

Americans continue to suffer and die prematurely while proven methods exist to forestall the pathological aging processes.

Life Extension® members long ago gained access to solid scientific data showing how healthy lifestyle choices slash disease risk. Yet the majority of Americans have their youth robbed by an epidemic of medical ignorance that results in sharply higher incidences of cancer, vascular occlusion, arthritis, dementia, and virtually every other age-related disorder.

While membership in the Life Extension Foundation® continues to grow, we still reach only a small fraction of the population. When a famous celebrity appears on national television to espouse what Foundation members learned decades ago, however, the average person stops to notice.

Suzanne Somers has turned her life around by removing toxic compounds from her environment, eating organic foods, meticulously keeping her hormones in natural balance, having her blood regularly tested, taking the appropriate supplements, and utilizing advanced stem cell therapy.

Suzanne is not the only prominent personality doing this. Hollywood has long emphasized youthful appearances and those involved in show business are early examples of humans taking aggressive steps to thwart degenerative changes.

What differentiates Suzanne from our other celebrity members is that she describes in meticulous detail the many virtues she has personally attained by following a science-based youth restoration program.

In her latest book titled *BOMBSHELL*, Suzanne reveals to the public much of the data that Life Extension members already view as common sense approaches to protect against age-related illness.

What impresses us is the ability of Suzanne Somers to appear in the national media and describe in “people speak” how humans can successfully intervene into pathological aging processes. By lifting the veil of scientific ignorance, Suzanne educates millions of people about novel methods to slow and reverse degenerative processes.

The following is an excerpted chapter from Suzanne’s new book *BOMBSHELL* that describes 18 underlying mechanisms that cause us to age and how each of them may be circumvented.

ADVANCED AGE REVERSAL

Based on new findings about the mechanisms of aging, the universal dream of a longer life is now a scientific reality. But what if you want to go deeper than making just a few changes and you want to dive into a more advanced age-reversing program? I asked Bill Faloon of Life Extension to provide a plan to counterattack the eighteen most common things that age us. Consult with an antiaging physician to see which of these might be issues for you, so that you can tailor your plan of attack to your individual needs.

The phenomenon known as “aging” is the result of pathological changes that are somewhat controllable using existing technologies. By prolonging our healthy life span, we put ourselves in a position to take advantage of future medical breakthroughs that could result in dramatic extensions of the human life span.

This chapter reveals what do about the eighteen controllable causes of age-related disease; follow these simple steps to correct them.

Aging Factor 1: Chronic Inflammation

Persistent *inflammation* occurs frequently with aging and is a primary contributor to the deterioration that our body undergoes as we grow old.

Inflammation can be triggered by both internal and external causes, making it difficult to prevent. For instance, excess belly fat releases inflammation-causing molecules called **cytokines**.

Continuous low-level inflammatory assaults inflict damage on everything from brain cells and arterial walls, to cell regulatory genes.

Heart attack, stroke, heart valve failure, cancer, and Alzheimer’s have all been linked to the chronic inflammation that occurs in most of us as we age.



most of us as we age.

Solution: Comprehensive Anti-Inflammatory Regimen

An array of clinically proven nutrients and hormones has been shown to effectively target the mechanisms behind inflammation. The agents listed next operate in multiple ways to neutralize pro-inflammatory processes.

Nutrient	Typical Daily Dose
Fish oil	1,400 mg EPA and 1,000 mg DHA
Curcumin*	400-800 mg
Bromelain (enteric coated)	500-1,000 mg
DHEA (dehydro-epiandrosterone)	15-50 mg

The most commonly used *blood test* for inflammation is known as *high-sensitivity C-reactive protein*, or hs-CRP. Any doctor should be able to provide this test for you, or you can order it directly by logging on to www.suzannesomers.com. CRP levels in men should ideally be below 0.55 mg/L while women should be below 1.50 mg/L.

In addition to the nutrients and hormones described in this section, those with persistently high levels of C-reactive protein should seek to reduce their fasting blood glucose levels to below 85 mg/dL of blood.

Carrying excess fat pounds, especially in the belly, is a common cause of systemic inflammation. There are nutrients that impede the absorption of carbohydrates and thus facilitate weight loss along with reductions in fasting blood sugar. (You will read in Aging Factor 16 about natural ways to reduce belly fat and lower blood glucose.)

Those with stubbornly high blood sugar levels may need to take a standardized *green coffee bean extract* (350 mg three times daily) that has been shown to naturally block the overproduction and release of glucose into the bloodstream.

High LDL (bad cholesterol) can also spark systemic inflammatory fires. Your LDL levels should ideally be kept below 80-100 mg/dL. The presence of inflammatory factors in the blood is why blood testing is so important when designing an individualized program to neutralize your Aging Factors. To inquire about low-cost comprehensive blood testing in your area, log on to www.suzannesomers.com and click through to Life Extension.

Aging Factor 2: Glycation

It is well known that diabetics age prematurely and die about 10 years earlier than non-diabetics. One reason for this is a process called **glycation**, in which glucose (and other sugars) bind to proteins and/or fats in the body to form nonfunctioning structures.

Diabetics suffer accelerated glycation. What few people realize is that *non-diabetics* also suffer from deadly glycation reactions, only at a slower rate.

The health consequences of glycation are most evident in damage to the kidneys, eyes, nerves, and blood vessels. Glycation speeds up these kinds of age-related damage, but there are simple steps you can take to slow it down.

Solution: Facilitate Glucose Metabolism and Inhibit Glycation

Numerous studies have shown that the nutrients listed below suppress dangerous glycation reactions in the body.

Nutrient	Typical Daily Dose
Carnosine	1,000 mg
Pyridoxal-5'- phosphate (active form of vitamin B6)	100 mg
Benfotiamine (a form of vitamin B1)	150 mg

Chromium

500 mcg

Aging Factor 3: Methylation

The DNA within every cell of your body requires constant enzymatic reactions called *methylation* for maintenance and repair. Aging *cripples* youthful methylation metabolism. The resulting DNA damage can manifest as cancer, liver damage, and brain cell degeneration.

Solution: Methyl Donors

Low-cost nutrients can safely *restore* methylation activity to youthful levels.

Taken together, the following nutrients are referred to as “methyl donors.” They induce so-called remethylation reactions—boosting levels of methylation activity and restoring healthy cellular function and repair.



Nutrient	Typical Daily Dose
L-methylfolate (active form of folic acid)	1,000 mcg
Pyridoxal-5'- phosphate (active form of vitamin B6)	100 mg
Vitamin B12	1,000 mcg
TMG (trimethylglycine)	500-1,000 mg
S-adenosyl-methionine (SAME)	200-400 mg

Aging Factor 4: Mitochondrial Dysfunction

Over 350 studies published in 2010 alone show how mitochondrial *degradation* leads to the onset of virtually every degenerative disease. Mitochondrial dysfunction can result in congestive heart failure, muscle weakness, fatigue, and neurological disease. The good news is that researchers have found that age-related mitochondrial decline may be *reversed*.

Solution: Mitochondrial Support

To energize and restore aging mitochondria, the following four nutrients should be taken each day.

Nutrient	Typical Daily Dose
CoQ10 as ubiquinol	100-200 mg
Pyrrroloquinoline quinone (PQQ)	10 mg
Acetyl-L-carnitine arginate	675 mg
R-lipoic acid	150 mg

Aging Factor 5: Hormone Imbalance

The cells in your body are synchronized to function by communication signals called “hormones.”

Aging creates severe **hormone imbalances** that contribute to depression, inflammation, osteoporosis, coronary artery blockage, and loss of libido.

These age-related hormone imbalances drastically affect quality of life. As testosterone, estrogen, progesterone (in women), and thyroid hormone levels inevitably decline, mood, energy levels, muscle mass, metabolism, memory, mental performance, and fulfilling sex all go by the wayside.

Age-related declines in hormone levels can be extreme. Serious health problems often don't get the right care because doctors fail to recognize that their aging patients' disorders may be caused by hormone concentrations that are up to **90%** lower than in their youth.

Solution: Bioidentical Hormone Replacement with Nutrient Support

The most effective way to bring your sex hormones into balance is by *restoring* them to youthful levels with bioidentical hormone replacement therapy. There's no fixed dosage for these hormones. You and your doctor tailor the amount that's right for you through careful monitoring of your blood test results.

HOW TO SUPPORT HORMONE BALANCE

Nutrient or Intervention	Typical Daily Dose
<i>For Women (no prescription needed)</i>	
DHEA*	15-25 mg
Pregnenolone*	50-100 mg
Natural progesterone cream	Follow label directions
Broccoli extract	400-800 mg
Indole-3-carbinol (I3C)	80-160 mg
Apigenin	25-50 mg
Calcium D-glucarate	200-400 mg
Vitamin D3	5,000 IU
<i>For Women (requires prescription)</i>	
Bioidentical hormone replacement	Based on individual blood test results
<i>For Men (no prescription needed)</i>	
DHEA*	25-100 mg
Pregnenolone*	50-100 mg
Saw palmetto extract	320 mg
Stinging nettle root extract	240 mg
Lignan extract	20 mg
Vitamin D3	5,000 IU
Broccoli extract	400-800 mg
Indole-3-carbinol (I3C)	80-160 mg
Apigenin	25-50 mg
<i>For Men (requires prescription)</i>	
Bioidentical hormone replacement	Based on individual blood test results

* Consult with your physician before taking DHEA or pregnenolone. Do not use DHEA or pregnenolone if you are at risk for or have been diagnosed as having any type of hormonal cancer, such as prostate or breast cancer.

Those taking bioidentical hormones should consider taking nutrients shown to help aging men and women safely utilize their hormones, protect against hormone-dependent cancers, and eliminate potentially carcinogenic compounds found in our diet and environment.



Estrogen imbalance poses a major threat to both women and men. Clinical studies reveal that too much or too little estrogen puts men at greater risk for heart disease, atherosclerosis, stroke, prostate cancer, and osteoporosis. Compounds found in *cruciferous vegetables* help our bodies regulate estrogen metabolites, neutralizing dangerous ones.

The chart in this section describes bioidentical hormones you can obtain right now and the nutrients you should take with them. Fortunately, many of these nutrients are available in special multiformulas, so you don't have to take a lot of pills.

Aging Factor 6: Excess Calcification

Aging *disrupts* calcium transport, resulting in excess calcium infiltration into the soft tissue cells of the brain, heart valves, and middle arterial wall (causing arteriosclerosis). Many age-related disorders are related to excessive calcification, including memory loss, aortic valve stenosis, atherosclerosis, vision problems, even dementia.

Gradual calcium buildup in your coronary arteries can constrict blood flow, causing chest pains and putting you at greater risk for a heart attack.

These deadly age-related processes can be halted and possibly *reversed* using two low-cost nutrients.

Solution: Vitamins K and D

Lining our blood vessels is a protein that regulates whether or not circulating blood calcium *infiltrates* (calcifies) our arteries. This protein requires vitamin K2 to function. When one is deficient in vitamin K2, vascular calcification occurs. When sufficient K2 is present, this protein functions to shield against arterial calcification.

Vitamins D and K work *together* to help remove calcium from circulation in the blood, trigger bone formation, and maintain bone strength. Vitamin D helps your bones absorb calcium. Vitamin K ensures that calcium is deposited in your bones and stays out of your arteries. Together they work to prevent excess calcium from depositing in your brain, arteries, and other soft tissues.

Nutrient	Typical Daily Dose
Vitamin D3	5,000 IU
Vitamin K1*	1,000 mcg
Vitamin K2 as MK-4	1,000 mcg
Vitamin K2 as MK-7	100 mcg

* If you're taking anticoagulant drugs like Coumadin® (warfarin), talk to your doctor before starting on a vitamin K regimen.

Aging Factor 7: Digestive Enzyme Deficit

Digestive enzymes are essential to the body's absorption and full utilization of food. They speed the chemical reactions that break down food in the digestive tract. Raw foods also provide enzymes that naturally break down food for proper absorption. The capacity of the living organism to make enzymes diminishes with age. One reason we pack on the fat pounds, feel sluggish, and grow more vulnerable to infectious disease as we grow old may surprise you. It's a connection I never made until I started talking to antiaging experts.



Our aging bodies no longer produce sufficient amounts of the active chemical compounds we need to extract essential nutrients from the foods we eat.

Meeting the full range of our nutritional requirements can create a high demand for these *digestive enzymes*. Their gradual loss accounts for many health problems that plague aging adults, from impaired immunity to digestive distress and nutritional deficiencies.

Solution: Tailored Enzymatic and Nutritional Support

Solution: Targeted Enzymatic and Nutritional Support

Nutrient	Typical Daily Dose
A complete high-potency digestive enzyme blend	Per label instructions
Prebiotic Fiber Blend	About 6 grams

Another way to restore digestive enzyme balance is to ensure you have enough beneficial bacteria in your gut. Supplements that supply these living bacteria are called *probiotics*.

You also need to ensure that “good” bacteria are getting enough of the nutrients they need to thrive. Dietary deficiency of these nutrients—known as *prebiotics*—is another reason we don’t have the robust digestive enzyme balance of our younger days.

So your digestive support strategy is threefold:

1. Replenish youthful levels of digestive enzymes.
2. Repopulate your gut with beneficial bacteria using probiotics.
3. Nourish beneficial bacteria so they can thrive with prebiotics.

One final word of caution, and something else that might surprise you: High-quality digestive enzyme supplements can cause you to gain weight if you’re not careful.

They work so well in helping your body break down food efficiently that you don’t get that “full” feeling as quickly. So you may wind up eating more than you should, *even though you know you shouldn’t*.

Aging Factor 8: Fatty Acid Imbalance

Aging *distorts* the metabolism of *essential* fatty acids, throwing their delicate proportion and interplay off balance. The resulting *fatty acid imbalance* may manifest as anything from irregular heartbeat and skin disorders to heart disease, high blood pressure, and stroke.

Solution: Fatty Acid Intervention

Nutrient	Typical Daily Dose
Fish oil	1,400 mg EPA and 1,000 mg DHA
Gamma-linolenic acid	300-600 mg
Lecithin granules	10 grams

Aging Factor 9: DNA Mutation

We are continuously exposed to synthetic *and* natural carcinogens in our food supply, in everyday household products, and in our environment. Cooking any food at high temperatures (above 250 degrees Fahrenheit) also generates toxic cancer-causing agents. These environmental and dietary compounds *mutate* cellular DNA.

Aging cells gradually lose their ability to repair DNA from these constant assaults. The resulting DNA damage can cause normally functioning cells to proliferate out of control, turning them into cancer cells.

These processes can be halted and reversed with a number of plant-based compounds that break down carcinogens, prevent cells from becoming cancerous, and *disable* mutated cells.

Solution: Targeted DNA Protection and Repair

Nutrient	Typical Daily Dose
Chlorophyllin	100-300 mg

Curcumin*	400-800 mg daily
Broccoli extract	400-800 mg
Watercress extract	50-100 mg
Rosemary extract	50-100 mg
Apigenin	25-50 mg

Aging Factor 10 : Immune Dysfunction

As the aging *immune system* loses its ability to attack bacteria, viruses, and cancer cells, it instead generates excessive levels of *inflammatory* chemicals that turn on its host and create autoimmune diseases such as rheumatoid syndrome.

Solution: Supercharge Your Immune System

You can restore your immune system using a few safe, low-cost compounds that target age-related immune conditions. They enhance different parts of your immune system at the same time to optimize your defenses against infectious disease, including pneumonia, the flu, and other highly infectious diseases.

Nutrient	Typical Daily Dose
Vitamin D3	5,000-8,000 IU
DHEA	15-50 mg
Beta 1,3/1,6 glucan	100-600 mg
Probiotic	333 million colony forming units (CFU)
High-potency multinutrient formula	Two tablets/capsules
Lactoferrin	300 mg

Aging Factor 11: Enzyme Imbalance

Youthful functions within your cells depend on multiple *enzymatic* reactions occurring with precise timing. Aging causes enzyme imbalances in the brain and liver. The result can manifest as neurological diseases such as Parkinson's or persistent memory loss. Impaired liver function results in toxic damage to every cell in the body.

Solution: Restore Youthful Enzyme Cofactors

Nutrient	Typical Daily Dose
L-methylfolate	1,000 mcg
S-adenosyl- methionine (SAME)	200-400 mg
High-potency multinutrient formula	Two tablets/capsules

Aging Factor 12: Loss of Mitochondria

The increasing weakness and fatigue we inevitably experience as we get older isn't only the result of a steady age-related decline in the amount of energy our mitochondria can produce. The *number* of healthy mitochondria throughout our bodies declines sharply as well.

Solution: Stimulate Growth of New Mitochondria

Mitochondrial biogenesis is the scientific term for the process of growing fresh mitochondria. The most recent research indicates

that the following nutrients listed can trigger mitochondrial biogenesis and increase mitochondrial energy output.

Nutrient	Typical Daily Dose
Pyrroloquinoline quinone (PQQ)	10-20 mg
CoQ10	100-200 mg
R-lipoic acid	300-600 mg
Trans-resveratrol	250 mg
Acetyl-L-carnitine	1,000-2,000 mg

Aging Factor 13: Excitotoxicity

Excitotoxicity is the pathological process by which nerve cells are damaged and killed by excessive stimulation by neurotransmitters such as glutamate. The result is brain cell damage and destruction leading to neurological disorders. Excitotoxicity contributes to lasting brain damage that arises from events like stroke and traumatic brain injury.

Solution: Compounds That Protect Against Glutamate Injury

There are nutrients that can protect brain cells and neurons from excitotoxicity injury and *regenerate* damaged cells.

Nutrient	Typical Daily Dose
Vinpocetine	15-30 mg
B12	1 mg
Magnesium threonate	1,000-2,000 mg
Blueberry extract	500-2,000 mg
Melatonin	1-10 mg before bed
Carnosine	1,000 mg

Aging Factor 14: Circulatory Deficit

Delivery of nutrient- and oxygen-rich blood to the brain, heart, and extremities is impaired as a part of normal aging. Major strokes and ministrokes are common problems associated with circulatory deficit to the brain. The skin of all aged people shows the effects of lack of nutrient-rich blood to the upper layers. An underlying cause of circulatory deficits is *endothelial dysfunction*, which destroys the inner lining of blood vessels and decimates their ability to efficiently transport blood.

Solution: Multimodal Support for Healthy Circulation

With all the mainstream medical and media attention focus on cholesterol and high blood pressure for heart health, a major issue facing most maturing people has been overlooked: *healthy circulation*.

Anywhere from two-thirds to three-fourths of Americans are concerned about circulatory issues by some estimates. Ruptured blood vessels, embolism, stroke, and varicose veins affect many people. Many resort to blood-thinning medications with potentially dangerous side effects. Most have been kept in the dark about low-cost, *natural* alternatives.

One of the most exciting is a brand-new, cutting-edge, high-potency *tomato extract*. This tomato extract is specially processed in such a way that provides benefits you cannot obtain by consuming cooked tomato products. In human clinical trials, it's proven to be completely safe with no side effects. Just three grams improves blood flow within ninety minutes and lasts for more than *twelve hours!*

It's already been approved in Europe for clinical use. It works by helping improve the balance of clotting factors—platelets—in your bloodstream. Even more exciting, it worked for 97 percent of test subjects, which means it will most likely work for you, without the risk of hemorrhaging, organ damage, and other side effects associated with blood-thinning drugs.

To protect against endothelial dysfunction, a critically important nutrient is *pomegranate*. In human clinical studies, those who drank pomegranate juice along with taking their standard therapy are able to reverse markers of circulatory deficit. In one study, circulation to the brain increased by 30 percent after one year in the pomegranate group, compared to *reduced* circulation to the brain in the placebo group not getting pomegranate. Both groups continued with their standard therapies.

Nutrient	Typical Daily Dose
Tomato extract	3 grams
Pomegranate extract	500 mg
Fish oil	1,400 mg EPA and 1,000 mg DHA
Sweet orange extract	600 mg
Vinpocetine	10-30 mg

Aging Factor 15: Loss of Youthful Gene Expression

In response to normal aging and environmental toxins, changes occur in *genes* required to sustain youthful cellular function. What happens is that genes that maintain cellular health slowly “turn off,” while genes that make us vulnerable to degenerative pathologies become overexpressed (turned on). As cells lose their youthful gene expression profile, we succumb to a plethora of discomforts, diseases, and eventual death.

Solution: Activate Your Longevity Genes

Longevity researchers have known for seventy-five years that consuming far fewer calories while meeting all nutritional needs can greatly increase life span in some species. More recently, geneticists discovered why: caloric restriction activates genes that slow cell aging.

In 2003, remarkable news arrived from the scientific community that a compound found in red grapes and other plants called *resveratrol* extended the life span of certain cells by as much as 70 percent. Even more exciting were findings in 2006 from a team of Harvard researchers showing that resveratrol “switches on” many of the same genes as caloric restriction!

Today this remarkable compound has attained celebrity status, with nationally known doctors endorsing its use. Medical researchers have found it combats not only aging but also the *diseases of aging*.

Further research into the area of *youthful gene* expression has brought to light a new class of compounds like resveratrol that enables aging cells to reverse course and function as though they were young again. These compounds work in synergy with resveratrol, mutually complementing and reinforcing its rejuvenating biological effects.

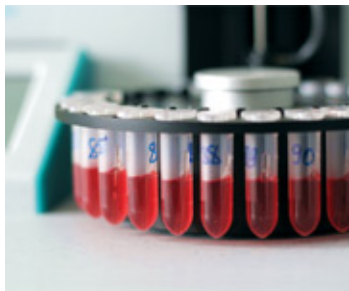
The following box describes four nutrients that help promote more youthful gene expression. Many of them can be found in multi-ingredient formulations, so you only need to take a few pills each day to obtain these potencies.

Nutrient	Typical Daily Dose
Trans-resveratrol	250 mg
Fisetin	48 mg
Trans-pterostilbene	3-100 mg
Vitamin D	5,000 IU

Aging Factor 16: Loss of Insulin Sensitivity

In youth, we efficiently utilize ingested carbohydrates to produce cellular energy with a minimal amount converted

to body fat storage. Aging reduces cellular sensitivity to insulin, which results in most people suffering chronically high blood glucose and insulin. This not only contributes to common age-related disorders but also unfavorably influences gene expression patterns.



Even if a blood test shows fasting glucose levels are normal, too many of us suffer from constant exposure to excess glucose throughout our normal days. In the presence of excess glucose, healthy tissue comes under an incredibly destructive free-radical assault. The ensuing cellular destruction has been linked to everything from blood vessel damage and stroke to cancer.

The bottom line is that most of us are playing with fire when it comes to excess blood sugar. Without knowing it, we place ourselves under a lifelong assault from excess glucose that wreaks havoc on our bodies long before we or our doctors recognize it. This is why some experts call glucose the *silent killer*. Even modest spikes in blood sugar (fasting glucose above 85 mg/dL) have been linked to increased risk of heart attack.

Solution: Restore Youthful Glucose Control

The good news is that forward-thinking researchers have identified a number of safe, completely natural substances that work in different ways to keep our after-meal blood sugar levels in check.

The most recently discovered of these is *green coffee bean extract*. I'm going to go into a bit of detail here because it really is exciting.

It works by blocking the destructive elevation in blood sugar that occurs after meals. Researchers have identified the active compound in raw coffee beans that combats excess blood sugar as *chlorogenic acid*. It brings blood sugar under control by both reducing the release of stored glucose into our bloodstreams and stopping the creation of excess glucose within our bodies.

In a recent clinical trial, just 350 mg three times a day of green coffee bean extract produced a remarkable 35 percent reduction in after-meal glucose spike. After twelve weeks, study participants shed on average almost eleven pounds, with fat loss accounting for 92 percent of the weight.

Nutrient	Typical Daily Dose
Green coffee bean extract	350 –1,050 mg
Green tea phytochrome	300 mg
Irvingia gabonensis extract	300 mg
Chromium	500 mcg
Cinnamon	175 –350 mg
R-lipoic acid	150 –300 mg

Ageing Factor 17: Loss of Bone Density

Ageing gradually weakens bones through decalcification and trace mineral loss. A compromised skeletal system negatively affects immune strength, blood cell production, nervous system function, insulin sensitivity, energy metabolism, and weight management.

Solution: Broad-Spectrum Bone Support

Ninety-nine percent of the calcium in our bodies resides in our teeth and bones. It stands to reason that if our bones and teeth store so much calcium, we would need to obtain additional calcium to preserve their strength. The real controversy is why mainstream doctors remain unenlightened about the need of maturing people to take the *right* kind of calcium supplement—and the proper nutrients to support it.

Ideal forms of calcium to look for on labels are dicalcium malate, calcium bisglycinate, or calcium citrate. They're easily tolerated by the body, highly absorbable, and supportive of bone

mineral density—the key measure of a calcium supplement's value.

A daily dose of at least 1,000 mg is recommended for female adults. Women can take up to 1,200 mg. You won't get any additional benefit from high doses. (Men only need around 800 mg a day of supplemental calcium.)

Your body can't readily absorb calcium without vitamin D3. This vitamin also ensures calcium



Your body can't readily absorb calcium without *vitamin D3*. This vitamin also ensures calcium deposits properly in bone tissue. There are receptors for vitamin D3 in more than thirty different tissue types throughout the body. D3 binds with them to promote immune function, reduce inflammation, reduce hardening of the arteries, enhance heart function, improve brain and nerve tissue performance, and even prevent cancer.



It's a good idea to have your vitamin D blood levels checked to make sure you're getting enough. The current evidence suggests that your readings for 25-hydroxy-vitamin-D should be between 50 and 80 ng/ mL in blood for optimal health. Experts suggest taking at least 2,000 IU per day, with most people requiring 5,000 IU per day, to achieve blood levels in a healthy range.

Nutrient	Typical Daily Dose
Calcium	1,200 mg
Vitamin D	1,000 IU
Magnesium	340 mg
Zinc	2 mg
Manganese	1 mg
Silicon	5 mg
Boron	3 mg
Vitamin K1	1,000 mcg
Vitamin K2 as MK-4*	1,000 mcg
Vitamin K2 as MK-7	100 mcg

* If you're taking anticoagulant drugs like Coumadin (warfarin), talk to your doctor before starting on a vitamin K2 regimen.

Aging Factor 18: Oxidative Stress

Free radicals are fiery unstable molecules that have been implicated in most diseases associated with aging.

At the molecular level, the continuous chemical reactions keeping your heart beating, your blood moving, and your brain working look like controlled infernos. The constant exchange of electrons wheeling inside the tiny energy-producing powerhouses in your cells called the mitochondria throws off enormous quantities of energy.

The problem is that as we get older, the cellular structures that once kept these fires under control begin to degrade, including the *mitochondria* themselves. Aging causes our cells to lose control over these reactions and renders them more vulnerable to destruction.

Solution: Quench the Raging Fires Within

Antioxidants have become popular supplements to protect against free-radical-induced cell damage, but few people take the proper combination of antioxidant supplements to adequately compensate for age-induced loss of endogenous antioxidants such as SOD, glutathione, and catalase.

Nutrient	Typical Daily Dose
Superoxide dismutase/ Gliadin complex (GliSODin®)	500 mg
Pomegranate extract	500 mg
Green tea extract	725 mg
Grapeseed extract	150 mg

S-adenosyl-methionine (SAME)	200-400 mg
Astaxanthin	5-6 mg
R-lipoic acid	300-600 mg
High-potency multinutrient formula	Two capsules
Gamma-tocopherol/ sesame lignans	200 mg gamma-E tocopherol with 20 mg of standardized sesame lignans

ONE FINAL NOTE

Children can benefit by taking vitamin supplements, but it is the *aging human* whose body is depleted of the endogenous antioxidants, hormones, enzymatic repair systems, and other biological chemicals needed to sustain life. What is optional in childhood becomes mandatory as humans enter middle age and become vulnerable to a host of degenerative diseases that await them if they fail to protect themselves.

The encouraging news is that supplements like fish oil, vitamin D, lipoic acid, curcumin, CoQ10, resveratrol, DHEA, vitamin K, and SAME function to circumvent multiple aging factors that conspire to rob us of our youthful health. This means that you don't have to take gobs of pills to counteract the multiple mechanisms of aging described in this chapter.

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