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PLUS: Page 26
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References

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WHAT’S BEHIND THE RISE IN PANCREATIC CANCER CASES?
Obesity, second-hand smoke, and chronic inflammation have led to an increase in pancreatic cancer cases. What you eat and drink impacts your pancreatic cancer risk up to 30%-50%.

IN THE NEWS
Four nutrients counter the effects of stress; vitamin D deficiency linked to need for knee replacement in women; and more.

ASK THE DOCTOR
Dr. Thierry Hertoghe, president of the International Hormone Society, explains how hormone replacement therapy helps fight disease and promote longevity.

AUTHOR INTERVIEW
In their new book, Chronic, Dr. Steven Phillips and Dana Parish provide techniques for treating chronic, undiagnosed infections, which they believe are the true causes of autoimmune diseases.

HEALTHY EATING
In her book, Ikaria: Food and Life in the Blue Zone, Meni Valle reveals longevity secrets of this Greek island and its cuisine. Here are four recipes that promise age-defying flavor and vitality.

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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.

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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.

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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 nanoparticles 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.
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You may have noticed that a lot of famous people are succumbing to pancreatic cancer. It is not a coincidence.

Pancreatic cancer incidence has steadily increased in the United States by about 1.2% annually over the last 10 years.\(^1\)

The lethality of a pancreatic malignancy has generated volumes of scientific data on how to reduce your risk of contracting it.

The good news for readers of Life Extension® magazine is they already follow many of these healthy diets and lifestyles.

What troubles me, however, is that a leading pancreatic cancer risk factor (tobacco use) has plummeted since the 1960s-1970s.

Yet, pancreatic cancer cases are not declining.

This editorial describes what's behind rising numbers of Americans who perish from pancreatic cancer and what can be done to reverse this deadly trend.

In 1967, when I was 12 years old, my best friend’s mother perished from pancreatic cancer. Her relatively young age and six young children made this a particularly tragic event.

At her funeral no one would have conceived that 54 years later there would be no cure.

Instead of curative therapy, most metastatic pancreatic cancer victims are offered palliative choices that provide only a limited amount of survival time depending upon treatment regimen. The survival variance often depends on what degree of chemotherapy toxicity the patient is willing to tolerate.

Few pancreatic cancer patients survive more than 18 months when relying on chemo drugs that were approved decades ago.

The lack of progress in better treatment options is inexcusable when one considers the advances made in other areas of medical practice. This includes cardiac stenting that was unheard of in the 1960s and is now a routine treatment for coronary artery disease.

Surgically for Pancreatic Cancer

By the time most pancreatic cancers are diagnosed, the malignancy has spread into the liver and adjacent tissues. Chemo at these advanced states becomes a death-delaying option.

Some patients are diagnosed early enough for potential curative surgery.

In 1935, a doctor named Allen Whipple devised a more effective way to remove a section of the pancreas and adjacent body parts.4,5

Dr. Whipple’s technique removes the head of the pancreas, along with portions of the stomach, first part of the small intestine, gallbladder, and the bile duct.

The impact of this procedure on the body, even in 2021, is severe, with a higher death rate compared to many other types of surgeries.6

The rearranged internal organs do not always hold together, and infection can spread inside the patient. This can lead to more surgeries, and in some cases the remainder of the pancreas and the spleen must be removed to correct problems from the first operation.

Some patients do not heal well and leak pancreatic fluid from where body parts are sewn together. This happens so frequently that the surgeon leaves in drainage catheters for fluids to exit so they do not accumulate inside the patient.7-9

Despite these horrific side effects, most patients who survive the painful surgical ordeal (called the “Whipple Procedure”) will die from metastatic pancreatic cancer.

Surging Global Incidences of Pancreatic Cancer

A comprehensive analysis, published in the prestigious journal The Lancet, revealed a sharp increase of pancreatic cancer worldwide.2

From 1990 to 2017 the number of pancreatic cancer cases more than doubled from 195,000 to 448,000 cases.

Better reporting of causes of death over these decades is partially responsible for this statistical surge, but the increase, as noted in The Lancet, is of international concern.

The Lancet article concluded:

“Prevention strategies should focus on modifiable risk factors. Development of screening programs for early detection and more effective treatment strategies for pancreatic cancer are needed.”
Risk Factors You Control

Significant investigative resources have been deployed to identify modifiable risk factors that can enable people to reduce their odds of developing pancreatic cancer.

A modifiable risk factor is one that YOU have control over.

Few readers of Life Extension® magazine use tobacco, but they should know that exposure to secondhand smoke can increase pancreatic cancer risk by over 50%.13

About 25% of pancreatic cancers relate to cigarettes.14 Yet smoking rates have plummeted since the 1960s-1970s while pancreatic cancer incidence has steadily increased.

One villain is the surging numbers of overweight and obese Americans. Close to half of all adults in the United States today are pre-diabetic or type II diabetic.15

Compared to normal-weight people, obese individuals have about a 50% increased risk of developing pancreatic cancer, as well as lower overall survival rates.16-18 That’s about the same risk as cigarette smokers, which helps explain why pancreatic cancer incidence is not declining despite reductions in tobacco use.
Both excess body weight and smoking are pancreatic cancer risk factors.\(^1\) Those who would never touch a cigarette may not realize the similar dangers inflicted from excess body fat.

Heavier individuals, especially when fat accumulates in the belly, are often in a chronic inflammatory state and have glucose control issues.\(^2\)

Type II diabetes and chronic inflammation increase the risk of multiple degenerative disorders, including pancreatic cancer.\(^2\),\(^3\) To put the danger of inflammation in context, those with chronic pancreatitis have up to an eight-fold higher risk of developing pancreatic cancer.\(^3\)

There is a lot to be gained from normalizing one’s body weight. The benefits include reduced inflammation, improved glycemic control, and lower risk for many cancers.

Chronic pancreatitis is long-term inflammation of the pancreas that typically causes severe pain in the center of your belly and/or extending through to your back. The cell damage inflicted by pancreatitis increases future pancreatic cancer incidence. Risk factors for pancreatitis include obesity and excess alcohol ingestion.\(^4\)

**Dietary Factors**

What you eat and drink impacts your pancreatic cancer risk up to 30\%-50\%. Certain foods are associated with higher risk, while others confer protection.\(^5\),\(^6\),\(^7\)

Consumption of red meats (especially when cooked at high temperature), fried foods, and foods containing nitrosamines (processed meats) may increase pancreatic cancer risk.\(^8\),\(^9\)

One meta-analysis that included 11 case-control studies found that red meat intake increased pancreatic cancer risk by about 48\%.\(^10\)

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**Steve Jobs, Pancreatic Cancer Victim**

Steve Jobs was criticized for delaying a Whipple Procedure for nine months after being diagnosed with pancreatic cancer.\(^10\)

The initial approaches Steve Jobs tried (acupuncture, vegan diet, herbs, spiritualists) had no chance of eradicating his pancreatic tumor.

It’s hard to blame the then 49-year-old co-founder of Apple for not wanting his body cut up via a Whipple Procedure.

Steve Jobs eventually died at age 56 after undergoing multiple aggressive treatments, including a liver transplant.\(^11\),\(^12\)

If one is diagnosed with pancreatic cancer at an early stage today, a procedure made clinically relevant back in 1935 (the Whipple Procedure) is still the best treatment option.

Better treatments are urgently needed.
Yet other studies of meat consumption and various cancer risks are inconsistent and less conclusive. On the protective side, high intake of vegetables and fruits decreased pancreatic cancer risk by 38% and 29%, respectively.

Increased nut consumption was shown to significantly lower risk of pancreatic cancer.

In a large UK study published in 2016, mortality for pancreatic cancer was lower for less-frequent meat eaters (about 45% lower mortality), as well as vegetarians and vegans (about 50% lower mortality) compared with regular meat eaters.

For those who insist on eating some red meat, it’s good to know that reducing total red meat intake may confer risk reduction.

The article on page 50 of this month’s issue describes dietary factors most associated with pancreatic cancer risk reduction, including lycopene from tomatoes and carotenoids from other foods.

**Role of Magnesium**

In the December 2016 issue of Life Extension® magazine I wrote an article based on a landmark study showing a modest increase in magnesium intake from diet and supplements resulted in profound reductions in pancreatic cancer risk.

What struck me about this study’s findings is that it did not require a large amount of additional magnesium to produce a meaningful reduction in pancreatic cancer risk. For example, compared to a person who ingests 300 mg a day of magnesium, an individual with a daily magnesium intake of 200 mg would be expected to have a 24% increased risk of pancreatic cancer.

Both intakes (200 mg and 300 mg a day of magnesium) are considered deficient even by government standards.

This 2015 published study involved over 66,000 men and women aged 50-76 years who were followed for an eight-year period. The subjects were divided into the following three groups based upon their magnesium intake:

- **Optimal Intake** - Defined as ingesting greater than or equal to 100% of the government recommended dietary allowance (RDA) for magnesium (420 mg a day for males and 320 mg a day for females)

- **Sub-optimal Intake** - Daily intake of only 75% to 99% of the government RDA for magnesium

- **Deficient Intake** - Less than 75% of the government RDA for magnesium (less than 315 mg a day for males and less than 240 mg a day for females)
Those who ingested 75%-99% of the government’s RDA for magnesium (sub-optimal intake) had a 42% greater risk of pancreatic cancer incidence compared with those ingesting greater than or equal to 100% of the magnesium RDA.

Those who ingested less than 75% of the government’s RDA for magnesium (deficient intake) had a striking 76% greater risk of pancreatic cancer incidence compared to those whose intake of magnesium was equal to or greater than the government’s (optimal intake) RDA.

When analyzing those who met or exceeded the government’s RDA for total magnesium intake, only those who took dietary supplements containing magnesium were able to consistently achieve the benefits.

What struck me about these findings is that the amount of added magnesium needed to meet the government’s RDA was exceedingly small.

For most people, taking one low-cost magnesium capsule a day, or obtaining it in a sufficient potency multi-nutrient formula, is all that may be needed to garner protective effects.

**Intolerable Delays**

The snail’s pace of progress against malignancies like pancreatic cancer should provoke societal outrage.

Like lambs standing in line awaiting slaughter, the public tolerates mediocre medicine that inflicts horrific suffering and needless deaths.

By contrast, we here at Life Extension® view bureaucratic roadblocks that impede delivery of better cancer treatments as intolerable delays that will be ridiculed by future historians.

I am not implying that there are an insufficient number of ongoing clinical trials. As of this writing there were about 500 human trials recruiting pancreatic cancer patients.

The urgency is for the 57,000 Americans who will be diagnosed with pancreatic cancer over the next 12 months. Where are the improved treatments for them?

Life Extension® has updated its Pancreatic Cancer Protocol (LifeExtension.com/pancreatic) to describe the use of repurposed drugs that may improve patient outcomes. Many of these treatments are not being incorporated into conventional practice.

**Take Control!**

About 10% to 20% of pancreatic tumors (adenocarcinomas) are thought to be due to a heritable cause that includes mutations in the BRCA1, BRCA2 and other cell regulatory genes.

This implies that most (around 80%) of pancreatic cancers may be attributed to modifiable behavior patterns.

Hard data show the risk of developing pancreatic cancer can be reduced if people follow healthier diet and lifestyle practices.
Healthy choices not only help protect against most malignancies, but also reduce incidences of cardiovascular disorders and dementia.

Most Americans engage in behaviors that spike disease risk. The tragic impact can be seen with increasing rates of common malignancies.

Beyond unhealthy lifestyle choices is a **pharmaceutical industry** that is failing to deliver meaningful improvements in treating pancreatic cancer and other deadly malignancies.

Mutated **BRCA** genes are associated with a high risk of breast, ovarian, and other cancers. Women who test BRCA positive sometimes undergo prophylactic removal of both breasts and their ovaries at young ages.

I cannot fathom why these barbaric procedures are tolerated in a world where rapid technological advances are taken for granted.

Young bodies are mutilated, toxic treatments deployed that do not cure, and oncology drugs prescribed that cost over $100,000. Yet pancreatic cancer deaths spiral upward each year.

**Cancer Establishment's Position**

A report published earlier this year showed **cancer death rates** went down 31% from 1991-2018 in response to reductions in smoking and to **earlier** diagnoses and some improved treatments. But this does not spare the more than **600,000** Americans who will perish from a malignancy over the next 12 months.

Greater priority given to discovering **curative** treatments is urgently needed. This will not happen until the public demands meaningful changes.

In the meantime, I urge readers to **take control** of their individual risk factors to reduce odds of contracting deadly digestive tract malignancies including colon, esophageal, and pancreatic cancers.

For longer life,

William Faloon, Co-Founder
Life Extension® Buyers Club

**References**

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Reference

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- Vitamin K2 (MK-4) 1,500 mcg (for bone & vascular health)
- Vitamin K2 (MK-7) 181 mcg (long-acting protection)

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Probiotic Use Associated with Fewer Upper Respiratory Tract Symptoms

Findings from a study presented at Digestive Disease Week® 2021 revealed an association between the use of probiotics and a reduction in upper respiratory tract symptoms among older and overweight men and women.*

The research team reviewed diary entries completed by the subjects during the trial to determine the presence of upper respiratory symptoms that included sore throat, wheezing, and coughing.

After one to two weeks of supplementation, subjects who received probiotics exhibited a delay in the time it took to record their first upper respiratory tract symptoms.

At the end of the study, there was a 27% lower incidence of upper respiratory tract symptoms reported by probiotic-supplemented participants in comparison with those who received a placebo.

Editor’s Note: The benefit of probiotics supplementation was greatest among those people who were at least 45 years of age, or who were obese.

* Digestive Disease Week® 2021. May 23.
Magnesium, B Vitamins, Green Tea, Rhodiola, Manage Stress

An article in *Nutritional Neuroscience* reported an improved response to the effects of social stress following supplementation with magnesium, B vitamins, green tea, and rhodiola in a trial involving moderately stressed men and women.*

Participants received a placebo or one of three nutrient combinations. The first treatment group received magnesium, vitamin B6, vitamin B12, folate, green tea extract, and rhodiola extract. The second group was given magnesium, B vitamin complex, and rhodiola extract, and the third group received magnesium, B vitamin complex, and green tea extract.

After receiving the supplements, the participants underwent a social-stress-inducing test, and resting state EEG was administered.

Combined treatment with magnesium, B vitamin complex, green tea, and rhodiola was associated with a significant increase in theta waves as measured by EEG, indicating a relaxed, alert state. Participants in this group reported less subjective stress, anxiety, and disturbed mood.

*Editor’s Note:* “There is a significant practical benefit of a nonpharmaceutical method of reducing the negative impact of stress, considering the associated profound detriment to the quality of life of individuals and substantial social and economic societal costs,” the authors stated.


Women Needing Knee Replacement Shown to have Vitamin D Deficiency

Having enough vitamin D may not only help prevent some pain associated with total knee (replacement) surgery but could help to prevent the condition in the first place, according to a study published in *Menopause*. *

The research included 226 post-menopausal women scheduled for total knee replacement who had 25-hydroxyvitamin D levels of less than 30 ng/mL or moderate levels of at least 30 ng/mL.

Of the women needing knee replacement, 67% had less than 30 ng/mL of 25-hydroxyvitamin D.

Editor’s Note: In addition to deficient levels of vitamin D, smoking and having a high body mass index (BMI) were independent risk factors for experiencing moderate to severe pain following knee replacement surgery.

Higher Dietary Antioxidant Intake Associated with Lower Cognitive Impairment

Among older individuals who consumed more antioxidants, there was a lower risk of cognitive impairment later in life, a study in The Journals of Gerontology® Series A reported.*

Cognitive function was evaluated 20.2 years after the beginning of the study in 1993. Among those whose Comprehensive Dietary Antioxidant Index Scores placed them among the top 25% of participants, the odds for developing cognitive impairment were 16% lower than those of participants with the lowest 25% of scores.

For participants in the highest quartile for Vitamin C Equivalent Antioxidant Capacity, the odds for developing cognitive impairment were 25% lower compared to those in the lowest quartile.

Editor’s Note: When antioxidant nutrients were individually analyzed, greater daily intake of vitamin C, vitamin E, carotenoids, and flavonoids was associated with a reduced cognitive impairment risk.

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* EGCG is the acronym for epigallocatechin gallate, which is the polyphenol in green tea that has demonstrated the most robust health benefits.

References
Unique PROBIOTIC Prevents Constipation

BY MICHAEL DOWNEY
Anyone who’s suffered from occasional constipation knows how unpleasant it can be.

Roughly 20% of Americans suffer from chronic constipation, which lasts for several weeks or longer.\(^1,2\)

This is more than a quality-of-life problem. Chronic constipation can lead to hemorrhoids, anal fissures, and other health risks.\(^3,5\)

As we age, the odds of developing constipation double.\(^8\)

Conventional approaches with fiber do not always enable one to achieve desired improvement.\(^6\)

A probiotic strain has been identified that offers a different approach.\(^7\)

In a clinical trial of patients with moderate constipation, daily use of this probiotic strain restored colonic transit time to normal in just two weeks.\(^7\)

That led to an average:\(^7\)

- 42% decrease in constipation
- 48% decrease in nausea
- 52% decrease in abdominal pain

Constipation has a wide range of underlying causes.

This novel probiotic strain may provide a solution for many individuals challenged to achieve satisfactory evacuation of their bowels.
When Constipation Becomes a Danger

Most people experience constipation (infrequent or difficult bowel movements) once in a while. But for some, it has become a chronic condition. Research has found that chronic constipation poses long-term health risks, including hemorrhoids, anal fissures, and possibly, gallstones.3-5,7 It has also been associated with a greater risk of cancer. Researchers have found a few possible reasons for the link:5

- People suffering from chronic constipation have a slow colonic transit time (the period it takes for stool to move through the colon).8,9 That can prolong the contact between stool carcinogens and the tissue lining the colon.

- Constipation contributes to an unfavorable gut microbiota (the community of microbes living in the intestine). This may lead to microbial toxins disseminating to other parts of the body, contributing to cancer development or progression.

- An unbalanced gut microbiota is linked to inflammation, which increases risk of various cancers.

A Solution

The risk of developing chronic constipation increases with age.3 Researchers focused on probiotics as a possible solution.

These beneficial bacteria have been shown to have a range of benefits, from improving general digestive health to supporting healthy immune function, and much more.

Scientists carefully examined more than 2,000 probiotic strains, hoping to identify ones that provided these wide-ranging benefits.10 They found several strains derived from yogurts produced in New Zealand that had probiotic value and the ability to survive conditions similar to those in the human digestive tract.10

Eventually, scientists showed that one specific strain decreased colonic transit time.7 By moving stool along faster, this probiotic can provide relief for existing chronic constipation and help to prevent it from developing.

This breakthrough probiotic strain is *Bifidobacterium lactis* HN019.

Validated in Rigorous Clinical Trial

Scientists set out to test *B. lactis* HN019 in a randomized, placebo-controlled, triple-blinded clinical study.7

Triple blinding means that no one involved in the study in any way is allowed to know which treatment is active and which is a placebo.

Researchers divided 88 men and women (ages 25-65) who suffered from moderate constipation into three groups.7 One was given 1.8 billion colony-forming units (CFU) of *B. lactis* HN019 once daily. A second was given 17.2 billion CFU of *B. lactis* HN019 once daily. A third group was given a placebo.

At the end of 14 days:7

- Subjects who took a low dose (1.8 billion CFU) of *B. lactis* HN019 had colonic transit times that were 18.5 hours faster, a 31% improvement.

- Subjects who took a high dose (17.2 billion CFU) of *B. lactis* HN019 had colonic transit times that were 28.1 hours faster, a 57% improvement. This means that these individuals went from the slower than normal colonic transit times typical of moderate constipation to values considered to be in the normal range.
Digestive discomfort questionnaires were also completed by participants. The high-dose (17.2 billion CFU) probiotic recipients reported, on average:7

- A 52% decrease in abdominal pain,
- A 48% decrease in nausea, and
- A 42% decrease in constipation.

Taking this probiotic was shown to be completely safe and did not result in any adverse effects, which mirrors the findings of other studies involving *B. lactis HN019.*7

**Comparing This Probiotic to a Drug**

Scientists compared the 57% improvement in colonic transit time of this probiotic to a prescription constipation medication called prucalopride.

They reviewed previous clinical studies of prucalopride, which lasted from four to 12 weeks longer than the two-week probiotic study.9

The reviewers found that prucalopride improved colonic transit times by 19%,9 far less than the 57% improvement seen in the high-dose probiotic trial.

The drug prucalopride has also been associated with a number of side effects, including headaches, abdominal pain, nausea, and diarrhea.11

**How It Works**

Studies have cast some light on how *Bifidobacterium lactis HN019* may reduce colonic transit time.7,12-15

This probiotic acts on food in the digestive tract to create metabolites known as short-chain fatty acids. These fatty acids are a source of energy for cells lining the surface of the colon, making them essential to gastrointestinal health.

Preclinical models have demonstrated that short-chain fatty acids interact with a protein within certain cells that exist alongside intestinal epithelial (surface) cells. This sets in motion a cascade of events that speeds up colonic transit times.7,12-15

**WHAT YOU NEED TO KNOW**

**Relief for Constipation**

- The likelihood of developing constipation increases with age.
- In addition to reducing quality of life, chronic constipation is linked to serious health issues, including higher cancer risk.
- A specific probiotic strain, *Bifidobacterium lactis HN019,* has been found to target and treat constipation.
- Clinical research shows that oral use of *B. lactis* HN019 decreases colonic transit time by up to 57%. In just two weeks, that led to a 52% decrease in abdominal pain, a 48% decrease in nausea, and a 42% decrease in constipation.
Another clinical study has shown *B. lactis* HN019 supplementation increased levels of two beneficial bacteria, *bifidobacteria* and *lactobacilli*, and decreased levels of harmful *enterobacteria*. This may stimulate peristalsis (the muscle contractions that move food through the digestive tract) and shorten colonic transit time. Put simply, this probiotic strain helps move things along in the colon, which can effectively treat and prevent chronic constipation.

**Summary**

*Chronic constipation* afflicts about 20% of Americans and about 40% of those aged 65 and over. Scientists have isolated a probiotic strain called *Bifidobacterium lactis* HN019 from yogurt produced in New Zealand. This strain has been demonstrated to target and relieve constipation.

Clinical research has demonstrated that oral use of this probiotic decreases *colonic transit time* by up to 57%, providing major relief from constipation. Participants’ regularity was considered normal after just two weeks of use.

Constipation has a wide range of underlying causes. This novel probiotic strain may provide a solution for many individuals who are unable to completely evacuate their bowels.

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

**References**

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LITHIUM Extends Lifespan and Slows Brain Aging

BY MICHAEL DOWNEY
During the past two centuries, people made pilgrimages to springs that were naturally high in the mineral lithium.

One site, Lithia Springs in Georgia, was visited by Mark Twain, at least four U.S. presidents, and other prominent figures, all because of the famous lithium water.

The more that scientists study lithium, the more persuasive the evidence has become for its unique effects.

Scientists have found that lithium may prevent cognitive decline. Preclinical studies have shown it activates pathways that may slow the aging process.

In one animal study, high doses of lithium increased median lifespan by 46%.

Two studies have found that individuals living in areas with even modest levels of lithium in drinking water tend to live longer.

As little as 300 to 1,000 mcg of lithium daily may provide these benefits.
What is Lithium?

Lithium is a naturally occurring mineral found in rocks and subsoil in some geographical areas. Some natural water sources contain small amounts of this element.

By the 19th century, many people had come to believe that there were health and longevity benefits to drinking water that contained lithium. It also became linked to improved mood.

Modern science has confirmed these beliefs.

For instance, two studies found that people living in areas with even low levels of lithium in the drinking water tend to live longer.6,7

Lithium and the ‘Age-Accelerating Enzyme’

One key to lithium’s benefits appears to be its ability to inhibit a cellular enzyme called glycogen synthase kinase-3 (GSK-3).3,4,8

GSK-3 controls several important functions within cells. But overactivity of GSK-3 can be harmful.

Increased GSK-3 activity correlates with rapid aging of many tissues and the entire body.9,10 Its impact is so dramatic that GSK-3 can be thought of as an age-accelerating enzyme.

Overactivity of GSK-3 is linked to chronic diseases, including Alzheimer’s, type II diabetes, some cancers, and mood disorders.6,11-14

Even in low doses, lithium reduces GSK-3 overactivity.3,4,8 Studies suggest that this GSK-3 inhibition is largely responsible for lithium’s ability to protect brain function and promote healthy longevity.3,8

Boosting Longevity

Scientists have noted that people taking high-dose lithium for medical reasons generally have lower mortality rates, including lower rates of death due to cardiovascular disease.15,16

Controlled experiments have been conducted to rigorously explore possible life-extending effects of lithium.

These studies showed that low-dose lithium led to a modest increase in lifespan in roundworms, known as C. elegans.7

Higher doses of lithium led to longer lifespans in both roundworms and fruit flies.3,5,7 In one of these studies, median survival was boosted by 46%.9

Evidence from these and other studies suggested that, in addition to inhibiting GSK-3, lithium exerted pro-longevity effects in three ways:5,17,18

- Lithium may help maintain longer telomeres, protective structures related to cellular health,
- Lithium regulates genes related to healthy DNA structure, and
- Lithium may protect against cell senescence. Senescent cells are contributors to age-related disease and accelerated aging.

Together, these mechanisms may help slow the aging process and protect against chronic disease.

Protecting the Brain

Very high doses of lithium have long been used to treat the psychiatric condition bipolar disorder.

Now, clinical studies suggest that much lower doses of lithium provide neuroprotective benefits.

Scientists are finding that lithium may help prevent or improve mood disorders, dementia, and Alzheimer’s disease.

One study found that long-term lithium exposure from drinking water may be associated with a lower risk of being diagnosed with dementia.19
Similar benefits have been demonstrated with Alzheimer’s disease. One epidemiological study in Texas revealed that rates of death from Alzheimer’s were higher in areas with low levels of lithium in the water.20 In one clinical study, a micro-dose of just 300 mcg of lithium daily was found to significantly decrease cognitive decline in Alzheimer’s patients, compared to a placebo.21

**Mechanisms of Neuroprotection**

Lithium appears to protect the brain in a number of different ways. In preclinical research, scientists found that it not only reduces the elevated GSK-3 activity associated with Alzheimer’s, but also reduces the buildup of beta-amyloid. This is the abnormal protein that accumulates and forms plaques in the brains of Alzheimer’s patients.22 Scientists have also documented that lithium:

- Increases the activity of multiple beneficial neurotransmitters in the brain,
- Increases brain-derived neurotrophic factor, an important signaling molecule that protects brain cells and augments their function, and
- Helps balance circadian rhythm and may help with adrenal hormone function.

In clinical studies, lithium treatment has been linked to additional signs of neuroprotection, including:23

- Thickening of the cerebral cortex, the brain’s outer layer,
- Increased density of gray matter, which contains most of the brain’s nerve cell bodies, and
- Enlargement of the hippocampus, the brain’s memory center.

All of these activities together may slow brain aging and protect against cognitive decline.

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**WHAT YOU NEED TO KNOW**

**Lithium’s Brain and Body Benefits**

- Studies have found that people living in areas with the mineral lithium in the drinking water tend to live longer.
- Patients taking lithium for medical reasons also have lower mortality rates, and lithium treatment extends lifespan in animal studies.
- Lithium in drinking water may also be associated with a lower risk of being diagnosed with dementia.
- In a clinical study, 300 mcg of lithium daily significantly decreased cognitive decline in patients with Alzheimer’s disease.
- Lithium appears to work largely by inhibiting overactivity of the “age-accelerating enzyme” GSK-3, which has been tied to rapid aging, cognitive decline, and risk for chronic diseases.
- Low-dose lithium may reduce risk for age-related disorders, protect brain function, and extend healthy lifespan.
LITHIUM EXTENDS LIFESPAN AND SLOWS BRAIN AGING

References


In a clinical study, it decreased cognitive decline in patients with Alzheimer’s disease. Research shows that low lithium doses—only 300 mcg to about 1,000 mcg daily—may benefit mental and physical health and increase longevity.

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

Summary

The mineral lithium is demonstrating broad-spectrum health benefits.

Lithium works, in part, by inhibiting the overactivity of the “age-accelerating enzyme” GSK-3 and protecting DNA.

Lithium intake is associated with longer lifespan in humans and a median 46% increase in longevity in roundworms.

In a clinical study, it decreased cognitive decline in patients with Alzheimer’s disease.

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People tend to live longer in areas where lithium is abundant in the drinking water.* Lithium is a low-cost mineral that functions in several ways to support cognition and overall brain health.

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Topical CoQ10 for Younger-Looking Skin

BY ROBERT GOLDFADEN AND GARY GOLDFADEN, MD

Oxidative stress damages delicate cell structures and diminishes the skin’s capacity for self-renewal.

Scientists have found that topically applied coenzyme Q10 helps repair this damage and reverse some of the outward effects of time.

Oxidative Stress Accelerates Skin Aging

When we’re young, skin uses its own natural supply of antioxidants to counter oxidative stress.¹,²

But aging and chronic sun exposure deplete the skin’s antioxidant reservoir.³,⁴

Oxidative stress left unchecked results in inflammation,⁵ damaged lipids,⁶ dysfunctional mitochondria,⁷ glyated proteins,⁵,⁶,⁸ and mutated DNA.⁶,¹⁰

This compromises the growth and maintenance of youthful skin cells.

Over time, visible signs of premature aging appear, including wrinkles and sagging skin.
Coenzyme Q10

Coenzyme Q10 (CoQ10) is a lipid-soluble compound found throughout the body. In skin, it is present mostly in the outermost layer. There, it acts as an antioxidant, reducing oxidative stress, inflammation, and DNA damage.11,12

In one study, pretreating human skin cells with CoQ10 before exposure to ultraviolet radiation decreased DNA damage by up to 70%, prolonging cell survival and protecting against skin cancer.12

CoQ10 is used by the mitochondria, the power plants of cells, to produce the primary energy source used for skin maintenance and repair.13,14

Human skin cells treated with CoQ10 show increases in energy metabolism.15,16

In a preclinical study, CoQ10 promoted the healthy proliferation of normal and aged fibroblasts.17

Fibroblasts are cells that make collagen and the skin’s extracellular matrix. Collagen is essential to maintain skin structure and integrity.12,17,18

CoQ10 also prevents collagen from being degraded by inhibiting the enzyme collagenase.12

Together, these beneficial effects diminish the appearance of unsightly wrinkles.

In one clinical trial, 20 mature participants with photodamaged skin topically applied CoQ10 around one eye and a placebo around the other eye, once daily. After six months, there was a 27% reduction in mean wrinkle depth on the CoQ10-treated side, compared to the control side.12

Another clinical study also showed that topical CoQ10 reduced wrinkle grade scores, compared to baseline.

Goji Berry Extract

Skin stem cells secrete exosomes, which shuttle information and material to other skin cells.19

Exosomes signal fibroblasts to produce new collagen and elastin that give skin its firmness and elasticity.19

As we age, the number and function of skin stem cells decline.20 This leads to a loss of collagen and elastin, resulting in wrinkles and sagging.

Lycium barbarum (goji berry) is a fruit-bearing plant that grows in Europe and Asia.21

When aged human skin stem cells are treated with an extract of Lycium barbarum, they show increased vitality, exosome production, and greater activity of collagen-elastin gene expression.22

In one clinical trial, compared to placebo, topical use of Lycium barbarum stem cell extract reduced wrinkle depth and decreased facial sagging.22

Orchid-Derived Stem Cells

Calanthe discolor is a species of orchid native to Asia. Its stem cells have been shown to increase the output of multiple growth factors in skin stem cells.23

These growth factors activate tissue repair and regeneration. In a lab study, Calanthe discolor (orchid- derived) stem cells:23

- Increased fibroblast proliferation by 220%,
- Increased fibroblast migration by 144%,
- Increased type I collagen (the most abundant kind) by 53%, and
- Increased elastin by 81%.

In a clinical study, 26 participants with aging facial skin topically applied Calanthe discolor (orchid) stem cell extract or a placebo once daily to the target area.
After 56 days, compared to the placebo, *Calanthe discolor* led to a:\(^{23}\)

- 17% increase in skin firmness,
- 10% increase in skin elasticity,
- 13.7% increase in youthful skin glow,
- 15% decrease in the number of wrinkles, and
- 12% decrease in total wrinkle surface.

These improvements were accompanied by a lifting effect of the upper eyelids that rejuvenated the appearance of the eyes.\(^{23}\)

**WHAT YOU NEED TO KNOW**

**Three Nutrients to Repair Damaged Skin**

- In the skin, *oxidative stress* damages cellular structures vital for cell renewal and repair.

- Over time, this results in *wrinkles* and *saggy skin*.

- *Coenzyme Q10 (CoQ10)* is an essential nutrient that protects against oxidative stress and increases energy metabolism in skin cells to enhance tissue regeneration.

- *Lycium barbarum* (goji berry) stem cell extract stimulates the activity of aged skin stem cells to reduce wrinkles, improve skin density, and decrease sagging.

- Stem cell extract from an orchid called *Calanthe discolor* increases the synthesis of growth factors in aged skin stem cells, boosting output of *collagen* and *elastin*, the proteins that keep skin firm and healthy.

- All three of these compounds have been combined into **one topical formula** to create firmer, more youthful-looking skin.
Summary

Oxidative stress accelerates skin aging.

Research shows that CoQ10 and stem cell extracts from two plants, Lycium barbarum and Calanthe discolor, help protect against oxidative stress and repair the damage it inflicts. The result is reduced wrinkle depth and less skin sagging.

All three compounds have been combined into a topical formula to enable visibly firmer, younger-looking skin.

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

Gary Goldfaden, MD, is a clinical dermatologist and lifetime member of the American Academy of Dermatology. He is the founder of Academy Dermatology in Hollywood, FL, and Cosmesis Skin Care. Dr. Goldfaden is a member of the Life Extension® Medical Advisory Board.

References

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Promising Strategies in the Fight Against Pancreatic Cancer

BY DAVID MARCUS
Pancreatic cancer is on the rise. The number of cases and deaths are increasing year after year.¹²

In 2018, there were 458,000 new cases diagnosed and over 432,000 deaths due to pancreatic cancer globally.³

The prognosis for most cases of pancreatic cancer is dismal. At time of diagnosis, 80% of patients have locally advanced or metastatic disease.⁴

It is extremely aggressive and often resistant to treatment.

There is a desperate need for new treatments.

In the meantime, healthy dietary and lifestyle choices can significantly reduce one’s risk of contracting this deadly malignancy.
What Is the Pancreas?

The pancreas is an organ located in the abdomen, near the stomach and small intestine. It plays two major roles. Exocrine tissue in the pancreas produces a liquid that enters the small intestine through ducts. This liquid and its enzymes aid in digestion. It is from these ducts that most pancreatic cancers arise.

The pancreas also contains endocrine tissue. These cells produce hormones, including insulin, which are released into the bloodstream and regulate blood sugar levels.

Why Pancreatic Cancer Is So Deadly

Pancreatic cancer is only the 11th most-common cancer in the U.S. But it’s the third-leading cause of U.S. cancer deaths. The overall five-year survival rate for pancreatic cancer is only 10%. Survival depends on how early the cancer is caught and treated. When caught early, the five-year survival rate can be close to 40%.

Unfortunately, more than half of all pancreatic cancers aren’t diagnosed until the disease has metastasized. The five-year survival rate for these patients is a frightening 3%. There are three main reasons why this form of cancer is so deadly.

First, early pancreatic cancers often do not cause symptoms. That means the tumor can continue growing unnoticed for a long time.

Second, pancreatic cancers are aggressive. They grow rapidly and quickly invade nearby tissues. They also metastasize—spread through the bloodstream or lymphatic system—to distant organs or tissues quite easily.

Third, pancreatic cancers are notoriously difficult to treat. Only the earliest, localized tumors can be effectively treated with surgery. In advanced stages, pancreatic cancer tends to be long-term resistant to chemotherapy drugs and radiation.

Lowering Risk Factors

There are some known ways to lower the risk of developing pancreatic cancer. Poor diet, excessive alcohol intake, smoking, obesity, diabetes, and certain nutrient deficiencies have been identified as factors that increase risk for cancers.

For example, compared to never-smokers, pipe smokers have a 1.6-fold greater risk of developing pancreatic cancer than non-smokers, and cigarette smokers have a 1.5-fold greater risk of developing pancreatic cancer.

Recent onset of diabetes is associated with a four-to-seven-fold greater risk of developing it within three years of diagnosis.
Heavy drinking and diets high in animal fats and saturated fats also significantly increase the risk of pancreatic cancer.7

Quitting smoking, improving diet, losing weight, and controlling blood sugar all help lower the risk of developing different types of malignancies, including pancreatic cancer.

Inadequate intake of various nutrients commonly found in fruits and vegetables also contributes to cancer risk. Studies show that high intake of these foods reduces risk of pancreatic cancer.6

**Protective Nutrients**

Several nutrients and vitamins have indicated protective properties against pancreatic and other cancers. These are often lacking in standard American diets. Supplemental intake of these compounds can correct deficiencies and raise levels to more beneficial amounts.

**WHAT YOU NEED TO KNOW**

**New Hope for Preventing and Treating Pancreatic Cancer**

- **Pancreatic cancer** is one of the deadliest forms of cancer with a very low survival rate.

- Cancer of the pancreas is aggressive and highly resistant to standard treatments in most cases.

- Curcumin, omega-3 fatty acids, carotenoids, green tea catechins, and magnesium may reduce the risk of developing pancreatic cancer and improve treatment in patients who already have it.

- The diabetes medication metformin and cholesterol-lowering statin drugs have also shown an ability to reduce the risk of and improve survival in pancreatic cancer. Both are being studied further and may come to be a part of standard treatment.
CAROTENOIDs

The carotenoids are a group of nutrients found in fruits and vegetables. The most studied as it relates to risk reduction are alpha-carotene, beta-carotene, lycopene, astaxanthin, lutein, and zeaxanthin.

Most of the carotenoids, either alone or in combination, have remarkable impact on various aspects of health. Numerous studies have drawn a link between carotenoid intake and prevention of cancer.\textsuperscript{10,11}

Cell studies show that some carotenoids reduce pro-inflammatory signaling in cancers and induce cell death by apoptosis.\textsuperscript{12}

A number of epidemiological studies have evaluated whether intake of carotenoids impacts risk for pancreatic cancer. Most of the common carotenoids have been shown to be associated with reduced pancreatic cancer risk, including alpha- and beta-carotene, vitamin A, lycopene, lutein, and zeaxanthin.\textsuperscript{13-17}

For example, men with the highest intake of lycopene were 31\% less likely to develop pancreatic cancer than men with the lowest intake.\textsuperscript{17} Beta-carotene and zeaxanthin intakes (highest vs. lowest) have been associated with a reduced risk of 48\% and 47\%, respectively.\textsuperscript{16}

Even in existing cancer, carotenoids provide benefits. For instance, in pancreatic cancer cells that have become resistant to chemotherapy, astaxanthin blocked the cancer cell progression and increased their sensitivity to chemotherapy, aiding in killing of the cancer cells.\textsuperscript{18}

CURCUMIN

Curcumin is the active compound found in the spice turmeric. It has been shown to act against cancer by several different mechanisms, affecting cancer cells at multiple points in their development.\textsuperscript{19}

Studies in cell cultures and animals demonstrate that curcumin has the ability to inhibit pancreatic cancer growth.\textsuperscript{20,21}

It works by stopping the tumor from growing new blood vessels, essentially starving it of nutrients. It also has direct toxic effects in cancer cells, killing them while being healthy for normal cells.\textsuperscript{20,21}

Curcumin also blocks the ability of cancer cells to migrate and spread, preventing metastases to other organs.\textsuperscript{22}

One of the major hurdles in the treatment of pancreatic cancer is that it develops resistance to chemotherapy. The most commonly used chemotherapy drug, gemcitabine, often becomes useless after a short time because the tumor stops responding to it.

Curcumin has been shown, in a laboratory study, to turn off this resistance, allowing chemotherapy to have a greater impact.\textsuperscript{23}

If future preclinical and clinical studies confirm this result, curcumin could not only help to prevent pancreatic cancer, but also to improve its treatment in patients who do develop this deadly disease.

VITAMIN D

Vitamin D deficiencies are extremely common, especially in older adults. Inadequate levels of vitamin D have been found to be associated with increased risk for several chronic diseases, including cancer.

Research also suggests a positive association between vitamin D intake or status and lower total cancer risk and mortality.\textsuperscript{24-26}
One analysis found that higher vitamin D intake (600 IU/day or more) was associated with a 41% lower risk for pancreatic cancer when compared to the lower intake (less than 150 IU/day).

Exposure to sunlight—which helps the body produce vitamin D—is also associated with a reduced risk of pancreatic cancer.27–29

**GREEN TEA CATECHINS**

Green tea and its extracts contain compounds called catechins that have numerous health benefits.

In observational studies, higher tea consumption is associated with lower risk of developing pancreatic cancer.30–32

In one study in China, regular tea drinkers had a 51% lower risk of pancreatic cancer compared to people who did not drink tea regularly.32

Like curcumin, green tea has direct effects on pancreatic cancer cells. In preclinical studies, it has been shown to reduce tumor cell growth, invasion, and migration, and to cause cancer cells to die off.33,34

Also, like curcumin, catechins increase the impact of chemotherapy drugs.

EGCG (epigallocatechin gallate) is the most common catechin in green tea. In one preclinical study, it reduced pancreatic cancer growth by 40% on its own. The chemotherapy drug gemcitabine reduced growth by 52%.

But together, the two compounds reduced cancer growth by 67%.35 EGCG has shown this ability for other cancer cell types and with other chemotherapy drugs as well.36

**OMEGA-3 FATTY ACIDS**

Omega-3 fatty acids from fish oil act by numerous mechanisms to help fight a wide array of cancers.37–39

For example, abnormal activation of two key signaling proteins, STAT3 and NF-kB, contribute significantly to the survival and growth of pancreatic cancer cells. Omega-3 fatty acids suppress their activity.40

In mice, omega-3s prevent the formation and viability of pancreatic cancer, while unhealthy fats accelerate tumor formation.41,42

In people, greater intake of omega-3 fatty acids, particularly DHA, has been associated with reduced risk of pancreatic cancer compared to lower intake.43,44

Omega-3s also work with other nutrients and medications.

The combination of omega-3 fatty acids and the cancer drug gemcitabine was found to completely block the secretion of a cancer growth factor called platelet-derived growth factor in pancreatic cancer cells.45

Combining omega-3s and curcumin has also been found to enhance the killing of pancreatic cancer cells.46

A review of trials that included omega-3 use in humans with advanced, terminal pancreatic cancer found that they helped to maintain body weight and approximately doubled patients’ survival time.47

**MAGNESIUM**

Magnesium is a critical mineral required for many different processes in the body, including metabolism. Low levels of magnesium contribute to many chronic diseases, particularly cardiovascular disease.48,49

There is mounting evidence that suboptimal intake of magnesium contributes to the development of cancers as well.

Magnesium is a required cofactor (or “helper molecule”) for proteins involved in DNA repair.48
Without enough magnesium, DNA repair may be inadequate. This leads to more rapid accumulation of genetic mutations, which contribute to the development of cancer.

One large study found a clear association between magnesium intake and risk for pancreatic cancer. The study followed more than 66,000 older adults for eight years. Subjects were divided into three groups based upon their magnesium intake as follows:

- **“Optimal” Intake** — These authors defined this as consuming greater than or equal to 100% of the government RDA for magnesium (420 mg a day for males and 320 mg a day for females)
- **Sub-optimal Intake** — Daily intake of 75% to 99% of the government RDA for magnesium
- **Deficient Intake** — Less than 75% of the government RDA for magnesium (less than 315 mg a day for males and less than 240 mg a day for females)

Compared to those with what the authors called “optimal intake,” subjects with sub-optimal intake had a 42% greater risk of developing pancreatic cancer. Those with deficient intake had a striking 76% greater risk of pancreatic cancer compared with those with intakes greater than or equal to 100% of the magnesium RDA.

**Medications with Anti-Pancreatic-Cancer Effects**

The standard pharmacologic treatment for existing pancreatic cancer is generally chemotherapy drugs, radiation, or a combination of both. They have little success.

Studies have found that patients who are taking two non-cancer medications, metformin or statin drugs, have some protection against the development and spread of this deadly cancer.

**METFORMIN**

Metformin is the most common drug used to control blood glucose levels in type II diabetes.

Research shows that metformin use in diabetics is associated with lower risk of developing pancreatic cancer.

In a study of records of patients with pancreatic cancer and diabetes treated at the University of Texas MD Anderson cancer center, the two-year survival rate in those taking metformin was nearly twice that of patients not taking metformin.

A large 2018 meta-analysis included nearly 4,300 diabetic pancreatic cancer patients, over 2,000 of whom had received metformin. This study found metformin use in diabetics with pancreatic cancer was associated with a 19% reduced overall mortality risk compared to those who did not use metformin.

And in a 2020 meta-analysis, compared to no use, metformin use was associated with overall better survival in patients who underwent surgery for pancreatic cancer.

Human trials evaluating the role of metformin in treating pancreatic cancer are currently underway or recently completed. Depending on the results, metformin may become a more standard component of cancer care.

**STATINS**

The statins are a group of drugs used to lower cholesterol levels, reducing risk of cardiovascular disease. They work by inhibiting an enzyme important for the synthesis of cholesterol in the body.

Researchers have found that use of statin drugs lowers risk for pancreatic cancer, increases survival, lowers mortality, and inhibits its growth.

In cell culture and animal models of pancreatic cancer, treatment with statins stunts the growth of cancer cells and prolongs survival of the animals.

In one large study of over 12,000 older patients with pancreatic cancer, those who started statins after their diagnosis had a 31% improved overall survival.

Another study looked at the medical records of almost a half million veterans. Statin use of six months or longer was associated with a 67% lower risk of developing pancreatic cancer. And statin use for more than four years correlated with a reduction in risk up to 80%.

Treatments for pancreatic cancer that include statins are currently being evaluated in five registered clinical trials.

These medications and the many compounds that have shown anti-cancer properties offer new hope for ways to prevent and treat this lethal cancer.
**Summary**

**Pancreatic cancer** is one of the deadliest forms of cancer. Treatment is rarely successful. But evidence shows that increasing intake of certain nutrients and healthier lifestyles help lower the risk of developing it and slow its growth in patients with the disease.

The best documented nutrients are:

- Carotenoids,
- Curcumin,
- Green tea catechins,
- Omega-3 fatty acids, and
- Magnesium.

In addition, the diabetes drug **metformin** and cholesterol-lowering **statins** have shown benefits in protecting against pancreatic cancer and in extending life in patients with pancreatic cancer. They have been studied in preclinical models, and are being tested in humans.

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

**References**


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Boost Collagen for Smoother Skin and Stronger Nails

BY MICHAEL DOWNEY
Collagen is the main protein in all connective tissue in humans.

It’s crucial for the health of our skin and nails. With age and sun exposure, our production of collagen declines.¹

The results are visible. Skin sags, develops wrinkles, and becomes marred by cellulite. Nails grow brittle and crack more easily.

To solve this problem, scientists developed collagen peptides that, when taken orally, stimulate the body to produce new collagen.

In clinical studies, these oral collagen peptides:²⁻⁵

• Reduce the volume of eye wrinkles by 20%,
• Increase skin elasticity by an average of 7%,
• Reduce cellulite scores by 9%, and
• Decrease nail breakage by 42%.
**Our Body’s Glue**

**Collagen** is the most abundant protein in the human body. The word collagen comes from the Greek word *kola*, meaning “glue,” and it is essentially the glue that holds the body together.

It’s the main component of most connective tissues, such as tendons and muscle.

Collagen makes up **70%** of the subsurface layer of the skin by weight. It is vital for skin cohesion, firmness, and resilience.²,³

It also provides flexibility and is integrated with fibers of **elastin**, the protein that allows the skin to stretch and return to its original shape.

**Collagen Drops with Age**

**Aging** has a devastating effect on collagen production. At around **age 25**, the cells that produce collagen fibers slow down. The remaining fibers can stiffen, break, and lose shape. Elastin fibers also begin to fray and lose elasticity.

From then on, adults lose about **1%** of their skin collagen each year.² After several decades, you may have lost **half** the skin collagen you had at age **18**.²,³

Collagen decline accelerates even faster in women after **menopause**. Smoking, high blood sugar, and sun exposure also decrease collagen levels.²,³,⁴

The result of collagen loss is **visible skin aging**, including thinning, sagging, and wrinkles.²,³ But this doesn’t have to be inevitable.

**Peptides Stimulate New Collagen**

**Collagen peptides** are short chains of amino acids that provide the building blocks for collagen.

In animal studies, scientists showed that hydrolyzed (or partially broken-down) collagen peptides boosted the creation and activity of collagen. This produces stronger, more supple skin.²,³

These collagen peptides also **reduce** the activity of an enzyme (**metalloproteinase 2**) that degrades collagen and hastens skin aging.²,³

Taken orally, these peptides stimulate the production of new collagen and elastin in the skin.²,³

Human trials have demonstrated that an oral collagen peptide is effective in improving skin appearance.²,³

**Reduced Skin Wrinkles**

Researchers conducted a series of human trials to test the effects of these collagen peptides on skin and **nails**.

In one clinical study, scientists gave oral collagen peptides to 114 women, aged 45 to 65, in daily doses of **2.5 grams**.²

After **four weeks**, the volume of eye wrinkles in the collagen group had decreased by **7.2%**, compared with placebo recipients.²

After **eight weeks**, those taking collagen peptides showed a stunning **20.1% reduction** in the volume of eye wrinkles.²

This research team also measured the structural proteins in the women’s dermal matrix, the structural framework responsible for skin renewal and vitality. The more proteins, the healthier and more youthful the skin appears.²

The study found that subjects taking collagen had a **65% increase** in essential type-I pro-collagen and an **18% increase** in elastin fibers.

**Increased Skin Elasticity**

In another study, scientists tested the effect of collagen peptides on skin elasticity. This is the skin’s ability to stretch and bounce back, rather than sagging.

One group of volunteers received **2.5 grams** of oral collagen peptides daily, a second group received **5 grams** daily, and a third received a placebo.

After eight weeks, **both** groups taking the collagen had an average **7% improvement** in skin elasticity.²
This improvement in skin elasticity was even greater in women over age 49.³

Remarkably, a treatment subgroup of elderly women still retained higher elasticity than the placebo group four weeks after the last dose was taken.³

Erasing Cellulite

Collagen was next tested on cellulite, the “orange peel” appearance of skin.

Cellulite is caused by fat under the skin bulging into the dermis due to collagen loss and the resulting matrix breakdown.

Restoring dermal architecture can decrease the appearance of cellulite by lessening the amount of fat showing through the skin.

Scientists enlisted 105 women, aged 25 to 50, with visible cellulite. One group received 2.5 grams of oral collagen peptides daily. A second group received a placebo.⁴

After six months, collagen reduced cellulite by 9% and decreased thigh-skin waviness by 11.1%, compared to the placebo.⁴
Using ultrasound scans of the skin, the researchers noted an evident improvement in dermal density in those who took the peptides. This indicates that the oral collagen helped restore the normal structure of the skin’s layers.4

**Stronger, Healthier Nails**

Loss of collagen doesn’t just affect the skin. It also results in brittle, ragged nails. In a human trial, 25 healthy women, ages 18 to 50, were given 2.5 grams of collagen peptides once daily for 24 weeks.5

The collagen peptides decreased the frequency of nail breakage by 42%. They also reduced nail peeling and nail-edge irregularity, and increased the nail growth rate by 12%.6

Overall, 64% of participants had an improvement in nail brittleness. Four weeks after treatment stopped, the benefits were even more pronounced, with 88% of participants showing significant improvement in nail brittleness.5

A whopping 80% of participants agreed that the collagen treatment improved their nails’ appearance and expressed complete satisfaction with the results.5

Along with the studies on skin, this result confirms that oral collagen peptides can improve the appearance and health of skin and nails.

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**Summary**

After about age 25, we begin to produce less collagen.

Over time, collagen loss results in wrinkled, sagging skin, cellulite, and brittle, breakable nails. Collagen peptides can boost the synthesis of new collagen and elastin.

Clinical trials show that these peptides decrease eye wrinkle size by 20%, increase skin elasticity, reduce cellulite, and strengthen nails.

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

**References**


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The Anti-Aging Power of Hormone Therapy

Dr. Thierry Hertoghe is one of the world’s leading experts in and practitioners of hormone replacement therapy for longevity and disease prevention.

In this exclusive, two-part interview, Dr. Hertoghe, president of the International Hormone Society and the World Society of Anti-Aging Medicine, tells Life Extension® how hormone therapy can help fight disease and promote longevity.

LE: In your practice in Belgium, you use hormone replacement to treat a number of disorders. Why do you think this type of therapy is often overlooked by mainstream medicine?

Dr. Hertoghe: Most doctors are trained to treat consequences of disease and not the cause. In contrast, most hormone therapies focus on preventing diseases and treating their causes. There are also scientifically unsubstantiated fears that hormone treatments could cause cancer or heart disease. But research shows that properly adjusted and well-balanced hormone treatments, at appropriate doses, are safe, and even protective.
There’s also a widespread belief that hormone deficiencies are extremely rare and that treatments should be reserved for severe deficiencies only. But data from numerous scientific studies show that low-to-normal hormone levels are frequent and are associated with disease.

In addition, the science of optimal hormone replacement therapy is hardly taught in medical schools. My team and I have developed a high-level training program in “evidence-based hormone therapy” for physicians and nutritionists, which fills in these educational gaps.

**LE:** How do you use hormones to treat or prevent disease?

**Dr. Hertoghe:** I focus on detecting and treating any degree of hormone deficiencies or excesses, even mild ones. For each hormone supplementation, I try to find the dose and route of administration (oral, transdermal, intramuscular, or sublingual) that fits the patient and the treatment best. If the patient has heart disease, diabetes, osteoporosis, or any other type of age-related disease, I will adjust my treatment to that condition. I do not focus on treating a disease but focus on correcting the hormone deficiencies that cause or aggravate it. In most cases the disease improves.

**LE:** Can you explain your belief that hormones can alter aging?

**Dr. Hertoghe:** There is a gradual age-related decline of hormone production. That decline is aggravated by mental and physical stress, which causes the body to compensate with increased secretion of certain hormones, which then taxes the endocrine glands that secrete them. The more an endocrine gland has to produce hormones, the more likely and quickly the patient’s gland is going to prematurely age and become unable to produce enough hormones to meet daily needs.

For example, take the adrenal glands, which produce hormones to cope with stress. If stress is too severe and persistent for many months, there is no possibility for the adrenal glands to recover. After overproducing hormones, the production of the adrenal glands will collapse and end up in what is called adrenal burnout. That means the adrenals are no longer able to produce enough hormones, even in unstressed conditions.

**LE:** How can hormone therapy prevent that from happening?

**Dr. Hertoghe:** Well-adjusted hormone therapies may spare endocrine glands, stopping them from having to overwork and prematurely age. For example, when testosterone is applied to male rats from youth to old age, the testicles are spared from overworking. When the testosterone treatment, which suppressed the rats’ own production of testosterone, is stopped at old age, the testicles of the older rats secrete testosterone again—at levels equal to that of younger rats. Even the sperm production of these old rats recovers to a rate equal to that of young rats!

**LE:** What conditions do you treat with hormone therapy?

**Dr. Hertoghe:** The most frequent reasons patients come to see me are psychological complaints, such as fatigue, depression, and low resistance to stress. The most frequent physical complaint is to restore a more youthful physical appearance.

Then come age-related diseases, such as cardiovascular disease, hypertension, and diabetes. Cancer is a rarer condition for us to treat. That’s not because of a lack of ability—we are able to stimulate the immune system of the patient considerably and improve health and energy levels—but because of the unjustified fear patients have of taking hormones.

The results we have seen on age-related diseases are very satisfying. Our treatments should be considered as adjuvant and complementary interventions to that of the patient’s medical specialists. We cannot promise full recovery, but in many cases we seem to be able to help our patients come close to full improvement.
**Dr. Hertoghe:** In our clinic, patients first fill out extensive questionnaires on their medical history and that of their family, and on about 15 hormone deficiencies or excesses. We also review the patient’s diet in detail, which is of crucial importance. Many of the hormone treatments may not work well if the patient’s diet is too far from the **Paleolithic diet**. This type of diet consists of eating the types of unprocessed foods that have existed on earth for millions of years, such as fresh and organic fruit and vegetables, unprocessed meat, fish, poultry, and eggs cooked at low temperature without oil.

Then we do laboratory tests. These are not only **blood tests**, which provide a snapshot of hormone levels, but also 24-hour **urine hormone tests**, which provide a more stable, 24-hour picture of what is happening with the hormones.

**LE:** What are the next steps?

**Dr. Hertoghe:** Based on this information, we start with hormone and nutritional supplementation, insisting that the patient also follow a Paleolithic-type diet for at least five out of seven days to guarantee full efficacy of hormone treatments. We also inform patients that it is more efficient, safer, and better to correct all their important deficiencies and not just one or part of them. Otherwise, treatments are unbalanced and less efficient.

Some treatments, such as **thyroid** and **growth hormone**, have to be started at very low doses and then slowly increased. Other treatments, such as **adrenal hormones** (DHEA, cortisol, pregnenolone, aldosterone), **sex hormones** (testosterone, estrogen, progesterone), and **melatonin**, may be started at the dose that is expected to be optimal. Patients are informed of signs and symptoms of deficiency and excess of each hormone treatment and encouraged to regularly check them. The patient is also seen in regular follow-ups.

**LE:** You mentioned that age and stress harm hormone production. What other factors impact hormones?

**Dr. Hertoghe:** Many environmental factors do. It is not wise to eat foods or drink beverages that contain pollutants. For example, research has shown that plastic subunits from the walls of **plastic water bottles** migrate into the liquid. These units have effects similar to estrogen.

Toxins in food, such as **trans fats** and the **polycyclic aromatic hydrocarbons** that appear in barbecued food, damage the endocrine glands and make them age faster. **Pesticides** in food may also be a problem because many of them have an affinity for sex hormone receptors and may block the beneficial effects of sex hormones.

**Alcohol** contains **three** types of estrogens: phytoestrogens, mycoestrogens, and estrogenic pesticides. These all oppose testosterone action. Additionally, alcohol speeds up the conversion of testosterone into estradiol in the liver, depleting testosterone in men and increasing estrogen levels to an excessive point.

**LE:** Do you think hormone therapy will become more accepted in the future?

**Dr. Hertoghe:** The most impressive advance in medicine in the next decades will come from a shift in focus from therapies that treat the consequences of disease to those that treat the causes. Doctors and patients will pay greater attention to **hormone** and **nutritional** therapies and use pharmaceutical drugs as additions in areas where hormone and nutritional supplementation are not sufficient.

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

**Part Two of this interview will continue in the September issue.**

**Dr. Thierry Hertoghe** practices medicine at his clinic in Brussels, Belgium, where he specializes in using hormone treatments and nutritional therapies to fight disease, optimize health, and promote longevity. He is president of the International Hormone Society and the World Society of Anti-Aging Medicine.
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A pandemic of **autoimmune** and **chronic illness** is sweeping the globe, with **50 million** people diagnosed in America alone.

In their new book, Dr. Steven Phillips and his former patient, SONY/ATV singer-songwriter Dana Parish, argue that the true cause of autoimmune disease is **chronic, undiagnosed infections**.

These infections—from Lyme to toxoplasmosis—are caused by a broad range of microbes and lack a simple fix.

In the absence of medical consensus, Dr. Phillips has created innovative treatment strategies to combat these infections. These include using a technique called “pulsing”—along with natural compounds like **oil of oregano, grapefruit seed extract** and **probiotics**.

Both Dr. Phillips and Parish nearly died of undiagnosed infections, and now they are on a mission to help prevent others from having the same experience.

In this interview with *Life Extension*®, Dr. Phillips and Parish delve deeper into this surprising connection—and Dr. Phillips shares some of his techniques for effectively treating these insidious infections.

—LAURIE MATHENA
LE: What is the connection between infections and autoimmune diseases?

Dr. Phillips: It’s striking to us that chronic autoimmune diseases are considered to be of unknown origin, yet so many have been linked in medical literature to infections, specifically Lyme and Bartonella.

When people receive a diagnosis of fibromyalgia, MS, lupus, rheumatoid arthritis, Sjogren’s, psoriatic arthritis, or another rheumatologic/inflammatory diagnosis, they are not getting an actual diagnosis, but rather a description of signs and symptoms that brings them no closer to an answer.

According to a survey of over 4,000 chronic Lyme patients, roughly 20% were initially misdiagnosed with one of the following serious neurologic diseases: MS, Parkinson’s, ALS, or Multiple Systems Atrophy.

Many doctors are not properly (and sometimes not at all!) evaluating these patients for the possibility of infections and it’s disgraceful.

LE: What exactly is Lyme?

Dr. Phillips: To say Lyme is a “tick-borne illness” overly simplifies the matter. The word “Lyme” has come to refer to a family of infections, referred to here as “Lyme+”—and the transmission of these germs is not just by ticks. [Some of these bacteria] can be transmitted by other bugs like fleas, lice, sand flies, spiders, and ants.

LE: What are some examples of conditions often linked to—and caused by—infestations associated with Lyme+?

Dr. Phillips:
- Fibromyalgia
- Chronic fatigue syndrome
- Multiple sclerosis
- Rheumatoid arthritis
- Spondyloarthropathy—psoriatic arthritis, spondylitis
- Psoriasis
- Lupus
- Mixed connective tissue disease
- Migraines
- Inflammatory bowel disease, i.e., Crohn’s and ulcerative colitis
- Irritable Bowel Syndrome (IBS)
- Interstitial cystitis, bladder symptoms
- Psychiatric illness (e.g., depression, anxiety, OCD, bipolar disorder, and psychosis)
- Dilated cardiomyopathy
- Neurodegenerative diseases including ALS (Lou Gehrig’s disease), Alzheimer’s disease, Parkinson’s disease, and Lewy body disease

LE: That’s a shocking list. How could Lyme be mistaken for something like multiple sclerosis?

Dr. Phillips: Lyme can be clinically indistinguishable from multiple sclerosis, a fact that has been documented for decades.

Before the 1950s, spirochetes were visualized in the brains of MS patients and found from their spinal fluid. As documented in the Official Journal of the California Medical Association by a group of Stanford-based researchers, they named these organisms Spirochaeta myelophthora.

After that, a series of inoculation studies demonstrated that the tissue from the central nervous system of MS patients could be contagious. When lab animals were injected with this tissue, they became infected—their immune systems became inflamed and neurologic illness followed, sometimes resulting in paralysis and death.

In a 2001 study done in Norway, when researchers looked for infectious agents in the cerebrospinal fluid of MS patients, they found B. burgdorferi cysts in all of them, but not in healthy controls, with the exception of one, who had a prior history of Lyme.

LE: Is it true that rheumatoid arthritis was originally believed to be caused by an infection?

Dr. Phillips: Retroviruses, parvovirus B19, rubella, Epstein-Barr, and other herpes viruses have all been studied as potential causes of RA.

But the development of the steroid drug cortisone in the late 1940s, which had such an immediate suppressive effect, temporarily covering up painful inflammatory
LE: How can invading germs flip the “switch” on the body’s immune system and cause what are commonly described as autoimmune disorders?

Dr. Phillips: The immune response produced against these infections can also attack normal cells because the invaders are tricky. They’re coated with proteins that look very similar to our own, such as tissue found in our nervous system. When the immune system rallies to attack the bacteria, it can mistakenly attack nerve tissue as well, causing secondary autoimmunity.

LE: Standard, short-term antibiotic treatments are often ineffective. How do you utilize a technique called pulsing to treat Lyme+?

Dr. Phillips: Pulsing means going off and on antibiotics in a predetermined manner, rather than taking them continuously day after day for months on end. For example, a patient would go on an antibiotic protocol for two weeks, then pause for two weeks before repeating it.

Although it may sound counterintuitive and go against what many doctors have been taught about the treatment of bacterial infections—due to the concern of antibiotic resistance—there’s robust data published in the journal Nature in 2018 that a well-designed pulsed antimicrobial regimen can actually reduce the emergence of antibiotic resistance compared to continuous antibiotic therapy.

For Lyme, pulsed antimicrobial therapy can often kill those stubborn persisters more effectively. Laboratory studies in test tubes with B. burgdorferi demonstrate that one application of the antibiotic ceftriaxone, for instance, does not eliminate persisters—the intransigent forms of the organism that put the “chronic” in chronic Lyme—but that pulsed therapy with ceftriaxone can.

LE: Are you concerned about the damage that antibiotics can cause to the gut microbiota?

Dr. Phillips: Although I have designed my regimens to focus on fewer antibiotics and more non-antibiotic antimicrobials, antibiotics are usually a necessary component—and all of them can disrupt gut flora to varying degrees.

Not all antibiotics are created equal in this regard. Some are far easier on the gut flora, and these are the ones I use.

I recommend that my patients take an oral probiotic supplement that contains at least 10 billion colony-forming units (CFU) with any antibiotic regimen, taken at least two hours apart from the antibiotics, but with food.

LE: In addition to antibiotics, what else is included in your treatment protocol?

Dr. Phillips: Studies have shown that combinations of antimicrobials against B. burgdorferi persisters can be helpful, and it’s well known that combinations of effective antibiotics work better than single agents against Brucella and Bartonella.

The options for a second drug are usually liposomal oil of oregano, monolaurin, fluconazole, or azithromycin.

LE: Can you tell us more about oregano and monolaurin?
Dr. Phillips: Herbals that have been shown to be effective in vitro against the Lyme bacteria include grapefruit seed extract, samento, and artemisinin, along with oil of oregano, cinnamon bark oil, clove bud oil, citronella oil, and wintergreen oil.

A 2017 study conducted by researchers from major universities, including Harvard and Johns Hopkins, showed some essential oils killed Lyme bacteria more effectively than antibiotics.

In particular, oils from oregano, garlic cloves, myrrh trees, thyme leaves, cinnamon bark, allspice berries, and cumin seeds were shown to have strong killing activity against the stubborn “persistor” forms that most antibiotics can’t kill.

Bear in mind that since some of these may be stronger than antibiotics, it would not be advisable to add any into your MD-prescribed protocol on your own. Please, always ask your doctor first.

LE: What action can a Life Extension® reader take if they suspect possible chronic Lyme?

Dr. Phillips: A good first step may be to consult a physician trained by ILADS (International Lyme and Associated Diseases Society). Otherwise, Lyme+ may not be properly evaluated, which can lead to years or decades on the medical merry-go-round.

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

To find a provider, ILADS has a provider search on their website (www.ilads.org).

Steven Phillips, M.D., is a renowned, Yale-trained physician, international lecturer, and media go-to expert. Well-published in the medical literature, he has treated over 20,000 patients with complex, chronic illness from about 20 countries. Phillips experienced firsthand the nightmare of undiagnosed, serious infection after nearly dying from his own “mystery illness,” and having to save his own life when 25 doctors could not.

Dana Parish developed Lyme-induced heart failure as a result of being improperly diagnosed by some of the best doctors in the country—and had her life saved by Dr. Phillips. A chart-topping SONY/ATV singer/songwriter who has written songs for artists like Celine Dion and Idina Menzel, she has become a major voice in the world of chronic illness. Her popular column on Huffington Post has been read by more than one million people globally.

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Ikaria: Food and Life in the Blue Zone

BY MENI VALLE

Ikaria is a small Greek island in the Aegean Sea that is considered a Blue Zone. These are regions of the world with the longest lifespans and the lowest rates of chronic disease.

Most Blue Zones have one key component in common: a Mediterranean-style diet.

Meni Valle, cookbook author, and an authority on Mediterranean cuisine, traveled to Ikaria to learn the secrets of the Ikarian cuisine.

She shares what she discovered in her latest book, Ikaria: Food and Life in the Blue Zone.

As Valle learned, meals on Ikaria are rich in whole grains, nuts, and fish. Olive oil and vegetables are of prime importance, and salads made from fresh, local produce are eaten with every meal.

Just as importantly, meals are eaten among family and friends, highlighting another common denominator among the Blue Zones: social connections.

"Ikaria is a textbook example of the Mediterranean diet in its holistic sense: pure and honest food enjoyed with a community," said Valle. "Most Ikarians grow their own food, giving them nourishment and a deep sense of satisfaction. Eating foods in season, as nature planned, produces mouth-watering, nutritious dishes. I think this is really the way we all want to eat."

Ikaria: Food and Life in the Blue Zone features recipes that Valle learned to cook alongside Ikarian locals.

"These are not complicated recipes requiring hours and hours in the kitchen, but they are lovely, and I’ve sprinkled them with my own touch," said Valle.

Here, Life Extension® features four recipes that promise to bring the flavor and vitality of Ikaria to your own dinner table.

—LAURIE MATHENA
Tabouleh Salad

45 g (1½ oz / ¼ cup) fine burghul (bulgur wheat)
3 tomatoes, diced
¼ cup sliced spring onions
3 cups parsley, finely chopped
¼ cup mint, finely chopped
1 pomegranate (optional)
1 cucumber, seeded and diced (optional)
60 ml (2 fl oz/¼ cup) olive oil
60 ml (2 fl oz/¼ cup) fresh lemon juice (or white vinegar)

This simple salad is not only healthy but super delicious, and dreamy with a dollop of Greek yogurt.

It is important to chop the vegetables and herbs as finely as you can for this salad. You can use a food processor for the parsley if you like, but make sure to use a sharp knife for the tomatoes and spring onions to keep them in good shape.

In a large bowl soak the burghul with enough hot water to cover and leave for 30 minutes or until all the water is absorbed. Drain any excess water.

Place the tomatoes, spring onions and herbs into a serving bowl and add the burghul. Combine gently with a fork.

If you’d like to add pomegranate to the salad, deseed it by first rolling it on a board to loosen the seeds. Cut in half. Over a bowl, hold one of the halves cut side down and tap the skin with a spoon to release the seeds. It will probably splatter juice, so be gentle and place some paper towel down to catch any juice. Repeat with the second half. Add the pomegranate seeds along with the cucumber, if using, to the salad.

Mix the olive oil and lemon juice together. Drizzle over the salad and stir to combine. Season with salt and pepper. Refrigerate for 1-2 hours and serve chilled.
Taro Root Salad

1 large taro root
1 red onion, sliced (optional)
2 celery stalks, sliced
2 tablespoons chopped parsley
12 pitted black olives
1 tomato, diced
60 ml (2 fl oz/¼ cup) olive oil
60 ml (2 fl oz/¼ cup) lemon juice

Kolokassi, or taro root, is a vegetable that is new to me. It is a root vegetable grown in ample quantities in Ikaria and Cyprus and can be found growing wild near riverbanks and streams. It is one of the main sources of starch in the Ikarian diet, especially in the cooler months. Kolokassi can be cooked in stews in tomato sauce, with beans or in a dip called Skordalia.

It is important to remember that you never wash kolokassi with water or it will become slimy; you scrub or wipe it with paper towel and peel with a sharp knife. Kolokassi is a mucilaginous food, so to prevent it from melting while cooking it is best to break it into large pieces. You do this by inserting a knife into the kolokassi and breaking off pieces, instead of slicing it.

Sweet potatoes or parsnips are good alternatives if you cannot get your hands on kolokassi.

Peel the taro root using a small sharp knife and break into small chunks. Add the taro root to a large saucepan and pour in enough cold water to cover completely.

Bring to the boil over a high heat, then reduce the heat to medium and continue to simmer until the taro root is tender.

Drain well, allow to cool slightly, then transfer to a serving plate. Top with the onion, celery, parsley, olives, and tomato and mix gently to combine. In a small bowl whisk the olive oil and lemon juice, then season to taste with salt and pepper and drizzle over the salad.

Serve at room temperature with grilled meats or fish.
Mushroom Stew

60 ml (2 fl oz/ ¼ cup) olive oil
1 red onion, diced
1 garlic clove, crushed
600 g (1 lb 5 oz) mushrooms, thickly sliced or left whole if small
100 ml (3½ fl oz) red wine
3 ripe tomatoes, grated
2 tablespoons red-wine vinegar
1 bay leaf
1 tablespoon finely chopped oregano (use half quantity if using dried)
1 tablespoon finely chopped thyme (use half quantity if using dried)
¼ teaspoon ground nutmeg
pinch of ground cumin
150 g (5 ½ oz) baby green peas

Heat the oil in a large saucepan over a medium heat. Add the onion and sauté until soft.

Add the garlic and combine well with the onions. Add the mushrooms and gently combine with the onion and garlic mixture.

Cook for 2–3 minutes.

Pour in the wine and bring to the boil. Reduce the heat to a simmer and add the grated tomatoes, red-wine vinegar, herbs and spices.

Season to taste with salt and pepper and simmer gently for about 15–20 minutes, add the green peas and continue cooking for a further 10 minutes until the mushrooms are tender.

Serve with fresh bread, as a side or as a sauce over pasta.

Autumn and early winter, from October to December, create the perfect conditions for wild mushrooms to grow in Ikaria. The locals hope for rain followed by some sunshine, as this is the environment in which the mushrooms flourish.

Each variety of mushroom grows in its own terrain, either high in the mountains or close to the sea. This influences their taste, color and shape. Ikarians know where to hunt for them and also know which not to pick as some are poisonous.

There are dozens of varieties that are used in stews and pies.

This dish is particularly appetizing served with some homemade macaroni or Makaronia.
Split Pea Dip with Caramelized Onions

450 g (1 lb) yellow split peas
1 brown onion, peeled and diced
1 garlic clove, crushed
juice of ½ lemon
20 ml (¾ fl oz) olive oil
paprika (optional)

CARAMELIZED ONIONS
60 ml (2 fl oz/ ¼ cup) olive oil
2 large red onions, thinly sliced

The caramelized onions go well with the fava, adding a subtle sweetness. It’s typically served with capers, but you can also use some pickled samphire or Kritamo, which is also lovely.

Rinse the peas under cold water, discarding any discolored ones. Place the peas and onion in a large saucepan and pour in enough water to cover completely. Place on the stovetop on a medium–high heat and bring to the boil.

Lower the heat and simmer for 30 minutes or until the split peas are cooked through and the mixture is thick and chunky. Strain out any excess water.

Add the garlic, lemon juice and olive oil and mix well until all blended. The mixture should remain fairly chunky. Season with salt and pepper, and garnish with paprika, if using.

To make the caramelized onions, warm the olive oil on a medium heat in a deep frying pan and add the onions, coating the onions well in the oil.

Reduce the heat to low and continue stirring while cooking.

Slow-cooking the onions will produce a rich color, and the natural sugars in the onions aid in the caramelization. Season with some salt.

Serve the dip topped with the caramelized onions alongside crusty bread, olives and cheese.
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It turns out one of the simplest breakfast foods is also one of the **healthiest**.  
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Oats contain **beta glucans**. Unlike beta glucans found in other foods which have different health benefits, oat beta glucans have been found to help lower cholesterol levels, help control blood glucose levels, reduce high blood pressure, and alleviate ischemic heart injury.2

Adding oat beta glucans to the diet has been shown to help reduce LDL and total cholesterol.3

And a study of type II diabetics found that consuming oat bran flour high in beta glucan lowered the glycemic response and decreased the after-meal glycemic response.4

The beta glucan found in oatmeal can prolong the time it takes your stomach to empty food, which can help you feel fuller, longer.5 In addition, eating beta glucans promotes the release of a satiety hormone that can help regulate appetite.6

In addition to beneficial plant compounds called polyphenols, oats contain a unique group of antioxidants called **avenanthramides**.

Avenanthramides can enhance nitric oxide production and inhibit smooth muscle cell proliferation—actions that could help prevent atherosclerosis by dilating blood vessels and improving blood flow.7

For added taste and nutrients, top a bowl of oatmeal with cinnamon, chopped nuts, sliced fruit, or chia seeds.

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<td>02422</td>
<td>Vegan Vitamin D3</td>
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</table>

### BRAIN HEALTH

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>01524</td>
<td>Acetyl-L-Carnitine</td>
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<td>01974</td>
<td>Acetyl-L-Carnitine Arginate</td>
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<tr>
<td>02419</td>
<td>B12 Elite</td>
</tr>
<tr>
<td>02321</td>
<td>Cognitex® Basics</td>
</tr>
<tr>
<td>02396</td>
<td>Cognitex® Elite</td>
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<td>02397</td>
<td>Cognitex® Elite Pregnenolone</td>
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<tr>
<td>01540</td>
<td>DMAE Bitartrate</td>
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<tr>
<td>02006</td>
<td>Dopa-Mind™</td>
</tr>
<tr>
<td>02413</td>
<td>Dopamine Advantage</td>
</tr>
<tr>
<td>02212</td>
<td>Focus Tea™</td>
</tr>
<tr>
<td>01658</td>
<td>Ginkgo Biloba Certified Extract™</td>
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<tr>
<td>01527</td>
<td>Huperzine A</td>
</tr>
<tr>
<td>00020</td>
<td>Lecithin</td>
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<tr>
<td>02101</td>
<td>Memory Protect</td>
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<tr>
<td>00709</td>
<td>Migra-Eeze™</td>
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<tr>
<td>01603</td>
<td>Neuro-Mag® Magnesium L-Threonate Caps</td>
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<tr>
<td>02032</td>
<td>Neuro-Mag® Magnesium L-Threonate Powder</td>
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<td>00888</td>
<td>Optimized Ashwagandha</td>
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<td>01676</td>
<td>PS (Phosphatidylserine) Caps</td>
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<td>02406</td>
<td>Quick Brain Nootropic</td>
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<td>01327</td>
<td>Vinpocetine</td>
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### CHOLESTEROL MANAGEMENT

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<tr>
<td>01828</td>
<td>Advanced Lipid Control</td>
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<tr>
<td>01359</td>
<td>Cho-Less™</td>
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<tr>
<td>01910</td>
<td>CHOL-Support™</td>
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<tr>
<td>01030</td>
<td>Red Yeast Rice</td>
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<td>01304</td>
<td>Theaflavins Standardized Extract</td>
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<td>00372</td>
<td>Vitamin B3 Niacin Capsules</td>
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### DIGESTION SUPPORT

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

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<th>Code</th>
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<tr>
<td>01628</td>
<td>Adrenal Energy Formula • 60 veg capsules</td>
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<td>01630</td>
<td>Adrenal Energy Formula • 120 veg capsules</td>
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<tr>
<td>00972</td>
<td>D-Ribose Powder</td>
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<td>01473</td>
<td>D-Ribose Tablets</td>
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<td>01900</td>
<td>Energy Renew</td>
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<td>01544</td>
<td>Forskolin</td>
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<td>01805</td>
<td>Ginseng Energy Boost</td>
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<tr>
<td>00668</td>
<td>Metabolic Advantage Thyroid Formula™</td>
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<tr>
<td>01869</td>
<td>Mitochondrial Basics with PQQ</td>
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<td>01868</td>
<td>Mitochondrial Energy Optimizer with PQQ</td>
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<tr>
<td>01904</td>
<td>NAD+ Cell Regenerator™ - 100 mg, 30 veg capsules</td>
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<tr>
<td>02344</td>
<td>NAD+ Cell Regenerator™ - 300 mg, 30 veg capsules</td>
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<td>02348</td>
<td>NAD+ Cell Regenerator™ and Resveratrol</td>
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<tr>
<td>01500</td>
<td>PQQ Caps • 10 mg</td>
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<tr>
<td>01647</td>
<td>PQQ Caps • 20 mg</td>
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<tr>
<td>00889</td>
<td>Rhodiola Extract</td>
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<td>02003</td>
<td>Triple Action Thyroid</td>
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### EYE HEALTH

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<tr>
<td>01923</td>
<td>Astaxanthin with Phospholipids</td>
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<tr>
<td>00893</td>
<td>Brite Eyes III</td>
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<tr>
<td>02323</td>
<td>Digital Eye Support</td>
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<tr>
<td>01514</td>
<td>Eye Pressure Support with Mirtogenol®</td>
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<tr>
<td>01992</td>
<td>MacuGuard® Ocular Support with Saffron</td>
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<tr>
<td>01993</td>
<td>MacuGuard® Ocular Support with Saffron &amp; Astaxanthin</td>
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<tr>
<td>01873</td>
<td>Standardized European Bilberry Extract</td>
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<tr>
<td>01918</td>
<td>Tear Support with MaquiBright®</td>
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### FISH OIL & OMEGAS

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<tr>
<td>02311</td>
<td>Clearly EPA/DHA Fish Oil</td>
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<tr>
<td>01937</td>
<td>Mega EPA/DHA</td>
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<tr>
<td>02218</td>
<td>Mega GLA Sesame Lignans</td>
</tr>
<tr>
<td>01983</td>
<td>Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans &amp; Olive Extract</td>
</tr>
<tr>
<td>01988</td>
<td>Super Omega-3 Plus EPA/DHA Fish Oil, Sesame Lignans, Olive Extract, Krill &amp; Astaxanthin</td>
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</tbody>
</table>
01982 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 softgels
01985 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 60 enteric coated softgels
01984 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 120 enteric coated softgels
01986 Super Omega-3 EPA/DHA Fish Oil, Sesame Lignans & Olive Extract • 240 softgels
01812 Provalin® Purified Omega-7
01640 Vegetarian DHA

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

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

HEART HEALTH
01066 Aspirin (Enteric Coated)
01842 BioActive Folate & Vitamin B12 Caps
01700 Cardio Peak™
02121 Homocysteine Resist
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 Modifier with TinoFend®

00955 Immune Protect with PARACTIN®
02005 Immune Senescence Protection Formula™
29727 Kinoko® Gold AHCC
24404 Kinoko® Platinum AHCC
00316 Kyolic® Garlic Formula 102
00789 Kyolic® Reserve
01681 Lactoferrin (Apolactoferrin) Caps
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®
01197 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 Boswellia
02467 Curcumin Elite™ Turmeric Extract • 30 veg capsules
02407 Curcumin Elite™ Turmeric Extract • 60 veg capsules
01804 Cytokine Suppress® with EGCG
02223 Pro-Resolving Mediators
00318 Serraflazyme
01203 Specially-Coated Bromelain
00407 Super Bio-Curcumin® Turmeric Extract
01254 Zyflamend™ Whole Body

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

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

LIVER HEALTH & DETOXIFICATION
01922 Advanced Milk Thistle • 60 softgels
01925 Advanced Milk Thistle • 120 softgels
02240 Anti-Alcohol Complex
01651 Calcium D-Glucarate
00550 Chlorella
01571 Chlorophyllin
01534 N-Acetyl-L-Cysteine
01522 Milk Thistle
01571 Chlorophyllin
01534 N-Acetyl-L-Cysteine
00342 PectaSol-C® Modified Citrus Pectin Powder
01080 PectaSol-C® Modified Citrus Pectin Capsules
01884 Silymarin
02361 SOD Booster
# PRODUCTS

## LONGEVITY & WELLNESS

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<tr>
<th>Code</th>
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<td>00457</td>
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<tr>
<td>01625</td>
<td>AppleWise</td>
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<tr>
<td>02414</td>
<td>Bio-Fisetin</td>
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<tr>
<td>01214</td>
<td>Blueberry Extract</td>
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<tr>
<td>01438</td>
<td>Blueberry Extract and Pomegranate</td>
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<tr>
<td>02270</td>
<td>DNA Protection Formula</td>
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<td>02405</td>
<td>Endocannabinoid System Booster</td>
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<tr>
<td>02119</td>
<td>GEROPROTECT® Ageless Cell™</td>
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<tr>
<td>02415</td>
<td>GEROPROTECT® Autophagy Renew</td>
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<td>02133</td>
<td>GEROPROTECT® Autophagy Renew</td>
</tr>
<tr>
<td>02401</td>
<td>GEROPROTECT® Stem Cell</td>
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<tr>
<td>02119</td>
<td>GEROPROTECT® Ageless Cell™</td>
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<tr>
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<td>GEROPROTECT® Autophagy Renew</td>
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<tr>
<td>02133</td>
<td>GEROPROTECT® Longevity A.I.™</td>
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<td>02211</td>
<td>Grapeseed Extract</td>
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<tr>
<td>00457</td>
<td>Mega Green Tea Extract (decaffeinated)</td>
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<tr>
<td>00953</td>
<td>Mega Green Tea Extract (lightly caffeinated)</td>
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<td>01208</td>
<td>Optimized Fucoidan with Maritech® 926</td>
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<tr>
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<td>Pycnogenol® French Maritime Pine Bark Extract</td>
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<td>Resveratrol</td>
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<td>01208</td>
<td>Super R-Lipoic Acid</td>
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<tr>
<td>01683</td>
<td>RNA (Ribonucleic Acid)</td>
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<tr>
<td>02301</td>
<td>Senolytic Activator*</td>
</tr>
<tr>
<td>01208</td>
<td>Super R-Lipoic Acid</td>
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<tr>
<td>01919</td>
<td>X-R Shield</td>
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## MEN'S HEALTH

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<td>00455</td>
<td>Mega Lycopene Extract</td>
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<td>02306</td>
<td>Men's Bladder Control</td>
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<td>01789</td>
<td>PalmettoGuard® Saw Palmetto and Beta-Sitosterol</td>
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<tr>
<td>01790</td>
<td>PalmettoGuard® Saw Palmetto/Nettle Root Formula and Beta-Sitosterol</td>
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<td>01837</td>
<td>Pomi-T™</td>
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<td>01373</td>
<td>Prelox® Enhanced Sex for Men</td>
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<tr>
<td>01940</td>
<td>Super MiraForte with Standardized Lignans</td>
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<tr>
<td>01909</td>
<td>Triple Strength ProstaPollen™</td>
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<td>02210</td>
<td>Resveratrol</td>
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<td>00070</td>
<td>RNA (Ribonucleic Acid)</td>
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<td>02301</td>
<td>Senolytic Activator*</td>
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<td>01208</td>
<td>Super R-Lipoic Acid</td>
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<td>X-R Shield</td>
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## MINERALS

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<td>02107</td>
<td>Extend-Release Magnesium</td>
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<td>03731</td>
<td>Ionic Selenium</td>
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<td>01677</td>
<td>Iron Protein Plus</td>
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<td>Lithium</td>
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<td>Magnesium Caps</td>
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<td>01682</td>
<td>Magnesium (Citrate)</td>
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<td>01328</td>
<td>Only Trace Minerals</td>
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<tr>
<td>01504</td>
<td>Optimized Chromium with Crominex® 3+</td>
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<td>02309</td>
<td>Potassium with Extend-Release Magnesium</td>
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<td>01740</td>
<td>Sea-Iodine™</td>
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<td>Super Selenium Complex</td>
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<td>Vanadyl Sulfate</td>
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<td>Zinc Caps</td>
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## MISCELLANEOUS

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<td>00577</td>
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<td>00657</td>
<td>Solarshield® Sunglasses</td>
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## MOOD & STRESS MANAGEMENT

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<td>Enhanced Stress Relief</td>
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<td>01074</td>
<td>5 HTP</td>
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<td>01683</td>
<td>L-Theanine</td>
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<tr>
<td>02175</td>
<td>SAMe (S-Adenosyl-Methionine)</td>
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## MULTIVITAMINS

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<td>Children's Formula Life Extension Mix™</td>
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<td>Comprehensive Nutrient Packs ADVANCED</td>
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<tr>
<td>02354</td>
<td>Life Extension Mix™ Capsules</td>
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<td>02364</td>
<td>Life Extension Mix™ Capsules without Copper</td>
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<td>02356</td>
<td>Life Extension Mix™ Powder</td>
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<tr>
<td>02355</td>
<td>Life Extension Mix™ Tablets</td>
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<td>02357</td>
<td>Life Extension Mix™ Tablets with Extra Niacin</td>
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<tr>
<td>02365</td>
<td>Life Extension Mix™ Tablets without Copper</td>
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<tr>
<td>02292</td>
<td>Once-Daily Health Booster - 30 softgels</td>
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<tr>
<td>02291</td>
<td>Once-Daily Health Booster - 60 softgels</td>
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<td>One-Per-Day Tablets</td>
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<td>02317</td>
<td>Two-Per-Day Capsules - 60 capsules</td>
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<td>02315</td>
<td>Two-Per-Day Tablets - 120 tablets</td>
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## NERVE & COMFORT SUPPORT

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<td>ComfortMAX™</td>
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<td>02303</td>
<td>PEA Discomfort Relief</td>
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## PERSONAL CARE

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<td>01006</td>
<td>Biosil™ - 5 mg, 30 veg capsules</td>
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<td>01007</td>
<td>Biosil™ - 1 fl oz</td>
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<tr>
<td>00321</td>
<td>Dr. Proctor's Advanced Hair Formula</td>
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<td>00320</td>
<td>Dr. Proctor's Shampoo</td>
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<td>02322</td>
<td>Hair, Skin &amp; Nails Collagen Plus Formula</td>
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<td>Life Extension Toothpaste</td>
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<td>00408</td>
<td>Venotone</td>
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<td>Xylitolwhite Mouthwash</td>
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<td>02304</td>
<td>Youthful Collagen</td>
</tr>
<tr>
<td>02252</td>
<td>Youthful Legs</td>
</tr>
</tbody>
</table>

## PET CARE

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>01932</td>
<td>Cat Mix</td>
</tr>
<tr>
<td>01931</td>
<td>Dog Mix</td>
</tr>
</tbody>
</table>

## PROBIOTICS

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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</thead>
<tbody>
<tr>
<td>01622</td>
<td>Bifido GI Balance</td>
</tr>
<tr>
<td>01825</td>
<td>FLORASSIST® Balance</td>
</tr>
<tr>
<td>02421</td>
<td>FLORASSIST® Daily Bowel Regularity</td>
</tr>
<tr>
<td>02125</td>
<td>FLORASSIST® GI with Phage Technology</td>
</tr>
<tr>
<td>01821</td>
<td>FLORASSIST® Heart Health</td>
</tr>
<tr>
<td>02250</td>
<td>FLORASSIST® Mood Improve</td>
</tr>
<tr>
<td>02208</td>
<td>FLORASSIST® Immune &amp; Nasal Defense</td>
</tr>
<tr>
<td>02120</td>
<td>FLORASSIST® Oral Hygiene</td>
</tr>
<tr>
<td>02203</td>
<td>FLORASSIST® Prebiotic</td>
</tr>
<tr>
<td>01920</td>
<td>FLORASSIST® Throat Health</td>
</tr>
<tr>
<td>02400</td>
<td>FLORASSIST® Winter Immune Support</td>
</tr>
<tr>
<td>52142</td>
<td>Jarro-Dophilus® for Women</td>
</tr>
<tr>
<td>00056</td>
<td>Jarro-Dophilus EPS® - 60 veg capsules</td>
</tr>
<tr>
<td>21201</td>
<td>Jarro-Dophilus EPS® - 120 veg capsules</td>
</tr>
<tr>
<td>01038</td>
<td>Theralac® Probiotics</td>
</tr>
<tr>
<td>01389</td>
<td>TruFlora® Probiotics</td>
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## SKIN CARE

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>80157</td>
<td>Advanced Anti-Glycation Peptide Serum</td>
</tr>
<tr>
<td>80165</td>
<td>Advanced Growth Factor Serum</td>
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<tr>
<td>80170</td>
<td>Advanced Hyaluronic Acid Serum</td>
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<tr>
<td>80154</td>
<td>Advanced Lightening Cream</td>
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<tr>
<td>80155</td>
<td>Advanced Peptide Hand Therapy</td>
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<tr>
<td>80175</td>
<td>Advanced Probiotic-Fermented Eye Serum</td>
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<tr>
<td>80177</td>
<td>Advanced Retinol Serum</td>
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<tr>
<td>80152</td>
<td>Advanced Triple Peptide Serum</td>
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<tr>
<td>80140</td>
<td>Advanced Under Eye Serum with Stem Cells</td>
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<tr>
<td>80137</td>
<td>All-Purpose Soothing Relief Cream</td>
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<tr>
<td>80139</td>
<td>Amber Self MicroDermAbrasion</td>
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<tr>
<td>80118</td>
<td>Anti-Aging Mask</td>
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<tr>
<td>80151</td>
<td>Anti-Aging Rejuvenating Face Cream</td>
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<tr>
<td>80153</td>
<td>Anti-Aging Rejuvenating Scalp Serum</td>
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</tbody>
</table>
PRODUCTS

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 mg, 100 veg capsules
01083 Melatonin • 500 mg, 200 veg capsules
00329 Melatonin • 1 mg, 60 capsules
00330 Melatonin • 3 mg, 60 veg capsules
00331 Melatonin • 10 mg, 60 veg capsules
00332 Melatonin • 3 mg, 60 veg lozenges
02201 Melatonin IR/XR
01787 Melatonin 6 Hour Timed Release • 300 mg, 100 veg tablets
01788 Melatonin 6 Hour Timed Release • 750 mg, 60 veg tablets
01786 Melatonin 6 Hour Timed Release • 3 mg, 60 veg tablets

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
02335 Super K Elite
01863 Super Vitamin E
02028 Vitamin B5 (Pantothenic Acid)
01535 Vitamin B6
00361 Vitamin B6
01753 Vitamin D3
02227 Vitamin C and Bio-Quercetin Phytosome

WEIGHT MANAGEMENT & BODY COMPOSITION

00658 7-Keto® DHEA Metabolite • 25 mg, 100 capsules
02479 7-Keto® DHEA Metabolite • 100 mg, 60 veg capsules
01509 Advanced Anti-Adipocyte Formula
01807 Advanced Appetite Suppress
02207 AMPK Metabolic Activator
01492 Quiet Sleep Melatonin

WOMEN’S HEALTH

01942 Breast Health Formula
01626 Enhanced Sex for Women 50+
01894 Estrogen for Women
01064 Femmenessence MacaPause®
02204 Menopause 731™
02319 Prenatal Advantage
01441 Progesta-Care®
01649 Super-Absorbable Soy Isoflavones
Astaxanthin is a carotenoid that benefits the brain, heart, skin, and immune system. Research suggests that astaxanthin can play a role in promoting cardiovascular health.¹

Found naturally in seafood and algae, as little as 50% of astaxanthin is normally absorbed in the bloodstream.²,³

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

References

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

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

LIFE EXTENSION®
TWO-PER-DAY

Compared to Centrum®,
Two-Per-Day Provides:

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

Two-Per-Day Multivitamin Capsules
Item #02314 • 120 capsules (two-month supply)
1 bottle $18 • 4 bottles $16 each

Two-Per-Day Multivitamin Tablets
Item #02315 • 120 tablets (two-month supply)
1 bottle $17.25 • 4 bottles $15.50 each

Each bottle provides a two-month supply.

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

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7 WHAT’S CAUSING THE SURGE IN PANCREATIC CANCER?
What you eat and drink impacts your pancreatic cancer risk by 30%-50%.

26 COMBAT CHRONIC CONSTIPATION
A targeted probiotic speeds up colon transit time to enable more efficient bowel evacuation.

34 IMPACT OF LITHIUM ON BRAIN AGING
Low-dose lithium may slow degenerative processes by inhibiting an age-accelerating enzyme.

42 TOPICAL COQ10 FIGHTS SKIN AGING
Topical CoQ10 combined with plant extracts reduces facial sagging and wrinkle depth.

50 STRATEGIES AGAINST PANCREATIC CANCER
Specific medications and nutrients may help reduce pancreatic cancer risk.

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Collagen provides vital structural support for skin and nails.

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