

13 Most Common Nutrient Deficiencies

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✓ Fact Checked

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STORY AT-A-GLANCE

- › If you eat a balanced, whole-food diet, you're probably getting adequate amounts of the vitamins and minerals your body needs to function. If not (and this applies to the majority of the U.S. population), there's a good chance you may be lacking important nutrients
- › 13 of the most common nutrient deficiencies include vitamins D, omega-3 fats, vitamin K2, magnesium, vitamins A, B12, C and E, iodine, niacinamide, glycine, choline and coenzyme Q10
- › Even if you do eat well, how and where your food was grown can also influence your nutritional intake. Eating real food is usually your best bet, but sometimes supplementation may be advisable, especially if you're showing signs of deficiency

If you eat a balanced, whole-food diet you're probably getting adequate amounts of the vitamins and minerals your body needs to function. If not (and this applies to most of the U.S. population), there's a good chance you may be lacking important nutrients.

Even if you do eat well, how and where your food was grown can also influence your nutritional intake. Soil quality, storage time and processing can significantly influence the levels of certain nutrients in your food. Your age and certain health conditions (digestive issues and others) can also impact your body's ability to absorb the nutrients in your food.

Unfortunately, in many cases nutrient deficiencies can be difficult to assess, and you may not develop symptoms until the deficiency has become quite pronounced.

Below, I will review 13 of the most common nutrient deficiencies¹ in no particular order, and how to address them. Eating real food is usually your best bet, but sometimes supplementation may be advisable, especially if you're showing signs of deficiency.

Vitamin D

Vitamin D deficiency is prevalent in people of all ages, especially in the elderly, those with darker skin, and those who choose to use topical sun screens (which blocks vitamin D production) or limit their outdoor activities.

Signs indicating you may have a vitamin D deficiency include obesity, achy bones, feeling blue, head sweating and poor immune function. It's now known that vitamin D is necessary not only for healthy bones but for health throughout the body.

As a powerful epigenetic regulator, vitamin D influences the activity of more than 2,500 genes, and vitamin D receptors are present all over your body, including in your intestine, pancreas, prostate and immune system cells.

Vitamin D has also been found to play a role in numerous diseases, including cancer, diabetes, acute respiratory tract infections, chronic inflammatory diseases, and autoimmune diseases such as multiple sclerosis (MS).²

Your best bet is to get your vitamin D level tested twice a year. Based on the evaluation of healthy populations that get plenty of natural sun exposure, the optimal range for general health appears to be somewhere between 60 and 80 ng/mL (150 to 200 nmol/L).

As for how to optimize your vitamin D levels, I firmly believe that sensible sun exposure is the best way, although vitamin D-rich foods and D3 supplements may also be necessary if you cannot get adequate sun exposure year-round.

To optimize your levels, you need to expose large portions of your skin, such as your back, chest, legs and arms, to the sun, ideally as near to solar noon as possible.

During this time, you need the shortest exposure time to produce vitamin D because UVB rays are most intense. Plus, when the sun goes down toward the horizon, the UVB is filtered out much more than the dangerous UVA.

Just be cautious about the length of your exposure. You only need enough exposure to have your skin turn the lightest shade of pink. Once you reach this point your body will not make any additional vitamin D due to its self-regulating mechanism. Any additional exposure will only cause harm and damage to your skin.

Niacinamide

Niacinamide is a form of niacin (vitamin B3) that plays a vital role in producing energy in your mitochondria, as it's required for the proper functioning of the electron transport chain. Without it, your mitochondria simply cannot make energy efficiently.

“ Nicotinamide increases NAD+, which is tightly correlated with total ATP production. It is the rare person that will not respond favorably to this simple intervention for increasing NAD+. ”

The older name of niacinamide is nicotinamide but it was switched because too many people confused it with nicotine. Niacinamide increases NAD+, which is tightly correlated with total ATP production.

Because of its effects on energy production and NAD+, niacinamide can be useful in the prevention and/or treatment of a long list of chronic conditions, including obesity,^{3,4} insulin resistance and diabetes,^{5,6} neurodegeneration⁷ and neurological conditions such as Alzheimer's and ischemic stroke,^{8,9} heart failure,^{10,11} leaky gut,^{12,13} glaucoma,^{14,15} declining testosterone levels,^{16,17} cancer,^{18,19} kidney disease,²⁰ alcoholic- and nonalcoholic liver disease,^{21,22} and COVID-19.²³

Niacinamide also has anti-lipolytic effects, as NAD⁺ inhibits the release of inflammatory polyunsaturated fats (PUFAs) such as linoleic acid (LA) from your fat cells. This is a good thing, because when LA is released from your fat cells it is metabolized into highly inflammatory molecules, so you want to release it from your cells very gradually.

As a blanket recommendation for optimal health, I recommend taking 50 mg of niacinamide three times per day. It is the rare person that will not respond favorably to this simple intervention for increasing NAD⁺.

Vitamin K2

Vitamin K2 may be just as important as vitamin D for optimal health. It's essential for bone strength, the health of arteries and blood vessels, and plays a role in other biological processes as well, including tissue renewal and cell growth, healthy pregnancy, and cancer prevention.

In the 2014 paper,²⁴ "Vitamin K: An old vitamin in a new perspective," vitamin D expert Dr. Michael Holick and co-authors review the history of vitamin K and its many benefits, including its significance for bone and cardiovascular health.

Vitamin K2 is an important adjunct to vitamin D, without which vitamin D cannot work properly. K2's biological action is also impaired by a lack of vitamin D, so you really need to consider these two nutrients together. Vitamins D and K2 also work synergistically with magnesium and calcium, so this quartet should ideally be taken in combination.

Whereas vitamin K1 – which is the primary form of vitamin K responsible for blood clotting – can be found in green leafy vegetables, vitamin K2 is only present in fermented foods. It's produced by certain bacteria during the fermentation process.

Examples of foods that are naturally high in vitamin K2 include natto (a fermented soy product) and fermented vegetables like sauerkraut. One of the best sources I've found is to ferment your own vegetables using a special starter culture designed with bacterial strains that produce vitamin K2.

Raw dairy products such as certain cheeses, raw butter, and kefir also contain high amounts. However, only grass-fed animals (not grain fed) will develop naturally high K2 levels.

Menaquinone-7 (MK-7) is the kind of vitamin K2 you want to look for in supplements, as this form is extracted from real food. The other type of K2, known as MK-4, is only available in synthetic form, which has the additional drawback of having a very short biological half-life, necessitating taking it several times a day.

Additionally, it is important to understand that vitamin K2 is a quinone and, like methylene blue, another quinone, has important effects in the mitochondria and can reduce reductive stress and increase ATP production.

Omega-3 Fats

Omega-3 fats play a crucial role in the health and functionality of your cell membranes and the membranes of your mitochondria. June 25, 2023, I posted an [interview with Nils Hoem](#), Ph.D., in which we took a deep dive into this.

Membranes are lipid structures made of phospholipids and other constituents. The foods you eat provide the raw material substrate that is then assembled into the mitochondrial and cellular membranes, which is why the type of fats you consume is so important.

There are two polyunsaturated fats (PUFAs) that are considered essential in conventional medicine. One of them is the omega-6 linoleic acid (LA). The reality though is that if you eat food, you are getting more than enough LA in your diet so there is rarely ever a need to intentionally consume LA as I discuss in my recent [LA article](#). The other is omega-3 alpha-linolenic acid (ALA). Your body cannot make these fats, so you have to get them from your diet.

Others, such as the omega-3 EPA and DHA, can be synthesized in your body, provided you have enough delta-6-desaturase and elongase enzymes. The problem is that there's competitive inhibition for these enzymes, and when you have 10-fold more omega-6 in

your system – which many have due to eating high amounts of processed foods – then they will be used to convert the omega-6 into arachidonic acid, instead of converting the ALA into EPA.

In short, because processed foods are so loaded with omega-6 fats, it radically skews your omega-3 to omega-6 ratio and inhibits your body's innate ability to synthesize EPA and DHA. If you reduce your LA intake to historical norms, then there's not this competition for delta-6. And if you have a baseline level of the omega-3 ALA, then you can make substantial amounts of DHA and EPA and don't need supplements.

Telltale signs that your omega-3 to omega-6 ratio may be out of balance include dry, flaky skin, alligator skin, or "chicken skin" on backs of arms; dandruff or dry hair; soft brittle nails; fatigue; menstrual cramps, and poor attention span.

The ideal ratio of omega-3 to omega-6 fats is about 1:1, but the typical Western diet is between 1:20 and 1:50, so in addition to upping your omega-3 intake, you also need to reduce the amount of omega-6 in your diet, which means cutting down on processed and fried foods.

Fatty fish like wild-caught salmon, mackerel, sardines and anchovies are all excellent sources of omega-3 fats. If you decide to take omega-3s in supplement form, I believe krill oil is superior to fish oil. The omega-3 in krill is attached to phospholipids that increase its absorption, which means you need less of it.

Krill oil also contains almost 50 times more astaxanthin, a potent antioxidant, than fish oil, which prevents the highly perishable omega-3 fats from oxidizing before you are able to integrate them into your cellular tissue.

Magnesium

Magnesium is the fourth most abundant element in your body²⁵ and one of the seven essential minerals we cannot live without.²⁶ It is involved in hundreds of biochemical reactions in the body,²⁷ and deficiency can contribute to significant health problems.²⁸ It

is necessary for the healthy functioning of most cells, and especially your heart and muscles.²⁹

Low levels can impede cellular metabolic function and mitochondrial function. According to one scientific review,^{30,31} which included studies dating as far back as 1937, low magnesium appears to be the greatest predictor of heart disease. Research published in 2017³² shows even subclinical magnesium deficiency can compromise cardiovascular health.

Magnesium is a necessary component for the activation of vitamin D³³ and deficiency can hamper your ability to convert vitamin D from sun exposure or oral supplements. Magnesium also plays a role in your body's detoxification processes and therefore is important for minimizing damage from environmental chemicals, heavy metals and other toxins.

Even glutathione, considered by many to be your body's most powerful antioxidant, requires magnesium to be produced. Magnesium is also required to activate tyrosine kinase, an enzyme that functions as an "on" or "off" switch in many cellular functions and is required for the proper function of your insulin receptors.

Indeed, low magnesium levels are consistently found in those with elevated insulin.^{34,35,36} Finally, magnesium is mostly stored in your body by binding to ATP. If you are deficient in magnesium, you will be unable to generate ATP effectively as it requires magnesium to form ATP.

There's no easily available commercial lab test that will give you an accurate reading of your magnesium status, so you usually must gauge your status based on symptoms. Common signs associated with low magnesium include nausea, constipation, headaches, nighttime leg cramps, numbness or tingling in extremities, general body weakness, tremors and heart palpitations.³⁷

The recommended daily allowance (RDA) for magnesium is between 310 mg to 420 mg per day, depending on your age and gender.³⁸ Some researchers believe you may need

as much as 900 mg per day for optimal health.³⁹ However, I believe many may benefit from as much as 2 grams (2,000 mg) per day.

However, before taking any magnesium supplement, be sure to consult with your health care practitioner, especially if you have kidney disease. Pregnant or nursing women should also consult their physician before using magnesium supplements.

If you do opt for a magnesium supplement, two of the best ones are magnesium glycinate and magnesium threonate. The former is a chelated form of magnesium that tends to provide the highest levels of absorption and bioavailability.

This form is typically considered ideal for those who are trying to correct a deficiency. Magnesium threonate is a newer type that appears promising, primarily due to its superior ability to penetrate the mitochondrial membrane.

You can also improve your magnesium status by taking regular Epsom salt baths or foot baths. Epsom salt is a magnesium sulfate that can be absorbed into your body through your skin. Magnesium oil (from magnesium chloride) can also be used for topical application and absorption. You can learn more about the health benefits of magnesium in “Why Magnesium Is a Cornerstone Mineral for Health.”

Vitamin B12

Vitamin B12 (cobalamin) is known as “the energy vitamin.” Your body requires it for a variety of functions, including energy production, blood formation, DNA synthesis and myelin formation.

It also plays an important role in neurological function, and deficiency can culminate in a range of mental health symptoms, from irritability and depression to dementia and even psychosis. You can learn more about vitamin B12’s role in mental health in this [November 6, 2022 article](#).

The two ways you become deficient are through a lack of vitamin B12 in your diet, or through your inability to absorb it from the food you eat. Warning signs of B12

deficiency include brain fog, memory lapses, mood swings, apathy, fatigue, muscle weakness and tingling in the extremities. Unfortunately, B12 deficiency may not present itself for several years, so by the time you notice symptoms, you may be quite deficient.

Vitamin B12 is present in natural form only in animal sources of food, which is one of the reasons I advise against a no animal food vegan diet. B12-rich foods include beef and beef liver (grass-fed beef is highly preferable to the grain-fed variety), lamb, snapper, venison, salmon, shrimp, scallops, organic pastured poultry and eggs.

When it comes to supplementation, your best alternatives include injectable B12 and sublingual drops or spray. Most oral supplements tend to be ineffective, as vitamin B12 is poorly absorbed.

Vitamin E

The primary reason why virtually everyone needs to be on a small dose of vitamin E is that it is highly protective on preventing the LA that is stored in your tissues from being oxidized into dangerous toxic byproducts.

Since most people are walking around with stores that are 10 times higher than normal and excess LA is likely one of the primary, if not the most important contributor to chronic disease, it is ideal to take vitamin E regularly until you can get your LA down to healthy levels in about six years.

You can see [my recent LA article](#) for more details, but after your LA levels are normal you probably can reduce your vitamin E to a few times a month as it is a fat soluble, vitamin and stores in your fat tissue.

Like vitamin B12, vitamin E is important for brain health, and studies have found it can help delay the loss of cognitive function in people with Alzheimer's disease. As explained by lead author Maret Traber:⁴⁰

"This research showed that vitamin E is needed to prevent a dramatic loss of a critically important molecule in the brain and helps explain why vitamin E is

needed for brain health. Human brains are very enriched in DHA, but they can't make it. They get it from the liver.

The particular molecules that help carry it there are these lyso PLs, and the amount of those compounds is being greatly reduced when vitamin E intake is insufficient.

This sets the stage for cellular membrane damage and neuronal death. There's increasingly clear evidence that vitamin E is associated with brain protection, and now we're starting to better understand some of the underlying mechanisms."

Vitamin E also protects against free radical damage and the normal effects of aging. The term "vitamin E" refers to a family of at least eight fat-soluble antioxidant compounds, divided into two main categories: tocopherols (which are considered the "true" vitamin E) and tocotrienols, each of which has subfamilies of four different forms.

Ideally, vitamin E should be consumed in the broader family of mixed natural tocopherols and tocotrienols, (also referred to as full-spectrum vitamin E) to get the maximum benefits. The vitamin E most often referred to and sold in most stores is a synthetic form of the vitamin, which really should not be used if you want to reap any of its health benefits.

You can tell what you're buying by carefully reading the label. Natural vitamin E is always listed as the "d-" form (d-alpha-tocopherol, d-beta-tocopherol, etc.) whereas the synthetic vitamin E is listed as "dl-" forms.

The best way to ensure that your body is getting the full spectrum of vitamin E, in a form your body can beneficially use, is to make smart dietary choices. Good dietary sources of vitamin E include hazelnuts, almonds, walnuts and pecans, sunflower seeds, genuine olive oil, legumes and green vegetables such as spinach and broccoli.

Vitamin A or Retinol

Vitamin A is an essential fat-soluble vitamin that is important for maintaining healthy skin, teeth, bones, cell membranes and vision. Vitamin A, like vitamin D, is also essential for your immune system. It's a precursor to active hormones that regulate the expression of your genes, and vitamin A and D work in tandem.

For example, there is evidence that without vitamin D, vitamin A can be ineffective or even toxic. But if you're deficient in vitamin A, vitamin D cannot function properly either, so a balance of these two vitamins is essential. Unfortunately, we do not yet know the optimal ratios between these two vitamins, which is why it's best to get them from food and sun exposure, rather than relying on supplements.

It's also important to understand the difference between retinol and beta-carotene. It should not be confused with beta-carotene, which is pre-vitamin A and frequently incorrectly labelled as vitamin A on many nutrition labels.

Both are important forms of vitamin A, but it can be very difficult to get enough vitamin A from beta-carotene alone. Unless your intestinal health is top notch, and you eat your veggies with healthy fat, getting your vitamin A in the form of retinol from organic animal products is your best bet, and here's why:

- **Retinol** is preformed vitamin A, found in animal products such as grass-fed meat and poultry, liver, fish, and raw organic dairy products like butter. This is the form of vitamin A your body can use.
- **Beta-carotene** is pre-vitamin A, found in plant foods like fruits and vegetables. To use beta-carotene, your body must first convert it into retinol, and to do this, you need to have a well-functioning digestive tract and sufficient bile produced by your gallbladder. Specific enzymes are also needed to break down the carotene for the conversion into retinol to occur.

Most people have poor gut health, which makes beta-carotene a poor alternative as a primary source of vitamin A. Also, to optimize the usable amount of vitamin A from your vegetables, you need to eat them with a bit of healthy fat, since bile is produced to help break down fat in your diet.

Vitamin A production is tightly controlled in your body, the source (substrate) being carotenoids from vegetables in your intestine. Your body uses these carotenoid substrates to make exactly the right amount of retinol. When you take vitamin A as retinol directly, you intervene in this closed system and bypass your body's feedback controls.

Ideally, you want to provide all the vitamin A and vitamin D substrate your body would have obtained in a natural state, so your body can regulate both systems naturally. This is best done by eating colorful vegetables and by getting sensible sun exposure.

Iodine

Iodine is an important nutrient found in every organ and tissue, and deficiency, or insufficiency of iodine in any of these tissues will lead to dysfunction of that tissue. The following symptoms could provide clues that you're not getting enough iodine in your diet. For example, iodine deficiency in:

- **Salivary glands** = inability to produce saliva, producing dry mouth
- **Skin** = dry skin, and lack of sweat. Three to four weeks of iodine supplementation will typically reverse this symptom, allowing your body to sweat normally again
- **Brain** = reduced alertness and lowered IQ
- **Muscles** = nodules, scar tissue, pain, fibrosis and fibromyalgia

There are potentially serious risks to taking too much iodine, however, which is why I generally do not advise taking iodine supplements like Lugol's or Ioderol. Your thyroid only transports iodine in its ionized form (i.e. iodide). The jury is still out on whether iodine in supplemental form is safe, especially at higher doses.

As an alternative, sea vegetables and spirulina are likely the ideal natural sources from which to obtain your iodine. Raw milk and eggs also contain iodine. At the same time, you'll want to avoid all sources of bromine as much as possible, as this appears to play a large role in the rising levels of iodine deficiency.

Choline

Choline⁴¹ is a B vitamin known for its role in brain development. It's a precursor to the neurotransmitter acetylcholine, which plays a role in both muscle control and memory.

Choline is also important for the health of your cell membranes, energy production and metabolism, and has anti-inflammatory properties. Additional health benefits are reviewed in my December 28, 2022, article "[You Are Likely Deficient in Choline.](#)" It's a fairly long list. There, you'll also find more specifics on the daily recommended intake depending on age and sex.

An estimated 90% of the U.S. population may be deficient in choline.⁴² Some of the symptoms associated with low levels include memory problems, lethargy and persistent brain fog.

More serious choline deficiency is connected to the development of nonalcoholic fatty liver disease (NAFLD). The reason for this is because choline is involved in fat metabolism. When choline levels are low, you can end up with an overaccumulation of fat deposits in your liver.

Your body can only synthesize small amounts of this nutrient, so you need to get it from your diet. Animal foods like organic pastured egg yolks and beef liver are some of the best sources of choline, so if you're a vegan or vegetarian who does not consume any animal foods, you may be at particular risk of deficiency.

Other good sources of choline⁴³ include grass-fed beef, wheat germ, Brussel sprouts, broccoli, wild-caught salmon, raw milk, shitake mushroom, cauliflower and krill oil.

According to the Dietary Guidelines Advisory Committee (DGAC),⁴⁴ most multi-vitamin supplements do not contain enough choline. You can find supplements that contain only choline, but it's generally best to get what you need through a healthy diet.

Vitamin C

Vitamin C has a wide variety of effects, which can be generally classified into the following: genomic, epigenomic, transcriptomic, proteomic, metabolomic and immunomodulatomic.

Since 2000, when Dr. Ping Chen, a conventional oncologist, started publishing papers on the pharmacokinetics of vitamin C, a body of evidence has grown suggesting vitamin C's effects are as powerful as any drug. I like to refer to it as a pharmaco-mimetic, because while it does have drug-like effects, it's still a natural biological molecule that cannot be patented, and hence cannot be a drug.

To be clear, there are distinct differences between whole food vitamin C and ascorbic acid. They really have two different purposes. Whole food vitamin C is not suitable for the treatment of cancer, for example, but does wonders for general health support, as it interacts favorably with copper and iron in your cells and mitochondria. For cancer support, you'd need intravenous high-dose ascorbic acid, which has potent drug-like effects.

When you think of vitamin C, you're probably thinking it's an antioxidant, which is true, but in high doses only available through IV, it becomes a pro-oxidant, and that's what allows it to kill cancer cells and gives it its antiviral and antibacterial properties.

If you feel like you're coming down with an infection, such as a flu or cold, oral vitamin C is plenty adequate. Oral dosing of vitamin C, using a nonliposomal product, can double your blood level of vitamin C, and using liposomal vitamin C – which is what I've been recommending for years – can increase it three- to fivefold – up to about 300 micromolar. So, liposomal vitamin C can make a big difference.

Symptoms of vitamin C deficiency, known as scurvy, include corkscrew hairs, perifollicular hemorrhage and bleeding gums. If you cease all intake, the vitamin C in your body will be depleted in four to 12 weeks,⁴⁵ so it's important to get it from your diet on a regular basis.

The best sources are fruits and vegetables. The acerola cherry (Barbados cherry) contains the highest amounts of vitamin C of any food, providing anywhere from 1,500

mg to 4,500 mg of vitamin C per 100 grams, which is 50 to 100 times than that of orange or lemon.⁴⁶

Glycine

Glycine makes up nearly one-third of the amino acids in collagen, so collagen and gelatin are excellent sources. The reason so many aren't getting enough glycine from their diet anymore is because they don't eat foods made with collagen-rich connective tissue, only red meat.

Glycine helps reduce inflammation and oxidative damage by inhibiting the consumption of nicotinamide adenine dinucleotide phosphate (NADPH). NADPH is used as a reductive reservoir of electrons to recharge antioxidants once they become oxidized. Glycine also has cell-protective and anti-stress effects,⁴⁷ and can help improve sleep⁴⁸ and gut health.⁴⁹

While traditionally viewed as a non-essential amino acid, some have suggested it may be a "conditionally essential amino acid," as low glycine levels have been consistently observed in people with metabolic disorders and NAFLD.⁵⁰ Overall, evidence suggests many degenerative, inflammatory and metabolic diseases may be ameliorated by eating more gelatin-rich foods.

While my personal preference used to be grass fed organic collagen made from beef bones (not hide), I'm now leaning more toward powdered gelatin, as it's more easily digested. That said, I still believe the natural approach is best.

Making homemade bone broth using bones and connective tissue from grass fed, organically raised animals isn't very complicated and will produce the best results. If you prefer chicken broth, consider using organic chicken feet. The claws are particularly rich in collagen.⁵¹

Coenzyme Q10

CoQ10 is an oxidizing quinone that helps reduce reductive stress (improperly referred to as oxidative stress). Statin drugs reduce your liver's ability to synthesize CoQ10 and deplete your body of it. Considering more than 1 in 4 Americans are on a statin drug,⁵² many are likely very deficient in this crucial nutrient.

Ubiquinol is the reduced version of CoQ10. They're the same molecule, but when CoQ10 is reduced it takes on two electrons, which turns it into ubiquinol. In your body, this conversion occurs thousands of times every second inside your mitochondria.

Ubiquinol is particularly beneficial for your heart health, a marker for which is C-reactive protein. When your C-reactive protein level is elevated, it suggests you have a heightened risk for heart disease, as it's a marker for inflammation.

Two other markers for inflammation are gamma-glutamyl transferase (GGT), which is an early marker of heart failure, and NT-proBNP. There's an association between the levels of these two markers and ubiquinol as well. When ubiquinol is supplemented, both these markers go down and genes associated with them are downregulated.

Dosing requirements will vary depending on your individual situation and needs, but as a rule, the sicker you are, the more you need. Severely ill individuals may need as much as 600 mg per day. If you're just starting out with ubiquinol, start with 200 to 300 mg per day. Within three weeks your plasma levels will typically plateau to its optimum level.

After that, you can go down to a 100 mg/day maintenance dose per day. This dose is typically sufficient for healthy people. If you have an active lifestyle, exercise a lot, or are under a lot of stress due to your job or "life" in general, you may want to increase your dose to 200 to 300 mg/day.

If you're on a statin drug you need at least 100 to 200 mg of ubiquinol or CoQ10 per day, or more. To address heart failure and/or other significant heart problems you may need around 350 mg per day or more. Ideally, you'll want to work with your physician to ascertain your ideal dose.

Tips to Supercharge Your Diet

As much as possible, I recommend getting the nutrients your body needs from whole foods. This means minimizing processed foods and focusing on healthy fats, fresh produce, grass-fed meats and pastured poultry, organic free-range eggs, nuts, seeds, and ripe fruits and berries.

There are a few tricks to get copious amounts of nutrients with little effort. You'll still need to eat a variety of foods to get the wide range of nutrients your body needs, but the tips that follow will give you an excellent start:

- **Homemade bone broth** – Bone broth contains high amounts of calcium, magnesium, and other nutrients.
- **Sprouts** – Sprouts can contain up to 100 times more enzymes than raw fruits and vegetables, allowing your body to extract more vitamins, minerals, amino acids, and essential fats from the foods you eat.
- **Juicing** – Juicing not only helps you to consume more nutrient-rich veggies, it also helps you absorb the nutrients they contain. Juicing will help to "pre-digest" the veggies for you, so you will receive most of the nutrition, rather than having it go down the toilet.
- **Fermented foods** – Fermented foods support the beneficial bacteria in your gut, which helps with mineral absorption and plays a role in producing nutrients such as B vitamins and vitamin K2.

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