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# MAXIMUM LONGEVITY:

VOL.3

NUTRITIONAL SUPPLEMENTS THAT  
INCREASE YOUR HEALTH SPAN

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We have identified 7 simple steps for you to take to thrive at 100... and beyond. [www.MaxLife.org](http://www.MaxLife.org). Nutritional supplementation is step number three.

Just twenty years ago, vitamin popping was still held by the mainstream medical community as a worthless fad. But studies now show we are woefully vitamin deficient. For example, two USDA surveys of 5,188 people and 16,103 people discovered that *not one* got 100% of the recommended daily allowances (RDA) for vitamins, minerals, and nutrients. And RDAs are far below what many researchers determine to be optimal levels.

Today, you would be hard-pressed to find a physician who would disagree with the tremendous potential health benefits supplements can provide. That's because we finally have tens of thousands of published studies supporting the use of supplements. We also have ways to measure just what, if any, positive effects many supplements have on you. In fact, we now know you can fix defects in your DNA with vitamins and minerals.

According to the *Proceedings of the National Academy of Sciences* (PNAS), there are many genetic differences that make people's enzymes less efficient than normal, and that simple supplementation with vitamins can often restore some of these deficient enzymes to full working order.

There are over 600 human enzymes that use vitamins or minerals as substances that need to be present for a specific reaction to take place, and this study reports what they found by studying just one of them. This means even if the odds of you having a defect in only one gene is low, with 600 genes, you are likely to have some mutations that limit one or more of your enzymes. This report comes from the University of California, Berkeley.

Thanks to emerging technologies, we will soon be able to tell precisely what supplements and what dosages are optimal for you. For now, we need to take a more general approach.

According to Dr Bruce Ames of the University of California at Berkeley, over fifty genetic diseases have already been identified that can be corrected by aggressive nutritional supplementation. Diet alone and recommended daily allowances (RDAs) will never do it for *optimal* health. In fact, optimal health is

not possible without supplements for most of us. Thousands of studies support supplementation.

Dr Michael Rose believes the best future strategy for radically extending human lifespans several-fold may be nutritional supplementation. In *The Future of Aging*, he states: “Evolutionary nutrigenomic agents can emulate the process of natural selection using nutritional supplements in lieu of genetic variation.”

There has been a recent explosion in alternative medicine and herbal remedies. Many of these products and services have tremendous potential benefits, but many others are worthless. We will try to make some sense of this burgeoning industry and cover the most common vitamins, herbs, drugs, and other supplements available to the consumer.

# *Which Supplements Should You Take?*

Science is far from perfect. Until we learn more, we'll have to understand what we already have to the best of our abilities. Although we know quite a bit about various supplements, there's much more we don't know.

So do not follow anyone's advice blindly when it comes to your health. When determining which supplements you should take and how much to take, look for the most reliable studies on each supplement. There are five general classifications of medical studies. Here they are in order of the most reliable to the least reliable:

1. Long-term group studies where participants were randomly selected
2. Case controlled studies where one group has risk factors, and the other group doesn't
3. Case series studies where there is no control group and where members of the group being studied share a specific disease
4. Animal studies
5. *in vitro* studies (studies performed in a dish or test tube)

If the studies are independent of anyone having a vested interest in the outcome, they tend to be far more reliable than those being sponsored by an interested party. So, pay attention to who paid for the studies. Do they have anything to gain from either outcome?

Published studies showed that supplementing with antioxidants can cut the risk of heart disease by 26–46%, as well as cutting risks from certain forms of cancer.

A cheap regimen of vitamins in use for decades is seen by scientists as a way to delay the start of Alzheimer's disease and dementia, a goal that prescription drugs have failed to achieve.

Supplementation can also help you avoid stroke, diabetes, arthritis, macular degeneration and much more. The bare basics include a daily high potency multi-vitamin tablet and essential fatty acids. Ninety-seven randomized trials involving over 275,000 subjects showed omega-3 fatty acids, like fish oil, reduced cardiac mortality risk by 32% and overall mortality by 23%.

*Life Extension Magazine* reports published studies show you can reduce your risk of dying prematurely from *all* causes by as much as 85% by maintaining optimal levels of omega-3 fats. If you aren't supplementing with at least 2 grams a day of a high-quality omega-3 product, you may be unnecessarily courting an early death.

The article goes on to say studies show that daily doses of 1 gram or more of EPA and DHA significantly reduce scores on standard depression rating scales, especially in older adults. Omega-3s also have an anti-obesity effect. They improve insulin sensitivity and glucose tolerance, reduce blood pressure, lower triglycerides, can raise your HDL levels, protect your skin cells from cancer-causing effects of the sun, and can dramatically reduce the chances of breast cancer and even chronic kidney disease.

You may consider krill oil as an alternative to fish oil, because it contains potent antioxidants, and fish oil does not.

This could be a drawback for fish oil, because as you increase your intake of omega-3 fats by consuming fish oil, you increase your need for even more antioxidant protection.

That's because fish oil is perishable, and that causes oxidation, which leads to the formation of the unhealthy free radicals we discussed earlier. Therefore, antioxidants are required to ensure the fish oil doesn't oxidize and become rancid inside your body. So, you should take additional antioxidants when using fish oil. If your fish oil is encapsulated though, that should solve any potential rancidity issues. For the time being, I take a high-quality fish oil/krill combination product.

## *Know Your Omega Balance Score*

An extremely important clinical test will set you on your way to optimal health. Unlike other blood tests that may be useful in one disease or area of your body, the Ideal Omega-3 Test gives information about every cell and every organ. The correct balance of Omega-3 and Omega-6 fatty acids is vital for optimal health. It is not possible to reach your true health potential if this balance is not right.

Many clinical studies have shown that correcting this Omega imbalance can act as an effective treatment for many of the chronic inflammatory conditions. Go to [www.idealomegatest.com](http://www.idealomegatest.com) for information on this home test.

If you don't learn anything else today, go out and buy some high-quality fish or krill oil capsules. Take 2,000 mg of fish oil twice a day with antioxidants. If you take krill oil, you won't need as much dosage.

Under your doctor's supervision, a daily baby aspirin (81 mg) or whole aspirin can reduce your risk of heart attack and stroke. According to The Nurses' Health Study at Women's Hospital in Boston, risk can be reduced by up to 50%. John Radcliffe Hospital in Oxford, England's study concluded whole aspirins or less can lower your risks of dying from many types of cancer, including:

- ◆ 40% lower risk of colon cancer
- ◆ 10% lower risk of prostate cancer
- ◆ 30% lower risk of lung cancer
- ◆ 60% lower risk of esophageal cancer

So, if you're at risk and can tolerate aspirin, one of the most convenient and inexpensive ways to avoid serious disease is to take this 3¢-a-day supplement with your biggest meal.

Other basic supplements include coenzyme Q<sub>10</sub>, carnosine, alpha lipoic acid, vitamin D3, NAD<sup>+</sup>, a high-quality absorbable resveratrol, and folic acid. Folic acid may be more effective if you get it from whole foods, especially fresh, dark

green vegetables. And most importantly, take glutathione—but only the “protected” form. Your best insurance against errors when your DNA gets copied is glutathione, which nutritionally supports normal cell replication. That happens 300 billion times every day! A protected glutathione product may soon be available. For current information, please see [www.MaxLifeSolution.com](http://www.MaxLifeSolution.com).

You can and should feed your brain as well with many of the supplements above plus ginkgo biloba; A-L carnitine; PS (phosphatidylserine); PC (phosphatidylcholine); DMAE and EPA/DHA.

You might consider what I believe to be the state-of-the-art aging brain supplement called CogniGene. It was developed by an artificial intelligence company specializing in longevity research under MaxLife personnel guidance. [www.MaxLifeSolution.com/CogniGene](http://www.MaxLifeSolution.com/CogniGene).

Some of these supplements, along with folic acid, some of the B vitamins and others enhance methylation.

Methylation is a chemical reaction, taking place millions of times a day, in every cell in your body. Your body depends on this biochemical exchange for some of its most critical functions, such as: detoxifying carcinogens and other poisons, repairing damaged DNA, forming new cells, and manufacturing anti-aging hormones. (Hormones are the chemical messengers that control virtually every biological process in your body.) If your body does not methylate properly, you will travel the path headed for accelerated aging, heart disease, Alzheimer’s, cancer, diabetes, and other conditions.

Fortunately, it’s easy to improve your methylation with supplementation. In fact, taking methylation-promoting nutrients is one of the primary preventable causes of aging and disease.

Also, if you or someone you know has arthritis, lymphoma, herpes, HIV, low energy, Parkinson’s, or frequent infections including colds and flu, these people may have a common link—nutritional deficiency. Researchers found that in almost any diseased condition, patients are glutathione deficient.

The supplements for which we have found the most supporting benefits and the most clinical data by far, are six key antioxidants. These six substances are vitamin C, vitamin E, coenzyme Q<sub>10</sub> (CoQ<sub>10</sub>), glutathione, lipoic acid, and

carnosine. Dr Lester Packer of the University of California at Berkeley, one of the world's most renowned experts on antioxidants, has found the first five to act as an antioxidant network in your body.

One problem with antioxidants is once they detoxify a free radical, they themselves become a free radical. In fact, vitamin C, a powerful antioxidant, can become a pro-oxidant (a free radical) and cause damage if it is not supported by other antioxidants. This is where the antioxidant network shines.

The combination of vitamins C, E, glutathione, CoQ<sub>10</sub> and lipoic acid form a supporting network, according to Dr Packer's studies. This allows each of the members of the network to recycle each other and prevent any formation of more free radicals. By detoxifying each other, they keep your ability to eliminate free radicals robust and healthy.

Reactive oxygen species (free radicals) play a direct role in heart disease, cancer, type 2 diabetes, strokes, Alzheimer's, Parkinson's, cataracts, and arthritis. The advantages of having a great antioxidant system are many:

- ♦ Antioxidants, especially vitamin E and CoQ<sub>10</sub>, have been shown to be effective in preventing heart disease.
- ♦ Antioxidants, both oral and topical, can prevent skin damage and rejuvenate older looking skin.
- ♦ Antioxidants enhance the effectiveness of your immune system.
- ♦ Antioxidants reduce all types of inflammation and arthritis in particular.
- ♦ Antioxidants can slow brain aging and prevent memory loss and mental problems later in life.
- ♦ Antioxidants have been shown to improve concentration and focus.

## *Life Extension Foundation's Supplement Pyramid*

Your Supplement Pyramid will have three levels. The bottom tier is the Foundation Level. It's made up of nutrients essential to life. Because of their vital importance to human biology, we all need to take the same foundational supplements. The middle tier is the Personalization Level. This is the level that's all yours. It is comprised of nutrients specific to your personal medical history and health needs. The top tier is the Optimization Level. This is where all the "extra" supplements come in that take your health to the next or optimal level.

Supplements in the top tier do exactly what the name implies. They don't necessarily meet your medical needs—that's what the personalization level is for.

The top tier supplements "optimize" your regimen. This level is where you'll find supplements that help you live a longer, healthier life such as the ones we specialize in at [www.MaxLifeSolution.com](http://www.MaxLifeSolution.com). You could also think of them as anti-aging supplements. These might include nutrients that have been shown to induce beneficial effects on *gene expression*, which ultimately might be the solution to eradicating age-related disease.

## *When Should You Start and How Much Should You Take?*

The age at which to consider supplementing is around 25. That's when the long-term effects of nutritional scarcity start being felt. But supplementation really becomes essential by 40.

The daily requirements for each of these antioxidants as established by the USDA are far too low, according to the accounts of a large number of scientists and physicians. There is still a heated debate as to what the correct dosages should be, and they will vary from person to person. At present, the following guidelines are based on the general recommendations of Dr Lester Packer.

Vitamin C, according to Dr Packer, should be taken in doses of 250 mg, twice daily. According to the results from his work, any more is not going to do any harm if you have a well-supported antioxidant network. Above this amount though, much of it is just excreted in the urine without being used. Some people advocate taking megadoses of vitamin C based on the reasoning that animals that produce it naturally make two to three times as much under conditions of stress and that it has extraordinary health benefits. Notable researchers such as Dr Linus Pauling, Dr Thomas Levy and Dr Robert C. Cathcart, as well as a 1995 Hoffman La-Roche study, found that up to 10 grams per day is safely utilized by the body.

The USDA recommended daily allowance (RDA) for vitamin E is woefully low. Vitamin E is one of the frontline defense systems against free radicals. Dr Packer and many other sources recommend a total of 500 mg (733 I.U.) of vitamin E per day, and higher dosages for people with cancer or heart disease. Dr Packer and others recommend mixed natural tocopherols and tocotrienols, members of the vitamin E family.

Premature aging is one primary side effect of having too little CoQ<sub>10</sub>. This essential vitamin recycles other antioxidants such as vitamins C and E. CoQ<sub>10</sub>

deficiency also accelerates DNA damage. And because CoQ<sub>10</sub> is beneficial to heart health and muscle function, this depletion leads to fatigue, muscle weakness, soreness and eventually heart failure.

CoQ<sub>10</sub> is naturally found in nearly every cell, tissue, and organ in your body. It is found in especially high concentrations at the source of most of your free radical production, the mitochondria, your cells' "power plants." It improves your cells' ability to transport electrons in and out of the mitochondria. CoQ<sub>10</sub> is especially attracted to high energy organs such as your heart and brain. It directly recycles vitamin E and is one of the primary molecules in the energy production system of cells. As we age, the production of CoQ<sub>10</sub> declines, and this may be a factor in heart disease as well as diminished cellular energy.

The antioxidant action of the reduced form of CoQ<sub>10</sub> (ubiquinol) is now considered to be one of its most important functions in cellular systems. Ubiquinol is a potent antioxidant capable of regenerating other antioxidants and provides important protection against oxidative damage to fats, proteins, and DNA. Recent studies also reveal its function in gene expression involved in human cell signalling, metabolism, and transport.

Many recent studies point out that plasma ubiquinol declines in response to neurodegenerative disease, cancer, fatigue, and especially type 2 diabetes, in addition to cardiovascular disease. The ubiquinol acts as an important first line defense against the oxidative insult associated with these diseases.

If you take ubiquinone instead of ubiquinol, make sure it is the water-soluble form. It may be just as effective at a much lower cost.

If you are in the older and/or are in a disease/stress category, you may want to start at 200 to 300 mg per day. Studies show the CoQ<sub>10</sub> plasma levels plateau at about two to three weeks at this dose. A good maintenance dose after that is in the 50 to 100 mg per day range. Make sure you take ubiquinol, the reduced form or water-soluble ubiquinone. Other forms are easily oxidized and are therefore inefficient.

*Life Extension Magazine* reports on the newest companion product to CoQ<sub>10</sub>. It is pyrroloquinoline quinone, or PQQ. Early in 2010, researchers found it not only

protects your mitochondria from oxidative damage, but it stimulates growth of *fresh* mitochondria!

The implications of this are huge! PQQ protects your brain, heart, and muscles against degenerative disease. It is also shown to optimize health and function of the entire central nervous system and may be a potent intervention in Alzheimer's Disease and Parkinson's Disease. In addition, it has the potential to *reverse cellular aging* by forming new mitochondria in aging cells.

PQQ is a master antioxidant and is now classified as an essential nutrient. Daily recommended dose is 20 mg. Coupled with 300 mg of CoQ<sub>10</sub>, it may even *reverse* aging-related cognitive decline in humans.

A low level of glutathione is one of the key indicators for premature death. Unfortunately, the body breaks down glutathione in the digestive tract... as well as in your circulatory system. So, supplementing with an unprotected version of glutathione won't do you much good. However, as I previously indicated, there is now a protected version of glutathione. Another way to keep your glutathione levels up is to avoid nitrates found in processed lunchmeats, smoking and alcohol. Supplementing with N-acetyl cysteine (NAC) may increase your levels as well.

## *More on Antioxidants*

In addition to the five key antioxidants found in your body, there are other compounds that can boost your antioxidant activity. One group of these molecules that has gotten a lot of attention as of late is the flavonoids. These antioxidants are found in tea, berries, red wine, and many fruits.

From recent studies, flavonoids seem to act as free radical scavengers, mainly recycling vitamin C. This appears to have a positive overall effect on the antioxidant system. Two of the most powerful flavonoid antioxidant extracts are those from pycnogenol (pine bark) and ginkgo biloba.

Most of the mental and sexual enhancement effects felt by people taking ginkgo is probably from the ability of flavonoids to improve circulation and allow better chemical signaling to occur. In addition to these benefits, the antioxidant effects mentioned above are enhanced. Dr Packer's recommendation for ginkgo biloba is 30 mg daily and for pycnogenol, 20 mg daily.

Another group of antioxidants available from plant, algae, and fungi are the carotenoids. The best source of carotenoids is your diet. Brightly colored fruits and vegetables all contain high levels of these compounds. These molecules are also available in capsule form. Conventional wisdom says if you are eating a diet with five to seven servings of vegetables and one to three servings of fruit a day, this is probably not necessary (one serving equals one-half cup).

However, conventional wisdom may be wrong. The fruits and vegetables we eat today may only contain a fraction of the nutrients they contained fifty years ago. Many soils have been depleted of minerals, and in their attempt to sell food that looks and tastes good and keeps from spoiling too early, the industry has adulterated much of our produce. We recommend you eat as much locally grown or organically grown food as possible for those reasons, and because organic foods generally contain far fewer toxins. And oh yes, I believe organic food tastes better too.

How do you know whether the food you buy that is labeled “organic” is truly organic? The term is becoming so popular that many food companies use the term loosely. Look for food that is labeled “100% organic.” If it’s labeled “Certified Organic”, that means it must be at least 95% organic. If you don’t see either of these designations, be wary. Buying from small local farms or farmers’ markets may be your best bet then, especially if you get to know the farmers.

Conventional wisdom also leads to “normal” health. For “optimal” health, we suggest supplements.

## *Wide Range of Benefits*

Additionally, recent studies show vitamin D does far more than promote healthy teeth and bones. Its role in supporting immunity, modulating inflammation, protecting you against viral infections, and preventing cancer make the consequences of vitamin D deficiency potentially devastating. A growing number of scientists who study vitamin D levels in human populations now recommend annual blood tests to check vitamin D status.

University of California recently conducted an extensive review of scientific papers published worldwide between 1966 and 2004. Their analysis suggested that taking 1,000 international units (IU) of vitamin D3 daily lowers an individual's risk of developing colorectal cancer by 50%. And a new European study suggests vitamin D supplements could prolong your life. "The intake of usual doses of vitamin D seems to decrease mortality from any cause of death," said lead researcher Dr Philippe Autier, from the International Agency for Research on Cancer in Lyon, France.

In fact, people with the lowest blood levels of vitamin D were about two times more likely to die from *any cause* during an eight-year study period than those with the highest levels.

If vitamin D3 levels among populations worldwide were increased, 600,000 cases of breast and colorectal cancers could be prevented each year, according to researchers from the Moores Cancer Center at the University of California, San Diego (UCSD). This includes nearly 150,000 cases of cancer that could be prevented in the United States alone.

Another study shows getting about 2,000 IU to 4,000 IU a day of vitamin D can help you to reduce your cancer risk by up to 50%! And according to Dr William Grant, internationally recognized research scientist and vitamin D expert, about 30% of cancer deaths, which amounts to 2 million worldwide and

200,000 in the United States, could be prevented each year with higher levels of vitamin D.

Furthermore, in the September, 2011 issue of the *European Journal of Clinical Nutrition*, W. B. Grant of the Sunlight, Nutrition and Health Research Center in San Francisco concludes that doubling one's serum level of vitamin D from 54 to 110 nanomoles per liter might increase life expectancy by an average of two years.

Here's a mechanism which may explain vitamin D3's life extending capabilities:

Daily supplementation of only 2,000 IU of vitamin D3 significantly increased telomerase activity in overweight African Americans. The study suggests vitamin D3 may improve telomere maintenance and prevent cell senescence and counteract obesity-induced acceleration of cellular aging. This was published in the *International Journal of Obesity* advance online publication on October 11, 2011.

Just as scientists are discovering critical new roles for vitamin D, they are also finding that shockingly few people have blood levels of vitamin D adequate to support their daily needs. Most people only get 250–300 IU a day from their diet, so another source, ideally the sun, is essential. Because vitamin D3 is obtained primarily from exposure to sunlight, this puts people living outside the tropics at particular risk for vitamin D deficiency, especially from late fall to early spring. The elderly may be more prone to vitamin D deficiency as well, since vitamin D does not get manufactured very efficiently by older skin. University of California at San Diego, researchers have found an association between lower sun exposure and higher Type I diabetes rates in children, which they attribute to vitamin D levels.

Further compounding the problem, many public health officials are concerned that their warnings about avoiding the sun because of skin cancer risk may in fact be causing people to limit their sun exposure to an unhealthy extent.

Taking vitamin D by itself orally is unnatural, and it is possible to overdose over prolonged periods of time. So be sure to take the natural D3 version. Consider measuring your vitamin D3 level with your regular blood tests if you

take high doses. Make sure you get the most accurate test, 25(OH)D. You want to measure your results against optimal levels, not normal levels.

Be cautious with overexposure to the sun as well, but it's hard to overdose on vitamin D3 from the sun. For prolonged exposure during peak hours, use a good sunscreen from most health food stores. Avoid most commercial sunscreens. They may be toxic.

## *New Study: Lack of Sun is as Bad as Smoking*

Even taking the skin-cancer risk fully into account, a May 3, 2016 Daily Mail article reports researchers say that getting a good dose of sunshine is statistically going to make us live longer, healthier, and happier lives.

Sunlight may protect us against a wide range of lethal or disabling conditions, such as obesity, heart attacks, strokes, asthma, and multiple sclerosis outside of the effects of Vitamin D. It has also been shown to boost our libidos and general mood.

Scientists now believe exposure to sun prompts our bodies to produce nitric oxide, a chemical that helps protect our cardiovascular system — and the feel-good brain-chemical serotonin.

In March investigators, from the Karolinska Institute in Stockholm, concluded that avoiding the sun is as bad for you as smoking.

Non-smokers who avoided the sun had a life expectancy similar to smokers in the highest sun exposure group.

## *Older people need more*

Last year Dr Richard Weller at Edinburgh University published a report warning that older people in particular need to get into the sun more. 'Advice on healthy sun exposure needs to be reconsidered,' he urges.

Dr Weller's team established that exposure to sunlight may lower people's blood pressure and thus cut their risk of heart attack and stroke. This is, due to the fact that the sun lowers blood pressure by causing blood vessels to widen.

It also appears that sunlight alters the way our genes behave. Last year, Cambridge University scientists showed that the expression of 28 per cent of our entire genetic make-up varies from season to season.

## *Sun helps reduce inflammation*

The Cambridge investigators reported that in summer we increase the activity of anti-inflammatory genes.

Chronic inflammation is linked to modern epidemics such as heart attacks, diabetes, and cancer. The Cambridge research indicates that sunlight may prompt our bodies to switch down the inflammatory response.

There is a correlation between more sun and less disease in a variety of conditions such as multiple sclerosis and atherosclerosis.

## *Sun may even stop you from getting fat*

Scientists are discovering sunlight may even help us keep slim and healthy, according to studies by the Universities of Southampton and Edinburg.

The results show that ultraviolet radiation may suppress the development of obesity and the symptoms of type 2 diabetes.

We all tend to feel happier when the sun is out, and this is not simply a matter of morale. Research shows that the main wavelength of light in sunlight stimulates sensors in our retina which regulate our body clock. This in turn regulates the amount of melatonin, the sleep hormone that our bodies release.

Studies such as a report by Sweden's Uppsala University last month show disruption of melatonin levels is linked to depression, Alzheimer's, and Parkinson's disease.

## *May help you live longer*

Dr Weller acknowledges that people who live in sunnier climates have more skin cancer. But he argues we have no proof that sunlight shortens life. In fact, the epidemiology suggests that overall, people who have more sunlight tend to live longer, even though their population gets more skin cancer.

Professor Feelisch warns that avoiding sunlight or using sunblock constantly could be a new risk factor for heart disease — and more people die from heart disease than skin cancer.

He does not recommend, however, that we spend hours sunbathing.

“We should also be more sparing in our use of sunscreen as it may block the benefits of sunshine,” Dr Lindqvist says.

# Vitamin K

According to Dr Cees Vermeer, one of the world's top researchers in the field of vitamin K, nearly everyone is deficient in vitamin K—just like most are deficient in D.

Most people get enough K from their diets to maintain adequate blood clotting, but NOT enough to offer protection against some health problems.

Vitamin K comes in two forms, and it is important to understand the differences between them before devising your nutritional plan of attack.

1. **Vitamin K1:** Found in green vegetables, K1 goes directly to your liver and helps you maintain a healthy blood clotting system. It is also K1 that keeps your own blood vessels from calcifying, and helps your bones retain calcium and develop the right crystalline structure.
2. **Vitamin K2:** Bacteria produce this type of vitamin K. It is present in high quantities in your gut, but unfortunately is not absorbed from there and passes out in your stool. K2 goes straight to vessel walls, bones, and tissues other than your liver.

You can obtain all the K2 you'll need by eating 10-15 grams of natto daily, which is half an ounce. The next best thing is a vitamin K2 supplement. Remember to take your K supplement with fat, since it is fat-soluble and won't be absorbed without it.

Although the exact dosing is yet to be determined, Dr Vermeer recommends between 45 mcg and 185 mcg daily for adults. Use caution with higher doses if you take anticoagulants. Even though the risk of increased clotting tendencies may be small, it is real.

In 2004, the *Rotterdam Study*, which was the first study demonstrating the beneficial effect of vitamin K2, showed that people who consume 45 mcg of K2 daily live seven years longer than people getting 12 mcg per day.

Vitamin K and vitamin D work together to increase MGP, or Matrix GLA Protein, which is the protein responsible for protecting your blood vessels from calcification. And the results of human clinical studies suggest that concurrent use of vitamin K2 and vitamin D may substantially reduce bone loss. We may be seeing just the tip of the iceberg when it comes to vitamin K and its many valuable functions in your health.

# *Astaxanthin*

Scientists long ago discovered that carotenoids held powerful antioxidant properties that are crucial for your health. These are the compounds in your foods that give you that vibrant cornucopia of color—from green grasses to red beets, to the spectacular yellows and oranges of bell peppers—as well as all the beautiful flowers in your garden.

Recently, one particular carotenoid jumped to the front of the line in terms of its status as a “supernutrient,” becoming the focus of a large and growing number of peer-reviewed scientific studies. This carotenoid is called natural astaxanthin and is now thought to be the most powerful antioxidant found in nature.

There are only two main sources of astaxanthin—the microalgae that produce it, and the sea creatures that consume the algae (such as salmon, shellfish, and krill).

## *What Makes it so Special?*

There are many properties that make this carotenoid unique. Here are the main differences:

Astaxanthin is by far the most powerful carotenoid antioxidant when it comes to free radical scavenging. It is 65 times more powerful than vitamin C, 54 times more powerful than beta-carotene, and 14 times more powerful than vitamin E.

Astaxanthin crosses the blood-brain barrier *and* the blood-retinal barrier (beta carotene and lycopene do not), which brings antioxidant and anti-inflammatory protection to your eyes, brain and central nervous system and reduces your risk for cataracts, macular degeneration, blindness, dementia and Alzheimer's disease.

Astaxanthin is soluble in lipids, so it incorporates into cell membranes. It's a potent UVB absorber and reduces DNA damage.

- ♦ It's a powerful natural anti-inflammatory.
- ♦ It protects your cell membranes and DNA from oxidative damage.
- ♦ It improves visual acuity and depth perception.
- ♦ It improves sun tolerance and reduces your tendency to sunburn.
- ♦ Astaxanthin improves strength and endurance.

Use only *natural astaxanthin*, not the synthetic version.

## *AMPK Activators*

AMPK is an enzyme that serves as the body's master regulating switch. It inhibits multiple damaging factors by revitalizing aging cells.

Found in every cell, AMPK promotes longevity factors that have been shown to extend life span in numerous organisms. Increasing AMPK signaling "turns off" many damaging effects of aging, enabling cells to return to their youthful vitality.

Greater AMPK (adenosine monophosphate-activated protein kinase) activation has been shown to help target damaging factors of aging. Studies show increased AMPK activity supports reduced fat storage, new mitochondria production, and the promotion of healthy blood glucose and lipids already within normal range.

The popular diabetes drug metformin has been a popular choice in recent years to derive these benefits. However, an article published in PubMed on February 26, 2016, citing an Alzheimer's Disease. study cautions that it could lead to an increased Alzheimer's risk.

Therefore, I recommend either Life Extension's AMPK Activator or Swanson's Berberine. I currently take Berberine which may be more effective than both metformin and AMPK Activator.

## *A New Important Finding*

NAD<sup>+</sup> is a cellular compound called *nicotinamide adenine dinucleotide*. It is found in every cell in the body and is essential to life. NAD<sup>+</sup> enables the transfer of energy from the foods you eat to vital cell functions. It is also required to “turn off” genes that accelerate degenerative aging processes.

As NAD<sup>+</sup> levels decline, mitochondrial function is impaired, resulting in fewer mitochondria surviving. This vicious cycle of mitochondrial depletion results in many of the physical symptoms of aging. NAD<sup>+</sup> also plays an important role in transferring energy released from glucose and fatty acids to the mitochondria so that it can be converted into cellular energy.

The consequences of a decline in NAD<sup>+</sup> levels are:

- ♦ *Neurodegeneration* in the brain
- ♦ *Vascular inflammation*, producing damage to blood vessels that can result in stroke or heart attack.
- ♦ *Increased fat storage* in the liver, which can lead to nonalcoholic fatty liver disease.
- ♦ *Increased fat production and deposition* in white adipose tissue, the primary fat storage form found in dangerous belly fat.
- ♦ *Insulin resistance*, preventing cells from appropriately removing glucose from blood, producing higher blood sugar levels and leading directly to metabolic syndrome.
- ♦ *Fatigue, loss of muscle strength, and fatty infiltration of muscles*, resulting in reduced fatty acid oxidation (“burning”), thereby depriving muscles of their normal sources of energy.

By increasing intracellular NAD<sup>+</sup> levels, age-related *mitochondrial dysfunction* can be reversed. One of the ways to accomplish this is by calorie restriction, which has been proven to raise NAD<sup>+</sup> levels and in experimental organisms

tested to date, to extend life span. Importantly, researchers have discovered a form of vitamin B3 that converts in the body to NAD+.

Directly boosting NAD+ with nicotinamide riboside presents a new and effective strategy for preventing the natural decline in cellular energy as we age by promoting youthful vitality. Studies have shown that nicotinamide riboside switches “off” the genes of aging, extends life span, increases endurance, improves cognitive function, activates sirtuins and enhances cellular energy.

Nicotinamide riboside is a relatively new and inexpensive supplement. I get mine from *Life Extension*.

You can get more powerful NAD+ therapies in the form of NAD+ patches worn on your skin and NAD+ infusions. The patches are much more convenient and more economical than intravenous injections. I get my patches from Archway Apothecary. Phone [\(985\) 801-0800](tel:9858010800) <https://archwayapothecary.com/>

# *Senolytics*

*In the longevity and anti-senescence therapy market, senolytics lead the way in current drug development. As of this writing, it appears senolytics to be the most affordable powerful healthy life extending compounds in history.*

Senescent cells are cells that reached their maximum cell division, and instead of dying, they stay in a zombie like state, spewing toxins and poisoning healthy neighboring cells. They impede organ function, create chronic inflammation, and shorten healthy lifespan.

Senolytics are compounds that clear senescent cells and extend healthy lifespan. Senescent cells damage everything... but are cleared by young healthy immune systems. That doesn't help us as we age. The older we get, the more these senescent cells gunk up our immune systems as well as all our organs. But finally, for the first time in human history, medical technology is introducing tools to clear most of your senescent cells. Senolytics are called "the golden child of anti-aging drugs." Animal studies have shown that removing senescent cells reverses the aging process, extends lifespan, and restores lost youth.

The most widely studied protocol to clear senescent cells is one quercetin plus dasatinib dose once a week for two weeks only (two total doses) preferably on an empty stomach. You may repeat this protocol in 6-12 months, or sooner as your doctor may direct. A published study indicated that the combination selectively cleared senescent cells in idiopathic pulmonary fibrosis mice and improved lung function and physical health indicators in mice. In an open-labeled phase I clinical trial, nine patients with diabetic nephropathy received dasatinib and quercetin therapy, which reduced the load of adipose tissue senescent cells. These results proved that senolytics are expected to be used to delay vascular aging and prolong the life span of the elderly.

Caution is advised against overdosing. Dasatinib is a prescription drug whose brand name is Sprycel. Suggested dosing is Dasatinib, 2.5 mg per kilogram of

body weight. Quercetin, 25 mg per kilogram of body weight. Always consult with your doctor for your prescription and recommended dosage before taking any prescription drugs. Quercetin is a nutritional supplement sold in most vitamin stores and online.

Two affordable dasatanib sources are: International Antiaging Systems [www.antiaging-systems.com](http://www.antiaging-systems.com) and Med Impex [trademedimpex@gmail.com](mailto:trademedimpex@gmail.com). US pharmacies offer Sprycel at exorbitant prices. Compounding pharmacies may be a fraction of the cost.

Another nutritional supplement, fisetin, has tremendous potential. Many people, including myself, use it daily as a senolytic. The Mayo Protocol consists of taking 20 mg/kg of body weight of oral fisetin on two consecutive days and repeating the same dose, one month later. Some suggest adding quercetin. Life Extension offers Bio-Fisiten which appears to be a superior brand. And Life Extension also carries a nutritional supplement called Senolytic Activator. I believe they are still evaluating effectiveness.

Finally, it was recently announced that a single five-day dose of the antibiotic, Azithromycin, can clear out up to 97% of senescent cells. There is some concern that it may not remove immune senescent cells.

To the best of my knowledge, there is only one blood test on the market to measure your NAD+ levels and another that measures your senescent cells. You can order these Jinfinity tests at [www.bioviva-science.com/](http://www.bioviva-science.com/).

## ***Breakthrough Longevity Supplement***

A new anti-aging product called TeloSCTM has recently been introduced. I have been testing it for over a year, and I'm so impressed that we built a website and offer it as one of only four specialized longevity products. [www.MaxLifeSolution.com](http://www.MaxLifeSolution.com).

I tried it before it hit the market, because I'm familiar with the 30 years of genomic research behind it. That research showed aging is linked to altered expression in more than a hundred genes. The lab discovered this by studying long-lived animal assays to screen for wide-spectrum herbal extracts that extend lifespan. They succeeded in greatly extending animal lifespan using a novel class of nutrigenomic supplements that fine-tune genes involved in both aging and age-related disease.

Its core ingredients increase both average and maximum life span in lab animals, even when started at middle age. As far as I know, it is one of only two supplements proven to double the lifespan of an animal model.

Effects vary among individuals. But the general expectation is, for most health measurements that are in the normal range for your age, TeloSC can promote readings you had when you were 20 years younger.

I have been fortunate. Most of my biomarkers are in healthy ranges, and I have been doing a lot for many years to get them and keep them there. Even so, since taking this product, my already good blood glucose level dropped by 11% since my previous reading, and my HDL level increased slightly, even while my total cholesterol dropped by 5%. My LDL level dropped by over 11% as well. When total cholesterol drops, you would expect both HDL and LDL to drop accordingly. So, my results are positive.

The main effects that have been observed in their clinical tests are lower blood pressure, somewhat lower LDL and higher HDL and reduced fasting blood glucose. Expect to see lower blood pressure and blood glucose within four weeks

of taking TeloSC if they are elevated. The cholesterol changes will take longer. Check after two months.

The scientists also believe telomere loss will be reduced with the supplement due to lower stress levels and reducing both oxidative damage and inflammation.

Besides the changes in lab tests, some have seen other anecdotal advantages such as more endurance during vigorous workouts, reduced anxiety levels, elevated mood, cleared sinuses and lost belly fat. Longer term, some have observed improvement in their gum health, less eye stigmatism, and smoother, more elastic skin.

You may or may not feel any different within a month when taking any anti-aging supplement—even one that works. Statins and baby aspirin are two examples of drugs with apparent anti-aging characteristics that typically lack any feel-good aspects. Yet, both drugs have lowered all-cause mortality in large scale clinical trials. If you are already in excellent health, you may not observe any real difference with treatment unless you monitor the silent biometrics of lipids, blood pressure, and glucose. These biometrics are the best-known indicators of future lifespan and health span.

## *Round out Your Program*

There are two more compounds worth mentioning in this discussion: selenium and melatonin. Selenium is an element that has a synergistic effect on the antioxidant network. The way it works is not completely clear yet, but it is well known that selenium deficiencies are responsible for higher levels of heart disease and cancer. In fact, people who live in areas in which the soil is selenium deficient are much more likely to die of heart disease. Dr Packer recommends taking 200 mcg (micrograms) per day.

Melatonin is technically a hormone, but one of its most powerful uses is as a general antioxidant. This molecule has the ability to cross the blood-brain barrier, the membrane that prevents most molecules from entering the brain itself. So, this might be one of the brain's key defenses against oxidation.

In addition to these effects, melatonin has a role in regulating the sleep cycles of some animals and may have similar effects in humans. Melatonin production declines with age in humans, and so it has been suggested that increased dosages may be necessary as you age. The most commonly recommended dosage is 3 mg or less at night before bed, but this is an unusually benign substance. Dosages up to 1,000 mg have been taken by humans in experiments. The only noticeable side effect was it is hard to wake up in the morning. Of course, this is extreme, and we don't recommend extreme dosages of anything.

We feel uncomfortable suggesting specific dosages for various supplements. We're all physiologically unique. One size does not fit all. For optimal health, and before starting any aggressive supplement protocol, see a qualified anti-aging physician. It could be the best investment you ever made or will make. Regarding your personal dosages, I suggest you have an anti-aging specialist monitor your blood panels, as I do. The person I use and recommend is Prof Joe Carrington [carrington@post.harvard.edu](mailto:carrington@post.harvard.edu). I often wonder if we typically overdo or underdo supplementation. The answer is, I don't know. Once we can

affordably map personal genomes and learn what to do with all the data, we'll have a much better idea. Until then, we do well with educated recommendations based primarily on personal bloodwork data and on possible symptoms.

I buy almost all my supplements from Life Extension. I have been a member of Life Extension Foundation (LEF) for over thirty-five years.

If you decide to join LEF, or to buy products from them, please say Maximum Life Foundation sent you. If you do, part of all the money you invest in their supplements will be donated to Maximum Life Foundation, a non-profit foundation, to invest in life extension research and development.

If you wish to find further information about any of the supplements we have discussed here as well as others, please look to the following sources.

- ♦ Life Extension Foundation, [www.lef.org](http://www.lef.org), a not-for-profit organization that donates proceeds of the sale of supplements to anti-aging research. This group is a reliable producer of reasonably priced and high-potency pharmaceutical grade supplements and a terrific source of current health and research information.
- ♦ Ray Kurzweil and Terry Grossman's Health Products [www.rayandterry.com](http://www.rayandterry.com). Also, review their Longevity Program, described in their book, *Fantastic Voyage: Live Long Enough to Live Forever*. They illustrate how heart disease, cancer, stroke, respiratory disease, kidney disease, liver disease, and diabetes do not appear out of the blue. They are the end result of processes that are decades in the making.
- ♦ MaxLife Solution, [www.MaxLifeSolution.com](http://www.MaxLifeSolution.com). This is a website that benefits Maximum Life Foundation and is owned by Age Reversal, Inc., a company I direct. So far, MaxLife Solution has identified several research-based products that have proven life extending capabilities.

## *MaxLife's Top 10 Supplements*

If you want an even more streamlined list for basic yet potent longevity purposes, here is what we recommend you take on a regular basis:

1. Bioavailable glutathione XtraGSH for powerful immune system support
2. High quality fish oil
3. D3
4. NAD+
5. A senolytic
6. High potency multi vitamin/mineral
7. CogniGene for the aging brain
8. InflaGene if chronically inflamed, overweight or over age 50
9. TeloSC for telomere and stem cell support
10. Quercetin and zinc for virus protection

Maximum Life Foundation's advisors estimate the top three combined cost about \$55 per month and could potentially slash healthcare costs in half. That means a savings in the U.S. of up to \$1.2 trillion a year. Year after year, after year. The cost to supplement the 250 million adults would be about \$165 billion annually. That comes out to a net annual savings of over \$1 trillion—plus the benefits of increased productivity and less suffering. Good return on investment, don't you think?

Is anyone awake in Washington?

## *But What About the Anti-Supplement News Articles I See?*

I could write a whole chapter on this issue alone. Instead, let me lay some groundwork for you and give you an example.

The FDA and international government agencies have been trying to regulate supplements for many years. And they have made inroads in spite of the fact that *people take over 60 billion doses of legitimate vitamin and mineral supplements per year in the USA without a single fatality. Not one.*

In striking contrast, drugs are known to cause well over **125,000 deaths per year** when taken correctly as prescribed. And the U.S. National Poison Data System's annual report tracked data from 57 U.S. poison centers. The report showed vitamin and mineral supplements caused zero deaths in 2010, while pharmaceuticals caused more than 1,100 of the total 1,366 reported fatalities.

*If vitamin and mineral supplements are allegedly so "dangerous," as the FDA and news media so often claim, then where are the bodies? Why are dietary supplements under so much attack?*

There are legitimate concerns over unscrupulous profiteers who adulterate weight loss and body building supplements with banned substances. But instead of enforcing existing laws, regulators continue trying to impose broad reaching restrictions on the entire industry.

It's no secret that the industry is big, growing and profitable. And the drug industry took notice. In some ways, dietary supplements are a threat to their business. In another way, they see a profit opportunity. They are already getting into the supplement business. Don't you think they'd love to have a monopoly like they do with drugs?

You decide.

Now here's an example of a news article attacking nutritional supplements. Two studies, a rehashed review, and an editorial published in the December 17, 2013 issue of the *Annals of Internal Medicine* have attempted to discredit the value of multivitamin supplements.

Both the studies were plagued by grievous methodological flaws.

In one of the studies, subjects were given low-quality, low-potency multivitamin supplements. Treatment adherence rates and drop-out rates were *horrendous*. Nevertheless, mainstream sources are using these slanted studies to undermine dietary supplements.

The first study examined the cognitive effects of *low-potency* multivitamin supplementation in aging male participants. In the other study, subjects with a history of heart attack were given a multivitamin supplement or placebo and monitored for about 4.5 years for cardiovascular events. Despite succumbing to obvious *design flaws*, this study revealed evidence that multivitamins reduced cardiovascular risk. However, the investigators constructed the study to ignore anything short of miraculous cardiovascular risk reduction, so the conclusion drawn questions multivitamin benefits.

Subjects in the first study were considered to have adhered to their multivitamin regimen appropriately if they took it just two-thirds of the time. In other words, even subjects who skipped their multivitamin 4 months out of the year were deemed "adherent" to the intervention.

In addition, the method by which adherence was assessed in this study is inherently weak. The multivitamin utilized in this study contained woefully inadequate nutrient concentrations. Even the researchers state a limitation of their study is "[the] doses of vitamins may be too low..."

Despite the low potency vitamins used in this trial, benefits were seen in the multivitamin group.

In the cardiovascular event study, a staggering 46% of subjects discontinued the multivitamin regimen during the study. Despite concluding that multivitamins don't protect against cardiovascular risk, the investigators did find an 11% *reduction* in their primary endpoint (composite of time to death from

any cause, heart attack, stroke, coronary revascularization or hospitalization for angina) among those taking multivitamins.

But in this study, the authors designed the trial to eliminate 1 in 4 cardiovascular event outcomes.

By setting the bar for efficacy so high, this study was set up to conclude that multivitamins would provide no benefit from the outset.

## *Cancer Caution*

Much of what you do for longevity may be counterproductive if you have cancer. For example, some supplements may feed your cancer cells right along with your healthy cells. All the other steps in this book are recommended for cancer patients, with your doctor's supervision. But if you have cancer, I strongly suggest you visit Dr J. William LaValley's Website before you supplement. See [www.integrativeoncologywellnessplan.md](http://www.integrativeoncologywellnessplan.md). Dr. LaVally is one of the few medical doctors in the world with a deep understanding of what effect, good or bad, certain supplements could have on cancer patients.

His information may help you and your physicians increase the effectiveness of the treatment they give you. It may also help protect your healthy cells and reduce the harsh side effects of chemotherapy and radiation without interfering with the desired benefits of those therapies. Dr LaValley has a spectacular track record of adding quality life to terminally ill cancer patients.

## *The Most Effective Cancer Cure on the Planet*

According to Springer Pharmaceutical Research, only 5–10% of all cancer cases can be attributed to genetic defects, whereas the remaining 90–95% have their roots in the environment and lifestyle. And according to the Associated Press, smoking is responsible for about 30% of all cancer-related deaths. Obesity ranks second, at 14% and 20% for men and women, respectively. As you browse the seven volumes in this series, you can see how many controllable factors contribute to the vast majority of cancers.

So, doesn't it make sense that the best way to keep from becoming a victim is prevention? Then why do so many people ignore this simple strategy? Laziness, denial, inertia? The simple fact is you can avoid most cancers. And if you do get cancer, your most effective path to cure is catching it in its early stages.

Adopting the seven-step protocol in this series will improve your odds dramatically. You have more than a 35% chance of becoming a cancer victim if you follow the crowd and don't take preventative measures.

Most victims don't know they have it until it's too late for effective treatment. Once you show symptoms, the cancer may have been growing inside you for years. Symptoms are often a death sentence with painful agonizing treatment offering you the most hope. Sometimes the treatment is worse than the disease. Cancer is a nasty mess that you want to avoid or detect early at all costs.

So, my second-best advice is to have your cancer detected early if you do get stricken. Stage I cancer survival rates are excellent, about 90%. Stages III and IV are a dismal 10%. So, see your physician for early warning signs. Most cancers are hard to detect until you see symptoms though, and then it may be too late. That's why prevention is critically important. Currently, the Canary Foundation and others are hard at work developing sophisticated early detection tests such as blood biomarkers samples and ultrasound imaging.

## *Stay Tuned for Breaking Longevity News*

From time-to-time, we discover validated nutritional supplement breakthroughs. If you would like to be among the first to be notified when they are released, please go to [www.MaxLifeSolution.com](http://www.MaxLifeSolution.com) and to [www.MaxLife.org](http://www.MaxLife.org) for general longevity advances.

Next, *Volume 4 – Anti-Aging Medicine Can REVERSE Your Aging Process* opens your eyes to the way your doctor should be treating you now and how medicine will be practiced in the future. And remember to subscribe to our weekly newsletter, *Longevity News Alert*, for breaking longevity news and advice.

Maximum Life Foundation: [www.MaxLife.org](http://www.MaxLife.org)