options.

FOCAL THERAPY AND IMMUNE RESPONSES

The type of **focal therapy** discussed in this article uses image-guided techniques to **damage** part of the tumor via a **freeze** and **thaw process** while leaving the rest of the organ or tissue intact.

The objective as you will read is to generate a systemic **immune response** while leaving most of the affected organ or tissue intact.

By **damaging** the **cancer cells**, it causes them to release their **antigens** for recognition by the **immune system**.

Most focal therapies seek to completely ablate (destroy) the tumor. The majority of reports on focal therapy do not discuss the value of exposing the patient's very own tumor cell **antigens** so that **immune** responses are activated.

As noted in a 2019 publication by Abdo, et al.:

"Cryosurgery releases hundreds of unique antigens from a population of tumor cells that make up the invading cancer."[2]

CHECKPOINT INHIBITOR DRUGS

Antigens are present in cancer cells and can trigger a targeted immune response against those very same **cancer cells**.

The problem is that **cancer cells** erect "**checkpoints**" that act as barriers to impede **immune** attack.

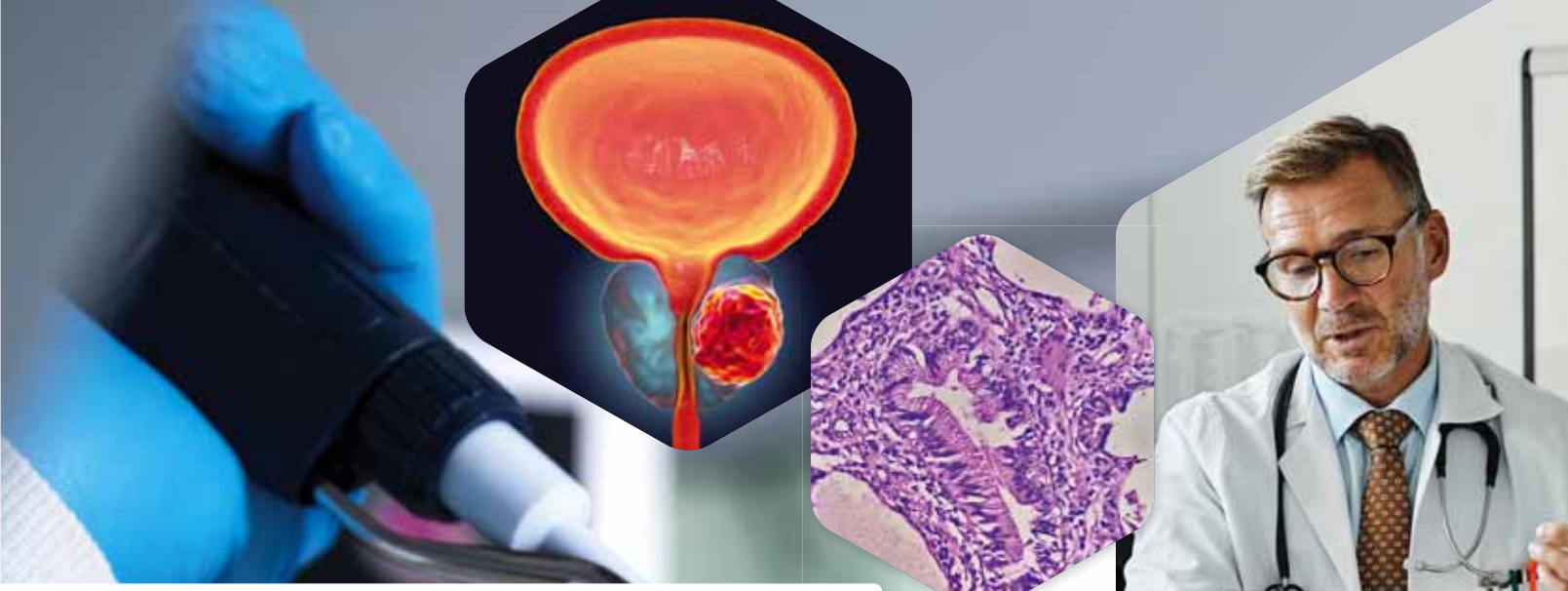
That's why a class of drugs called "**checkpoint inhibitors**" like pembrolizumab (**Keytruda**®) and ipilimumab (**Yervoy**®) are increasingly used against a variety of malignancies.

But when **checkpoint inhibitors** are delivered via the intravenous route there are often systemic **side effects** which may be serious.[3]

This prompted some prostate cancer treatment centers to trigger damage in part of the tumor with localized **cryo-focal** therapy and inject **checkpoint inhibitor** drugs into the tumor area.

The combination of damaging (freezing-thawing) and uniquely injecting **checkpoint inhibitors** is part of the spectrum of "**cryo-immune focal therapy.**"[4-6]

Cryo-immune focal therapy damages the tumor instead of destroying it.



This causes antigens from the tumor to be released into the circulation where they provoke a systemic immune response against both local and distant (metastatic) tumor cells that migrated elsewhere in the body.

AN EMERGING SCIENCE

Life Extension® has been referring **prostate cancer** patients for **cryo-immune focal therapies** since at least **2015**.

We've received much positive feedback about the results from earlier versions of this treatment. We have now learned that this therapy has become more comprehensive, adding additional drugs to augment the overall immune response.

An upcoming **clinical trial** is open and recruiting new patients with metastatic disease. The trial will assess the effects of **cryo-immune focal therapy** plus a systemic **immune drug** called **granulocyte-macrophage colony-stimulating factor** (GM-CSF).

The trial will also use a low dose of **cyclophosphamide** to lessen an obstacle to a more robust immune response against tumor cells.

Information about registration and the trial can be found at:

www.rampartheath.com or

www.clinicaltrials.gov/ct2/show/NCT04713371

This article describes recent findings and a clinical trial that is testing this enhanced cryo-immune therapy against common malignancies.

More than **600,000** Americans will perish from **cancer** this year.[7]

Modern treatments are **curing** more cancer patients than ever before.

Unfortunately, the **immediate** and **long-term side effects** of conventional treatments like surgeries, radiation, chemo, and other toxic treatments are too often ignored or trivialized

As just one example, **breast cancer** patients treated with aggressive **chemotherapy** (and surgery/radiation) incur serious adverse effects including **immune suppression** and increased risks of **leukemia,** and **coronary artery disease** over time.[8,9]

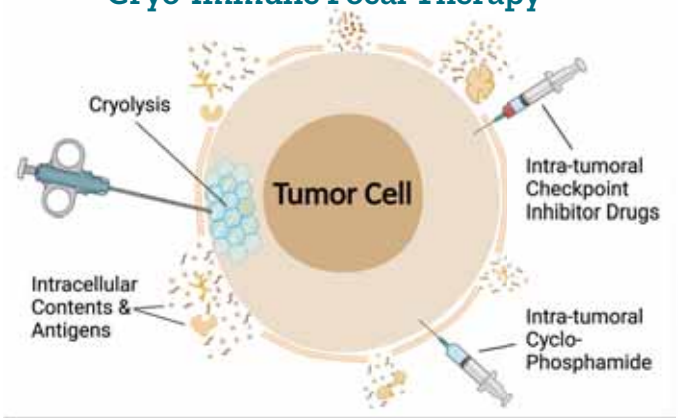
Although it is experimental, a cancer research group is treating metastatic **cancer** in an innovative way that could reduce or eliminate most side effects by damaging part of the tumor with **cryotherapy** and injecting the area with **checkpoint inhibitor** drugs.

Granulocyte-macrophage colony-stimulating factor or **GM-CSF** will be used to boost blood cell counts to enhance immune response.

Low-dose **cyclophosphamide** is also given to suppress a regulatory cell population that curtails the anti-tumor immune response. **Cyclophosphamide** may have an anti-angiogenesis benefit as well.

The checkpoint inhibitor ipilimumab (Yervoy®) also functions in this manner and potentially adds to the effectiveness of **cyclophosphamide**.

Simplistic Illustration of Cryo-Immune Focal Therapy



Cryoprobe needle (left) is inserted into tumor damages outer cell membranes (cryolysis) to cause the release of their anitgens. Syringe needle (top right) injects pembrolizumab and ipilimumab into tumor area to reduce barriers (check points) used by cancer cells to escape immune attack. Syringe needle (bottom right) injects cyclophosphamide into tumor area to remove suppression of T-cell activity. Combination of tumor antigen release (for immune recognition), checkpoint inhibitor drugs (for penetrating tumor defenses) and cyclophosphamide (for enhancing immune activity) seeks to induce a systemic attack against localized and metastatic cancer cells.

Although investigational at this point, the administration of **checkpoint inhibitor** drugs directly into a part of the tumor should generate a broader, both local and systemic, **immune response** against residual primary malignant cells as well as regional malignant and distant metastasized cells and with a lower risk of side effects compared to the systemic **intravenous** administration of checkpoint inhibitors.

The use of **focal therapy** alone against **prostate cancer** continues to be favorable. The goal now is to study the effects of **cryo-immune focal therapy** + **systemic immune**-boosting drugs against not only prostate cancer, but other metastatic malignancies.

Cryoablation + Immune Treatments Against Common Cancers

In **December 2019** a literature review by Aarts, et al., found favorable effects for **cryoablation therapy** combined with systemically administered immune **checkpoint inhibitors** and other conventional treatments in human studies.[5]

In most of these trials, the **checkpoint inhibitors** were given **intravenously** and not via direct injection into the tumor. The **doses** used in those studies cited by Aarts were significantly *higher*.

Basis for Focal Cryo + Checkpoint Inhibitor Therapy

- Cancer cell necrosis inflicted by **cryo** results in the release of antigens from the cancer cell that act as immune triggers. It is believed that this can induce a tumor-specific immune response.
- Immunotherapy uses the patient's immune system for treatment of the tumor. Not all patients respond to immunotherapy with checkpoint inhibitors or other drugs.
- The combination of **cryo + immunotherapy** may enhance the effect of both therapies for improved tumor destruction—both locally and systemically.

This 2019 report described **human** studies demonstrating varying degrees of efficacy using **cryoablation +** whole-body **immune** therapies against a variety of cancer types including:

- Breast cancer (2 studies)
- Kidney cancer (2 studies)
- Lung cancer (1 study)
- Melanoma (2 studies)
- Prostate cancer (4 studies)

Researchers are intrigued about first priming the immune system with immune-stimulating drugs and damaging part of the tumor with **focal therapy** to expose tumor antigens, and injecting **checkpoint inhibitor** drugs into the area to facilitate an **immune response** against residual local and **metastatic** cancer cells.

This is the primary approach that will be used in a multi-modal **clinical trial**, described next, that plans to treat a variety of solid metastatic malignancies including **breast** and **prostate cancer**.

Clinical Trial on Cryo-Immune Focal + Systemic Immune Therapy

A clinical trial is currently recruiting metastatic cancer patients who have not responded to conventional therapy, or who refuse conventional therapy.

The clinical trial will evaluate the effectiveness of cryo-immunotherapy.[10] The current medical center is in Rochester, Michigan, but more sites should soon be open.

The trial design is as follows:

1. Identify an accessible location of tumor mass(es) inside or on the surface of the patient's body.
2. Administer low-dose **cyclophosphamide** five days before the focal procedure to suppress a sub-population of lymphocytes (called Tregs) to further enhance T-cell destruction of cancer cells.
3. Use image-guided technology to precisely cryo-damage a portion of the malignant lesion.
4. Precisely inject into the tumor(s) two immune-therapeutic drugs:
   a. **Keytruda®** (pembrolizumab), which is a monoclonal antibody drug that inhibits PD-1 (programmed death -1 receptor) and impedes a cancer cell's ability to escape the body's normal immune response. PLUS,
   b. **Yervoy®** (ipilimumab), an anti-CTLA-4 (cytotoxic T-lymphocyte-associated antigen 4) monoclonal antibody drug that works to enhance the immune response by targeting a subset of T-cells called Tregs that inhibit the immune response.
5. The treatment also involves an immune drug called **GM-CSF** (granulocyte-macrophage colony stimulating factor) that has been used for decades to mobilize the **bone marrow** release of granulocytes and macrophages to protect against bone marrow suppression caused by toxic chemotherapy drugs. The objective in this cryo-immune **clinical trial** is to use **GM-CSF** to potentiate the effects of the immune checkpoint inhibitors Keytruda® and Yervoy®. The GM-CSF is given under the skin (subcutaneous) and is injected for about 30 days after cryo-immune focal therapy is administered.
6. Up to two cancer areas for each patient will be selected and treated during each treatment. The clinical trial will involve up to three treatments using the above approach for each patient.

By using a sequence of cryo-damaging the tumor (to release its antigens), followed by four different immune therapies (Keytruda® + Yervoy® + GM-CSF+ cyclo-phosphamide), a cryo-immune synergy is created, and some researchers believe that a clinically significant systemic anti-cancer immune response may be elicited.

Moreover, the intra-tumoral injection of drugs at a lower dose is likely to cause fewer **side effects** than higher-dose intravenous systemic therapy.

How to Determine if you Qualify for this Study

There is no cost to those eligible for the study other than possible travel expenses and lodging near the **clinical trial** study site medical facility. The study center may bill your insurance if it covers the cost of some laboratory tests and imaging, but patients are not expected to pay anything out of pocket.

If you or someone you know has a diagnosed metastatic **malignancy involving a solid tumor** and all available treatments have failed or the patient chooses against conventional therapy, you can register at the following website to ascertain your eligibility:

www.rampartheath.com

Additional information about the trial can be found at www.clinicaltrials.gov/ct2/show/NCT04713371

If you are eligible, you will be contacted for full medical records and a trial coordinator(s) will guide you through the trial process.

Summary

I've interacted for over 20 years with some of the oncology experts involved with designing this clinical trial.

Neither I, nor **Life Extension**® have any financial interest in this **cryo-immune focal therapy**.

I am grateful the parties have worked together to enable this **clinical trial** to launch this year in the United States.

When confronted with difficult medical issues (not cancer), I've been fortunate enough to have alternative medicine doctors recommend simpler solutions that have spared me from surgery and other toxic treatments.

If this combined **cryo-immune focal therapy** proves efficacious it may revolutionize cancer treatment against many common malignancies.

We look forward to learning the results of this **clinical trial** that has recently been initiated.

This article may be updated as we learn more about this treatment and the clinical trial. Please go to **www.LifeExtension.com/cryo** to view any updates to this print article. •

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Side Effects of Focal Therapies

Before the advent of **focal therapies**, men diagnosed with **prostate cancer** were confronted with harsh choices.

The so-called gold standard of treatment entails complete removal of the prostate gland and suspicious lymph nodes (**radical prostatectomy**). The side effects of this mutilating surgery are often horrendous.

Many men instead choose **external beam radiation** which has its own litany of potential side effects.

Improvements made over the years include "nerve sparing" radical prostatectomy and insertion of radioactive seeds in the malignant portions of the prostate gland and image-guided radiation therapy.

Currently available **focal therapy** options include:[11,12]

- **Focal Cryotherapy**
- **Focal HIFU (high intensity focused ultrasound)**
- **Focal Laser Ablation (FLA)**
- **Irreversible Electroporation (IRE)**
- **Vascular-Targeted Photodynamic Therapy (VTP)**
- **Focal Cryo-Immune Therapy (investigational)**
- **Radiofrequency Ablation (RFA)**
- **HDR-brachytherapy (high-dose rate brachytherapy)**
- **Focal Brachytherapy (FB) using seeds**
- **Stereotactic Body Radiation Therapy (SBRT)**

The primary advantage demonstrated to date with **focal therapy** is a significantly improved adverse event profile versus whole-gland treatment.

However, side effects do occur, usually peri-operatively and temporarily that include:[13]

- Urinary tract infection (in up to **20%** of patients) and acute urinary retention (in up to **17%** of patients).
- Painful urination and blood in the urine.
- Urinary incontinence following focal therapy in approximately **5%** of patients.

The majority of patients recover in a few weeks.

Erectile dysfunction can occur after **focal therapy**, but usually resolves over time.

Side-effect risks are greatly reduced when treatment is performed by an experienced clinician but are increased if the malignancy is located near the nerve bundle or urethra running through the prostate gland.

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

How DOPAMINE

Protects the Aging Brain

BY MICHAEL DOWNEY

Dopamine is a **neurotransmitter** that promotes feelings of pleasure and reward, supports memory, attention, and more.[1]

As we age, increased activity of an *enzyme* called **monoamine oxidase B (**MAO-B) *degrades* dopamine, causing levels to fall.[2]

Lower dopamine levels can contribute to **reduced motivation** and **decreased enthusiasm** for things that would excite most people.

A solution is to ingest compounds that *inhibit* the **MAO-B** enzyme.

Scientists have found that components of **phellodendron** tree bark accomplish this in lab studies[3,4] and have **neuroprotective** effects in animals.[5-7]

Preclinical research also shows that a *specific form* of **vitamin B12** may protect neurons and help prevent a decline in dopamine levels.[8]

These compounds may help maintain motivation and feelings of pleasure, while reducing risk for neurodegenerative illnesses.

What is Dopamine?

Dopamine is often referred to as the "feel-good hormone" due to its role in regulating **mood**.[1]

The brain releases dopamine during pleasurable activities. ***Low*** dopamine levels are associated with **depression** and a lack of **motivation** and **pleasure**.[9]

But the brain uses dopamine for more than **mood elevation**.

This neurotransmitter also influences movement, learning, cognition, and memory.[10]

Dopamine enables youthful **cognitive** performance and body coordination.[11,12]

Dopamine *depletion* plays a role in certain **neurodegenerative** diseases, while *increasing* dopamine has been shown to **prolong lifespan in animals**.[1,13,14]

Dangers of Reduced Dopamine

In a region of the brain that plays a role in cognitive and motor function, levels of **dopamine** decline by about **13%** each decade after **age 45**.[15]

This decline coincides with an *increase* in the brain levels of **monoamine oxidase B (MAO-B)**, an enzyme that *degrades* neurotransmitters such as dopamine.[2]

Low dopamine levels are associated with depression, lack of motivation, and pleasure.[9] These mood and motivational changes also may be seen with normal aging in some people.

Rising **MAO-B** levels pose even more of a threat.

MAO-B activity is *higher* in **dementia** patients than in non-impaired individuals the same age,[16] suggesting a role in neurodegeneration.

One reason may be that increased MAO-B activity results in formation of potentially damaging by-products[2,17,18] that can contribute to neurodegenerative diseases such as **Parkinson's** and **Alzheimer's disease**.

Doctors frequently prescribe **MAO-B inhibitors** such as **deprenyl** (also called selegiline) to stop MAO-B degradation of dopamine in patients with Parkinson's disease.[19]

Inhibiting MAO-B activity helps *decrease* the breakdown of dopamine and the potential harm that can be done by too much enzyme activity. This helps protect our **aging brains**.

The Effects of Phellodendron

Scientists discovered that some **plants** have **MAO-B**-inhibiting properties.

After investigating hundreds of botanicals, they identified **phellodendron** tree bark as one of the most potent plant-derived MAO-B inhibitors.[3,4]

Phellodendron (no relation to the houseplant philodendron) is also known as **Amur cork tree**. It has been safely used in traditional Chinese medicine for centuries to treat various ailments.[5]

In lab research, extract of **phellodendron** bark selectively inhibited over **80%** of MAO-B activity, which is comparable to the drug **deprenyl**.[4]

This may enable dopamine levels to increase while blocking the neurotoxic effects of elevated MAO-B.

Phellodendron's neuroprotective properties go beyond MAO-B inhibition.[5,6,20]

In scientific studies, phellodendron protects against neuroinflammation, beta-amyloid production, and other changes associated with **Alzheimer's** disease, suggesting it may help to maintain **cognitive function** into older age.[20]

Phellodendron has also demonstrated anti-inflammatory, antibacterial, antiviral, and antitumor properties,[5] helping to protect both the brain and body.

Those who take MAO-B-inhibiting drugs such as **deprenyl** do not need to take **phellodendron**. Phellodendron is not a substitute for physician-prescribed medications.

A B12 Form Helps Sustain Dopamine Levels

There are two *bioactive* forms of **vitamin B12**.[21] One of them, **adenosylcobalamin**, has been shown in lab research to prevent a decline in **dopamine** levels and protect neurons.[8]

In research partially funded by the Michael J. Fox Foundation, scientists prepared brain slices of mice that carried a mutation linked to **Parkinson's disease** and treated some with **adenosylcobalamin**.[8] Every two minutes, they stimulated the dopamine-producing neurons.

After 20 minutes, the untreated control slices were releasing approximately **20%** less ***dopamine***. In the mice, dopamine production dropped by up to **45%**.

In the **adenosylcobalamin**-treated slices, dopamine production was ***equal*** to that of animals without the mutation linked to Parkinson's disease.[8]

Stated differently, instead of dopamine production declining by **45%** after 20 minutes like in the untreated brain slices, in the treated slices, it only dropped by **20%** in response to the artificial stimulation.

This suggests that **adenosylcobalamin** may help prevent dopamine loss and related neurotoxicity.

Taken together, phellodendron extract and **adenosylcobalamin** may prevent an age-related decline in critical dopamine levels.

Summary

Levels of the neurotransmitter **dopamine** decline in the aging brain, in part due to increased activity of the enzyme **MAO-B**.

The result can be decreased motivation, diminished pleasure, and an increased risk for neurodegenerative diseases.

Scientists have found that **phellodendron** bark extract inhibits MAO-B, helping to maintain dopamine levels and prevent neurotoxicity.

A form of vitamin B12 called **adenosylcobalamin** may also prevent a decline in dopamine levels and help inhibit neurodegeneration.

These compounds may prevent declines in pleasure and motivation and protect the aging brain. ●

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

Phellodendron amurense

WHAT YOU NEED TO KNOW

Prevent Dopamine Decline

- Increases in the enzyme **monoamine oxidase B** (**MAO-B**) contribute to lower levels of the neurotransmitter **dopamine** after middle age. This can lead to reduced motivation and pleasure.
- Heightened MAO-B activity is also linked to altered brain function and certain **neurodegenerative** diseases.
- After screening hundreds of plants, scientists identified **phellodendron** bark extract as one of the most powerful inhibitors of MAO-B.
- A form of vitamin B12 called **adenosylcobalamin** has also been shown to help prevent a decline in dopamine levels and to inhibit neurodegeneration in preclinical studies.
- These compounds may help maintain positive mood and motivation while inhibiting neurodegeneration.

Inhibiting MAO-B May Boost Lifespan

The drug **deprenyl** is prescribed to *inhibit* MAO-B activity, most often in Parkinson's disease patients.[19] Inhibiting MAO-B leaves *more* dopamine in the brain's neural circuits.

In dogs, deprenyl treatment helped ***improve cognitive function***.[22]

Additionally, animal studies have also found that MAO-B inhibition **extends lifespan**.[23-29]

For example, rats given deprenyl had an average lifespan up to ***40% longer*** than untreated rats.[27,28]

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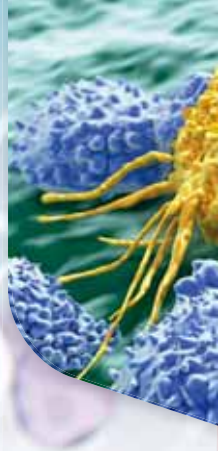

Optimized Prostate Cancer Treatment

by Stephen B. Strum, MD, FACP

INTRODUCTION BY WILLIAM FALOON

For the past 23 years, **Life Extension**® has been privileged to interact with a medical oncologist who has consistently identified the world's most effective approaches to **prostate cancer** diagnosis and treatment.

Stephen Strum, M.D. has made **cancer medicine** the focus of his life since **1963**.

Of Dr. Strum's 59 professional years, 40 of them involved tireless efforts to provide patients with the best means to evaluate and treat **prostate cancer**, and to prevent the many side effects associated with anti-cancer therapies.

This resulted in **127** peer-reviewed, published papers and **124** presentations, most of which were accomplished in the setting of a clinical practice, with negligible financial assistance.

Over the past six decades, Dr. Strum provided comprehensive individualized treatments and felt privileged to be an integral part of the lives of thousands of cancer patients and their families.

The situations and problems his patients have sought help with have included:

- Men living with the dread of getting prostate cancer,
- Those with a strong family history of prostate cancer seeking ways to prevent it,
- Newly diagnosed prostate cancer patients, and
- Men with advanced stages of the disease who had undergone various treatments, with many being unfortunate to have progressive disease.

I asked Dr. Strum to share with readers of ***Life Extension Magazine***® the best ways to treat prostate cancer.

In response to my request, Dr. Strum investigated **570** peer-reviewed papers over the course of many months to honor us with an honest 10,000-word appraisal.

He went further and selected almost **300** key articles to create a public **Dropbox™** folder for ***Life Extension®*** readers wishing to delve deeply into this vital topic and related issues.

You will be able to download close to 300 PDFs and graphic files into a zip file on your computer. Then you can unzip it to open and see all the files sorted alphabetically by lead author and by year of publication.

Dr. Strum is semi-retired. He saved his own life using his exceptional grasp of the medical literature and clinical expertise to enable a complete response to **light chain amyloidosis**.

The articles Dr. Strum compiled are written for those who have, or suspect they have **prostate cancer**. They contain meticulously laid-out facts, opinions of critical relevance to prostate cancer, and hyperlinks to relevant websites.

These articles are not meant for casual reading. They require intensive focus for those seeking better diagnostics and treatments for the most common malignancy striking men.

What may surprise readers of Dr. Strum's reports are the myriad of advanced diagnostics and treatments that are not being routinely incorporated into conventional practice.

The best I can do to save lives is to provide Dr. Strum with a forum to empower prostate cancer patients with information that can assist them in utilizing the many modern treatment modalities currently available.

To review Dr. Strum's up-to-date article on optimized **prostate cancer** diagnostics and treatments, please visit: **www.LifeExtension.com/strum**

The weblink takes you to two articles as follows:

PART 1. **Optimized Prostate Cancer Treatment**

Introduction

Changing Nature of the Patient-Physician Relationship

The Critical Nature of Context

The Contextual Menu

Find the "Artist"

Where the Patient with Cancer Goes Wrong

Caveats

PART 2. **Focal Therapy**

Active Surveillance and Focal Therapies

To access the above **Part 1** and **Part 2** log on to **www.LifeExtension.com/strum**

NOTE: To review **Life Extension's Prostate Cancer Treatment Protocol** (originally written by Dr. Strum in 2003) with updates since 2003, log on to: **www.LifeExtension.com/prostate**

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00432 Stevia™ Sweetener

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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 5 Day Elderberry Immune
00681 AHCC®
02302 Bio-Quercetin®
02410 Black Elderberry + Vitamin C
01961 Enhanced Zinc Lozenges
01704 Immune Modulator with Tinofend®
02425 Immune Packs with Vitamin C & D, Zinc and Probiotic
02005 Immune Senescence Protection Formula™
00316 Kyolic® Garlic Formula 102
00789 Kyolic® Reserve
01681 Lactoferrin (Apolactoferrin) Caps
02426 Mushroom Immune with Beta Glucans
01903 NK Cell Activator™
01394 Optimized Garlic
01309 Optimized Quercetin
01811 Peony Immune
00525 ProBoost Thymic Protein A
01708 Reishi Extract Mushroom Complex
01906 Standardized Cistanche
13685 Ten Mushroom Formula®
01097 Ultra Soy Extract
01561 Zinc Lozenges

INFLAMMATION MANAGEMENT

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

JOINT SUPPORT

02404 Arthro-Immune Joint Support
02238 ArthroMax® Advanced NT2 Collagen™ & AprèsFlex®
01617 ArthroMax® with Theaflavins & AprèsFlex®
02138 ArthroMax® Elite
00965 Fast-Acting Joint Formula
02430 Fast Acting Relief
00522 Glucosamine/Chondroitin Capsules
02420 Glucosamine Sulfate
02424 Joint Mobility
01600 Krill Healthy Joint Formula
01050 Krill Oil
00451 MSM (Methylsulfonylmethane)
02231 NT2 Collagen™

KIDNEY & BLADDER SUPPORT

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

LIVER HEALTH & DETOXIFICATION

01922 Advanced Milk Thistle • 60 softgels
01925 Advanced Milk Thistle • 120 softgels
02240 Anti-Alcohol Complex
01651 Calcium D-Glucarate
01571 Chlorophyllin
01522 Milk Thistle • 60 veg capsules
02402 FLORASSIST® Liver Restore™
01541 Glutathione, Cysteine & C
01393 HepatoPro
01608 Liver Efficiency Formula
01534 N-Acetyl-L-Cysteine
00342 PectaSol-C® Modified Citrus Pectin Powder
01080 PectaSol-C® Modified Citrus Pectin Capsules
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
02133 GEROPROTECT® Longevity A.I.™
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
01637 Pycnogenol® French Maritime Pine Bark Extract
02210 Resveratrol
00070 RNA (Ribonucleic Acid)
02301 Senolytic Activator®
01208 Super R-Lipoic Acid
01919 X-R Shield

MEN'S HEALTH

02209 Male Vascular Sexual Support
00455 Mega Lycopene Extract
02306 Men's Bladder Control
01789 PalmettoGuard® Saw Palmetto and Beta-Sitosterol
01790 PalmettoGuard® Saw Palmetto/Nettle Root Formula and Beta-Sitosterol
01837 Pomi-T®
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

02434 Calm-Mag
02312 Cortisol-Stress Balance
00987 Enhanced Stress Relief
01074 5 HTP
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

01006 Biosil™ • 5 mg, 30 veg capsules
01007 Biosil™ • 1 fl oz
00321 Dr. Proctor's Advanced Hair Formula
00320 Dr. Proctor's Shampoo
02322 Hair, Skin & Nails Collagen Plus Formula
01278 Life Extension Toothpaste
00408 Venotone
00409 Xyliwhite Mouthwash
02304 Youthful Collagen
02252 Youthful Legs

PET CARE

01932 Cat Mix
01931 Dog Mix

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
01920 FLORASSIST® Throat Health
52142 Jarro-Dophilus® for Women
00056 Jarro-Dophilus EPS® • 60 veg capsules
21201 Jarro-Dophilus EPS® • 120 veg capsules
01038 Theralac® Probiotics
01389 TruFlora® Probiotics

SKIN CARE

80157 Advanced Anti-Glycation Peptide Serum
80165 Advanced Growth Factor Serum
80170 Advanced Hyaluronic Acid Serum
80154 Advanced Lightening Cream
80155 Advanced Peptide Hand Therapy
80175 Advanced Probiotic-Fermented Eye Serum
80177 Advanced Retinol Serum
80152 Advanced Triple Peptide Serum
80140 Advanced Under Eye Serum with Stem Cells
80137 All-Purpose Soothing Relief Cream
80139 Amber Self MicroDermAbrasion
80118 Anti-Aging Mask
80151 Anti-Aging Rejuvenating Face Cream
80153 Anti-Aging Rejuvenating Scalp Serum

80179 Brightening Peptide Serum
80176 Collagen Boosting Peptide Cream
80156 Collagen Boosting Peptide Serum
02408 Collagen Peptides for Skin & Joints
80180 CoQ10 and Stem Cell Rejuvenation Cream
80169 Cucumber Hydra Peptide Eye Cream
02423 Daily Skin Defense
80141 DNA Support Cream
80163 Eye Lift Cream
80123 Face Rejuvenating Anti-Oxidant Cream
80109 Hyaluronic Facial Moisturizer
80110 Hyaluronic Oil-Free Facial Moisturizer
80138 Hydrating Anti-Oxidant Facial Mist
00661 Hydroderm
55495 Instensive Moisturizing Cream
80103 Lifting & Tightening Complex
80168 Melatonin Advanced Peptide Cream
80114 Mild Facial Cleanser
80172 Multi Stem Cell Hydration Cream
80159 Multi Stem Cell Skin Tightening Complex
80122 Neck Rejuvenating Anti-Oxidant Cream
80174 Purifying Facial Mask
80150 Renewing Eye Cream
80142 Resveratrol Anti-Oxidant Serum
01938 Shade Factor™
02129 Skin Care Collection Anti-Aging Serum
02130 Skin Care Collection Day Cream
02131 Skin Care Collection Night Cream
80166 Skin Firming Complex
02096 Skin Restoring Ceramides
80130 Skin Stem Cell Serum
80164 Skin Tone Equalizer
80143 Stem Cell Cream with Alpine Rose
80148 Tightening & Firming Neck Cream
80161 Triple-Action Vitamin C Cream
80162 Ultimate MicroDermabrasion
80173 Ultimate Peptide Serum
80178 Ultimate Telomere Cream
80160 Ultra Eyelash Booster
80101 Ultra Wrinkle Relaxer
80113 Under Eye Refining Serum
80104 Under Eye Rescue Cream
80171 Vitamin C Lip Rejuvenator
80129 Vitamin C Serum
80136 Vitamin D Lotion
80102 Vitamin K Cream

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
01786 Melatonin 6 Hour Timed Release 3 mg, 60 veg tablets
01721 Optimized Tryptophan Plus
01444 Quiet Sleep
01445 Quiet Sleep Melatonin
02502 Rest & Renew

VITAMINS

01533 Ascorbyl Palmitate
00920 Benfotiamine with Thiamine
00664 Beta-Carotene
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
00065 MK-7
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
01807 Advanced Appetite Suppress
02207 AMPK Metabolic Activator
02504 Body Trim and Appetite Control
02478 DHEA Complete
01738 Garcinia HCA
01432 Optimized Saffron
00818 Super CLA Blend with Sesame Lignans
02509 Waistline Control™

WOMEN'S HEALTH

01942 Breast Health Formula
01626 Enhanced Sex for Women 50+
01894 Estrogen for Women
01064 Femmenessence MacaPause®
02204 Menopause 731™
01441 Progesta-Care®
01649 Super-Absorbable Soy Isoflavones
02507 Youthful Woman 40+ with B-Complex

Keep Your Heart Healthy & Your Brain Sharp

Taurine is one of the most abundant amino acids in your body, 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

GLUTEN FREE
NON GMO LE CERTIFIED

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

*Also available in an unflavored powder that mixes easily into your favorite healthy beverage.

"Covers all the bases."
Brian
VERIFIED CUSTOMER REVIEW

VOTED #1 Multi-vitamin

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

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

GLUTEN FREE
NON GMO LE CERTIFIED

TOP RATED MULTIVITAMINS #1 ConsumerLab.com CONSUMER SATISFACTION 9 Time Winner LIFE EXTENSION 2022

#1 Rated Multivitamins 9 Time Winner!*

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

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

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