The 20 Most Important Supplements to Take

Analysis by Dr. Joseph Mercola Fact Checked March 24, 2023

Story at-a-glance

- Molecular hydrogen is a selective antioxidant, meaning it doesn't indiscriminately suppress free radicals but, rather, helps your body make the antioxidants it needs
- Glycine and NAC are glutathione precursors; your body uses glutathione to increase the effectiveness of antioxidants such as vitamin C, which is why it's known as the "master antioxidant"
- Magnesium is involved in the functioning of more than 300 enzymes, and many people are deficient
- The best supplements for you depend on your age, health status, diet and health goals
- I mention a bonus supplement at the end of the article

While dietary supplements cannot take the place of a healthy lifestyle, they can be used strategically to boost your health, especially in cases of deficiency. In the U.S., 57.6% of adults aged 20 and over use supplements, with multivitamins, vitamin D and omega-3 fats representing the top three.1 Another survey put the percentage of Americans using supplements at 86%.2

So, it's safe to say that many people are interested in taking control of their health with the support of supplemental vitamins, minerals and other compounds. But, when it comes to supplements, more isn't always better.

To ensure you're using only supplements you need — avoiding wasting your money while maintaining your body's balance — I recommend using dietary interventions first. Next, work with a holistic health care practitioner who can guide you on which supplements your body truly needs.

19 Supplements I Consider Essential

The best supplements for you depend on your age, health status and health goals. If having a practitioner guide you isn't possible, essential supplements may be next on your list — and I've compiled the list in rank order of what I believe to be the most important ones.

Some of the most important individual variables you need to consider would be if you are plant-based or choose to eat animal products. While many plant-based diets are fundamentally healthy, they do lack some vital nutrients, like vitamin B12, retinol, vitamin K2, carnosine, carnitine, collagen and choline. If you are plant-based, you will certainly want to consider adding these to your regimen.

1. Molecular Hydrogen (H_2)

Molecular hydrogen acts as a selective antioxidant, meaning it doesn't indiscriminately suppress free radicals. Rather, it's unique in that it helps your body make its own endogenous antioxidants. This is important because excessive use of antioxidants can be counterproductive, while molecular hydrogen serves as a redox regulator.

The H_2 molecule is the smallest in the universe, which allows it to diffuse through all cell membranes, including the blood-brain barrier and subcellular compartments, and into the mitochondria. According to Tyler LeBaron, Ph.D., it's been shown to have therapeutic benefits in more than 170 different animal disease models.3 While there's no risk of overdosing on molecular hydrogen, intermittent exposure produces the best results.

2. Vitamin D

Vitamin D has multiple actions on the immune system, including enhancing the production of antimicrobial peptides by immune cells, reducing damaging pro-inflammatory cytokines, and promoting the expression of anti-inflammatory cytokines.4

A recent study found giving vitamin D to people with COVID-19 cut risk of death from SARS-CoV-2 by 51% and reduced risk of admission to the intensive care unit (ICU) by 72%.5,6 Vitamin D also plays a role in heart disease, as it improves circulation and may be beneficial for high blood pressure. In addition, due to its effects on endothelial function, vitamin D may also help improve or prevent heart failure, heart attack, vasculopathy, stroke and diabetes.7

Ideally, optimize your vitamin D levels via sensible sun exposure, as there are many benefits to sun exposure even aside from vitamin D, such as increasing mitochondrial melatonin by near infrared (IR) exposure.

My vitamin D level is typically between 80 and 100 and I haven't taken any vitamin D supplements so you can get your levels high if you are disciplined about your sun exposure. Just be sure to make sure you are eating a very low linoleic acid (LA) diet as it is excessive omega-6 fats that virtually everyone consumes, that cause sun-induced skin cancers.

However, if getting healthy sun exposure simply isn't an option for you due to your location or lifestyle, daily vitamin D3 supplementation of 8,000 to 10,000 units is likely needed to reach a vitamin D level of 60 to 80 ng/mL.

Data from GrassrootsHealth's D*Action studies suggest the optimal level for health and disease prevention is between 60 ng/mL and 80 ng/mL, while the cutoff for sufficiency appears to be around 40 ng/mL. In Europe, the measurements you're looking for are 150 to 200 nmol/L and 100 nmol/L respectively.

The only way to gauge whether you might need to supplement, and how much to take, however, is to get your level tested, ideally twice a year — in the early spring and early fall — when your level is at its low point and peak, respectively. Make sure that your supplemental vitamin D intake is balanced with

other nutrients, including vitamin K2 (to avoid complications associated with excessive calcification in your arteries) and magnesium.

3. Niacinamide

NAD+ (nicotinamide adenine dinucleotide) is one of the most important biomolecules in your body. It's involved in the conversion of food to energy, maintaining DNA integrity and ensuring proper cell function. Together, these functions help protect against or delay aging and virtually all chronic disease.

NAD+ also acts as fuel for longevity proteins called sirtuins. Sadly, NAD levels dramatically decline with age, contributing to aging and chronic disease states. NAD is also used up by DNA repair enzymes and enzymes involved in inflammation and immunity, such that chronic inflammation, or acute illness in old age, can rapidly result in depletion.

To restore NAD_, you need to fix the root cause for NAD+ depletion, which primarily involves addressing the decline in the NAD salvage pathway. By increasing enzymes in that pathway, which decline with age, your body can recycle NAD_ like it did naturally when it was younger. For more information, please review my fantastic interview with molecular biologist Nichola Conlon, Ph.D.

In addition to optimizing NAD+ levels, it also blocks lipolysis which is important if you are the more than 99% of the population that have elevated linoleic acid (LA) levels. Reducing the release of LA from your tissues will lower the amount of oxidative stress in in your body.

Niacinamide, like progesterone, inhibits the production of nitric oxide, and also like progesterone, it improves recovery from brain injury and also:

Helps lowers stress	Lowers harmful free fatty acids	Protects against scar formation
Helps brain injuries	Supports immune function	Improves mitochondrial function
Reduces serotonin formation and/or accelerates it’s elimination	Reduces lipolysis	Protects against pathogenic prostaglandins
Supports glucose oxidation	Inhibits excess nitric oxide formation	

Niacinamide can also lower your triglycerides, which are a potent cardiovascular disease risk factor. It also has a direct anti-adrenaline effect and increases the oxidation of glucose which is your primary metabolic fuel.

The best way to supplement niacinamide is by taking a very low dose of 50 mg three times a day. This is an order of magnitude less expensive than taking NAD precursors like nicotinamide riboside or nicotinamide mononucleotide to increase NAD+ levels.

Please do NOT take high doses like 500 mg or even 1,000 mg, because taking more is not better and will be highly counterproductive as higher doses will impair your sirtuin longevity proteins.

You can purchase a niacinamide powder and take one-sixty-fourth of a teaspoon three times a day or take a 50 mg niacinamide tablet three times a day. Because a 50 mg niacinamide tablet currently is not being made commercially, we will be launching one very soon.

4. B Complex

Vitamin B complex is important for your health because it's involved in a wide range of bodily functions and processes including cell health and the growth of red blood cells, energy levels, eyesight, brain function, digestion and appetite, proper nerve function, hormones and cholesterol production, and cardiovascular health.

B vitamins have a direct impact on your energy levels, brain function and cell metabolism. Vitamin B complex help support or promote cell health, growth of red blood cells, energy levels, eyesight, brain function, digestion, appetite, proper nerve function, and cardiovascular health and may help prevent infections.

Vitamin B complex is also important for pregnant women as it helps to form the neural tube, which is the precursor to the baby's brain and spinal cord. It also helps to prevent birth defects of the baby's brain and spine. It is important to note that vitamin B complex is water-soluble, which means it is not stored in the body and needs to be taken more than once a day.

5. Magnesium

Magnesium is necessary for the healthy functioning of most cells, especially your heart, kidneys and muscles. It's involved in the functioning of more than 300 enzymes,8 and low levels of magnesium impede cellular metabolic function and deteriorate mitochondrial function.

Magnesium is also required for the activation of vitamin D, and deficiency may hamper your ability to convert vitamin D from sun exposure and/or oral supplementation. Unfortunately, deficiency is common and rarely diagnosed.9

When it comes to oral supplementation, my personal preference is magnesium threonate, as it appears to be the most efficient at penetrating cell membranes, including your mitochondria and blood-brain barrier. Magnesium is also absorbed through your skin, so you can use a topical solution or take Epsom salt (magnesium sulfate) baths to increase your levels.

6. Vitamin E

Vitamin E is a fat-soluble antioxidant that I believe is important for nearly everyone to take. Why? Because it limits the production of very dangerous free radicals from the metabolism of the omega-6 fat, linoleic acid (LA), which virtually everyone reading this has too much of. It does this by inhibiting lipolysis, or the release of the stored LA in your tissues.

While exercise and fasting are wonderful tools to improve your health, the downside is that virtually everyone has too much LA in their tissues and both of these strategies will increase lipolysis of LA stored in your tissue and produce loads of free radicals and oxidative stress.

Vitamin E not only can prevent oxidative stress from too much LA, but it may also help your body convert this dangerous fat to a non-dangerous saturated fat. Bacteria in your intestine can use vitamin E to saturate the LA. So, vitamin E can actually transform the polyunsaturated fat rather than just protect against it after effects.

Vitamin E is an aromatase inhibitor, which means it blocks the enzyme that converts androgens like testosterone to estrogen, which is useful in reducing the risk for many cancers, especially breast and prostate cancers. Not only does it prevent the production of estrogen, but it also detoxifies xenoestrogens from synthetic chemicals.

Vitamin E is an iron chelator and can also remove age spots or liver spots and scars on your skin if applied topically. It does this because it is an iron chelator. Another term for liver spots is lipofuscin, which is an accumulation of oxidized fats like LA and iron.

While cosmetically unattractive, removing lipofuscin spots is key because what you see on your skin is the tip of the iceberg. They are also in your tissues and organs and will contribute to premature aging. Thankfully, taking vitamin E orally seems to help lower lipofuscin levels. Vitamin E also lowers prolactin, which helps counteract high estrogen levels which tends to increase fertility. Finally, it also blocks adrenaline and reduces cortisol and inflammation.

All of these are major reasons why I am huge fan of vitamin E and believe most people would benefit by taking it. However, you just need to be very careful in selecting your vitamin E supplements as most on the market are counterproductive. Natural vitamin E is a family of eight different compounds: four tocopherols and four tocotrienols. If you eat certain wholesome foods, all eight of the different vitamin E compounds are naturally available.

So, please be careful and make sure to avoid all synthetic vitamin E supplements. You also want to make sure that it has no soy oil in it as soy is typically a GMO, loaded with glyphosate and high in LA.

Your vitamin supplement should have all tocopherols (alpha, beta, gamma and delta) with the majority of tocopherol as alpha. Similarly, it should have balance tocotrienols (alpha, beta, gamma and delta). The most common vitamin E supplement on the market is made from GMO soy, is synthetic and only has alpha tocopherol with no other isomers and has no tocotrienols. You definitely don't want to use supplements like that.

7. Vitamin C (Not Ascorbic Acid)

Vitamin C is a powerful antioxidant that can strengthen your body's natural defenses. It may reduce your risk of chronic disease, including protection against immune system deficiencies, cardiovascular disease, prenatal health problems, eye disease and even skin wrinkling.

Vitamin C plays an essential role in your body, particularly for skin and immune health. It also boosts collagen production and helps protect your skin from UV damage. Some research has found that supplementing with vitamin C can shorten the duration of a cold and may help prevent and treat other infections, such as tetanus and pneumonia.

There are basically two types of vitamin C: that derived from whole foods with all the vital and important micronutrients and synthetic ascorbic acid. They both are important and serve crucial biological roles.

The best of the synthetic ascorbic acid would by liposomal forms as they can more easily penetrate cell membranes, especially when needed in large doses as when treating an acute infection, sepsis or cancer. However, it is best to avoid taking synthetic ascorbic acid daily as this can impair copper utilization by your mitochondria.

It is better to take whole food vitamin C daily as this will support the integration of copper into the electron transport chain in your mitochondria and allow you to generate cellular energy more efficiently. Ideally this can be in the form of fruits that are high in vitamin C, like oranges, tangerines, amla (also known as gooseberry) and, my favorite, acerola cherries. It is best to take it a few times a day as vitamin C is water soluble.

8. Probiotics

If you don't eat fermented foods on a regular basis, a probiotic supplement can be useful for maintaining your gut health and microbial diversity. Your gut microbiome affects nearly all your physiological systems, but gut microbial diversity decreases with age.10

For each gram-per-day increase in the average national consumption of fermented vegetables, the mortality risk for COVID-19 decreased by 35.4% in one study.11 Beneficial bacteria found in fermented foods may even be effective for suppressing colon cancer,12 while your mental health is also affected.

One randomized controlled trial demonstrated that high-dose probiotic supplementation is beneficial for people with depression,13 while Lactobacillus has been found to produce gamma aminobutyric acid (GABA), a neurotransmitter that inhibits excessive neuronal firing, helping to induce a natural state of calm,14 in animal studies.15

9. Omega-3 Fat as DHA and EPA

Omega-3 fats are important for brain health, warding off autoimmune disease16 and decreasing mortality from cardiovascular disease, while also reducing heart attacks and coronary heart disease events.17 An omega-3 index test is one of the most important annual health screens that everyone needs, and it's a more important predictor of your heart disease risk than your cholesterol levels.

Even research supported by the National Institutes of Health suggests an omega-3 test is a good predictor of overall health and all-cause mortality.18,19 The ideal sources for EPA and DHA omega-3s

include cold-water fatty fish, like wild-caught Alaskan salmon, sardines, herring and anchovies. If you do not eat these fish on a regular basis, consider taking a krill oil supplement.

Fish oil is among the most popular supplements in the U.S. Globally, the fish oil market was valued at $1.9 million in 2019, with estimates suggesting this will rise to $2.8 million by 2027.20 Many of these dollars may be wasted, however, due to a chemical process that leaves many fish oil supplements lacking in actual EPA and DHA.

The issue with most fish oil supplements is the chemical process used — trans-esterification — which transforms the oil into a synthetic product that's far removed from the oil you'd get when eating fish or a high-quality cod liver oil.

When you eat fish or a high-quality cod liver oil, the omega-3 is in a triglyceride form. However, the omega-3s in most all fish oil supplements are in an ethyl ester which is essentially a synthetic substrate, created through the micro distillation process of crude fish oil, in which ethanol and/or industrial alcohol is added. This mix is heat distilled in a vacuum chamber, resulting in a concentrated omega-3 ethyl ester condensate.

The problem with ethyl esters is they're the least bioavailable form of omega-3. Manufacturers could convert them back into the triglyceride form by detaching the ethyl alcohol molecule and reattaching a glycerol molecule in a process known as re-esterification,21 but most don't because it's so costly.

Additionally, not only does this molecular distillation process remove vital resolvins and protectins that are important in reducing inflammation, but it also concentrates the EPA and DHA. You can tell the concentration of these two fats in any given supplement by looking at the label. In fish, the oil consists of 20% to 30% EPA and DHA, whereas purified fish oil concentrate typically contains between 60% and 85% EPA and DHA.22

In my view it is best to avoid most omega-3 supplements as there are many dangers with them. Krill or a high-quality cod liver oil are some of the best choices I know of, but you must be careful here also, as most are very low quality and add synthetic vitamin A and D into the oil.

Krill oil stands out in this regard, however. It's more bioavailable because the EPA and DHA are bound in a phospholipid form, allowing you to take lower doses while still reaping similar results. Research also suggests krill oil alleviates oxidative stress and iron accumulation, such that it could be used as a treatment for toxicity caused by iron overload.23

10. L-Glycine

I personally take a teaspoon (about 5 grams) of glycine twice a day, in the morning and before bed. Glycine is an amino acid and is an important methyl-group donor. Methyl groups are found in DNA, where they play a role in cellular reactions. Glycine helps protect against intracellular calcium overload and hypoxia and has anti-inflammatory effects.

In addition to supporting brain function,24 supplemental glycine may be useful for the "prevention and control of atherosclerosis, heart failure, angiogenesis associated with cancer or retinal disorders

and a range of inflammation-driven syndromes, including metabolic syndrome."25 Importantly, glycine is also a glutathione precursor, discussed below. Ray Peat has shown that glycine is:

Anti-excitatory	Anti-stress	Anti-inflammatory
Anti-Serotonin	Anti-estrogenic	Improves learning & memory
Promotes recovery from strokes & seizures	Cell protective	Promotes wound healing
Inhibits tumor formation	Inhibits lipolysis	

11. N-acetylcysteine (NAC)

NAC, a form of the amino acid cysteine. It's most well-known to help increase glutathione and reduce the acetaldehyde toxicity26 that causes many hangover symptoms. Anyone who overdoses on acetaminophen (Tylenol) also receives large doses of NAC in the emergency room, as it helps prevent liver damage by increasing glutathione.

NAC can be combined with glycine (known as GlyNAC) for even more benefits. In a pilot trial of older adults, GlyNAC supplementation for 24 weeks corrected glutathione deficiency and improved multiple measures of health, including:27

Mitochondrial dysfunction	Oxidative stress	Inflammation
Endothelial dysfunction	Insulin resistance	Genomic damage
Cognition	Strength	Gait speed
Exercise capacity	Body fat levels	Waist circumference

12. Quercetin

Quercetin, an antioxidant flavonol found in foods such as onions, apples, plums and green tea, is a natural antiviral28 which helps drive zinc into the cells to stop viral replications. It also combats inflammation and works as a natural antihistamine. A number of studies have also shown quercetin, when used early, also lowers your risk of hospitalization and death from COVID-19,29 and improves clinical outcomes.

Quercetin is one of the supplements I recommend keeping in your medicine chest for times when you feel you're "coming down" with something, be it the common cold or influenza. This is because it helps drive zinc ions into your cells, which then serves to halt replication of the virus that you are infected with.

Like vitamin E, quercetin also chelates iron. Like niacinamide, it also increases NAD+ levels but through a different mechanism. Rather than serving as a substrate to make NAD+, it helps to activate the rate limiting enzyme in the NAD+ salvage pathway, NAMPT, thus increasing NAD+ levels. Finally, it can also help with nonalcoholic fatty liver disease (NAFLD).

Plant-Based Diets Essential Supplements

If you are eating a plant-based diet or you do eat animal foods but are avoiding any organ meats, which are some of the most nutrient dense foods that we know of, then please seriously consider adding these supplements to your regimen.

13. Vitamin B12

Vitamin B12 is likely the most important nutrient that is missing from a plant-based diet and it is absolutely essential that you take it if you choose not to eat animal foods. Left undetected and unaddressed, a vitamin B12 deficiency can lead to fatigue, muscle weakness, intestinal issues, limited nerve development, mood disturbances and much more.

But it is not only vegetarians that can be deficient in this important B vitamin. There are three factors are involved in the widespread B12 deficiency we're seeing today:

- Many people don't have enough stomach acidity due to lower levels of pepsin secretion to release the vitamin B12 from dietary proteins.
- Factory-farmed meat and poultry (the most common types consumed today) contain lower levels of vitamin B12.
- Insufficient production of intrinsic factor, a special protein, required for B12 to be absorbed in your small intestine may be the result of aging or an autoimmune condition.

Your body needs vitamin B12 to make red blood cells, maintain nerves, produce DNA and to carry out essential functions for your heart, arteries and veins, nervous system, brain and cognitive function. There's no way you can enjoy optimal health without adequate B12 levels.

When you supplement with vitamin B12 be sure to choose the more biologically active, methylcobalamin, or "methyl B12," is the most bioavailable and most absorbable form of vitamin B12. Avoid using the most common form of B12, cyanocobalamin.

14. Retinol (Vitamin A)

Retinol, also known as Vitamin A, is a fat-soluble vitamin that is essential for many bodily functions, including vision, growth, cell division, reproduction and immunity. It is not to be confused with beta-carotene. Even though many nutritional labels conflate the two, they are completely different. Since many are unable to easily convert beta-carotene to vitamin A, it is important to make sure you are getting retinol not beta-carotene.

Vitamin A is necessary for producing hemoglobin, the protein in your red blood cells that transports oxygen. It is necessary to properly recycle and make copper available in your mitochondrial electron transport chain for energy production. It is also necessary for your body to produce two vitally important hormones, progesterone and pregnenolone and has ant-estrogenic properties. It is also helpful for male fertility.

One of the most important benefits of retinol would be to help your body's immune system and natural defense against illness and infection to work optimally. It also works synergistically with vitamin D with many similar benefits. Also, like vitamin E, retinol has anti-estrogenic properties.

Retinol is responsible for making the pigments in your eye's retina, improves your vision and promotes good night vision. It also can help protect against cancer. It likely also improves skin health and helps keep your skin moist, and may help reduce the risk of skin and other cancers. Doses are typically from 5,000 to 10,000 I.U.s.

15. Copper

Copper is an essential mineral that plays a vital role in many bodily functions, including the production of red blood cells, the absorption of iron and the maintenance of nerve cells. Most importantly, it is vital to the proper functioning of your mitochondria so you can generate enough ATP.

Copper and its master protein, ceruloplasmin, are instrumental for mitochondrial function. Ceruloplasmin is what drives the copper into the mitochondria, and each mitochondrion needs about 50,000 atoms of copper to do its work.

There are five cytochrome complexes embedded in your inner mitochondrial membranes. Their purpose is to shuttle electrons created from the food you eat that is ultimately converted to acetyl-CoA to produce ATP. If these complexes are deficient in copper, you will not be able to generate enough cellular energy.

Despite its bad rap, most people are deficient in copper. To raise your copper level, you could use a copper bisglycinate supplement (about 4 to 8 mg), or foods like grass fed beef liver, and whole food vitamin C that has the enzyme tyrosinase which is loaded with copper. For additional information please review my podcast with Morley Robbins.

16. Zinc

Zinc plays many roles in your body. It is required for the healthy functioning of all your cells, tissues, organs and bones. Zinc is the second most abundant trace mineral in your body, coming in just after iron. It's found in foods like beef, poultry, shellfish and mushrooms.

Zinc deficiency is not just an issue with vegetarians, but for those with GI and digestive disorders who can experience decreased zinc absorption. Those who eat seeds, grains, nuts and legumes that are loaded with phytates which can bind zinc and also prevent absorption, may also be deficient. Pregnant

and nursing women require higher levels of zinc and those with excessive alcohol consumption also need extra zinc to metabolize the alcohol.

Researchers have discovered hundreds of ways zinc supports health in your body, and every year, they continue to discover more. In the last decade alone, there have been tens of thousands of studies investigating the roles zinc plays in promoting good health.

Zinc provides support for immune function, healthy cell growth, respiratory health and healthy metabolism. It also helps support brain health and healthy function of your taste, smell and vision.

One of the biggest challenges with zinc for people of any age is that zinc isn't stored in your body, so you must consume the amount your body needs each and every day which is about 15 mg. If you are eating sufficient animal protein or organs, you should not need to supplement unless you are sick, as supplemental zinc can be quite useful to limit viral replication especially if taken with quercetin.

17. Vitamin K2

Vitamin K2 is needed to activate the protein osteocalcin, which is found in your bones. Without vitamin K2, this and other vitamin K2-dependent proteins remain inactivated, and cannot perform their biological functions.30 Vitamin K2 also facilitates the transfer process of calcium from your arteries to your bone. Without it, your risk of arterial calcification increases. It does this by increasing the production of an important hormone for bone health, osteocalcin.

In one study, those who consumed foods with the highest amount of vitamin K2 were less likely to experience severe calcification in their arteries or less likely to die from heart disease over a seven- to 10-year period.31 Vitamin K2 also works in tandem with vitamin D and magnesium. As a rule, if you have osteoporosis, heart disease or diabetes, you're likely deficient in vitamin K2.

If you are eating fermented foods such as natto, or vegetables fermented using a starter culture of vitamin K2-producing bacteria, then you may not need to take a supplement. Certain cheeses such as Brie, Munster and gouda, are also particularly high in K2, as are grass fed organic animal products such as egg yolks, liver, butter and dairy.

18. Collagen

Collagen, in addition to being rich in glycine, is well-known for its role in skin health, including helping mitigate age-related wrinkles.32 It may also reduce joint pain and stiffness33 while improving glucose tolerance34 and high blood pressure.35

My personal preference is to use a less denatured (unhydrolyzed) organic collagen supplement, as it has a more balanced amino acid profile or, better yet, simply boost your collagen intake by making homemade bone broth using bones and connective tissue from grass fed, organically raised animals.

19. L-Carnosine

Carnosine is a dipeptide composed of two amino acids: beta-alanine and histidine. It's a potent antioxidant as it binds to advanced lipoxidation endproducts (ALEs) that are the result of oxidized seed oils in your diet. The highest concentrations of carnosine are found in your muscles and brain.

If you're a vegetarian or vegan, you will have lower levels of carnosine in your muscles. This is one reason why many strict vegans who do not properly compensate for this and other nutritional deficiencies tend to have trouble building muscle. Eating beef is known to efficiently raise carnosine levels in your muscle,36 which is why if you're a vegetarian or vegan this supplement may be particularly important.

Bonus: Methylene Blue

While methylene blue is clearly not a vitamin or mineral and is, in fact, the oldest known modern drug, I consider it an important and, in many cases, essential supplement for most because it is the best product out there to increase mitochondrial electron transport efficiency and your production of cellular energy currency or ATP. In simpler terms, most anyone who is fatigued or tired will benefit from using methylene blue.

Additionally, it is very inexpensive if you avoid buying it in foolish ways. If you purchase 1 ounce (25 grams) of the bulk powder it will last you over three years if you take 20 mg/day, which is a solid maintenance dose, but if you are tired you can easily double or triple that.

Twenty mg is a very small amount and is about half of one-sixty-fourth teaspoon. That would be a one-one hundred twenty-eighth teaspoon, but those are not available. Just be really careful, though, as methylene blue is a dye and will stain your countertop. It's best to measure over a stainless-steel sink. A dose of 50 mg is best taken by putting one-sixty-fourth teaspoon into an empty gel cap, as it can irritate your mouth at higher concentrations.

The best time to take it is prior to near infrared (IR) exposure from a near IR sauna, a photobiomodulation panel or sun exposure. For more details about methylene blue be sure to view my interview with the leading researcher in the field, Francisco Lima-Gonzalez, Ph.D.

The Timing of Your Supplements Matters

When and how you take supplements — such as with or without food and in the morning or evening — can make a difference in their safety and effectiveness. For instance, fat-soluble vitamin K2 is best taken with your largest meal that contains fat, while magnesium, which helps your body relax, is best taken in the evening. In the infographic below, you can see a simple breakdown of some of the most common supplements and when it's best to take them.

DAYTIME

THESE SUPPLEMENTS ARE BEST TAKEN *WITH* FOOD:

- Chlorella
- Psyllium
- Krill Oil
- Multivitamin
- Saw Palmetto
- Curcumin/Turmeric
- Vitamin B Complexes
- Methylsulfonylmethane (MSM)
- Zinc
- Lignans
- Vitamin C
- Vitamin K2
- Vitamin D

THESE SUPPLEMENTS CAN OR SHOULD BE TAKEN *WITHOUT* FOOD:

- Calcium
- Rhodiola
- Probiotics
- Whey Protein
- Fermented Beets
- Joint Health *(products containing Eggshell Membrane and Hyaluronic Acid)*
- L-Arginine
- Fermented Ginseng
- Grape Seed Extract

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NIGHTTIME

THESE SUPPLEMENTS ARE BEST TAKEN *WITH* FOOD:

- Iodine
- Ubiquinol
- Vitamin E
- Astaxanthin
- Fermented Garlic
- Spores or Soil Based Organisms
- Liver Health Supplements *(products containing NAC, Milk Thistle Extract)*
- Berberine and Pyrroloquinoline Quinone (PQQ)
- Digestive Enzymes
- Fermented Mushroom
- Fermented Chlorella

THESE SUPPLEMENTS CAN OR SHOULD BE TAKEN *WITHOUT* FOOD:

- Collagen
- Magnesium
- Resveratrol
- Fermented Ginger
- Apple Cider Vinegar (ACV)
- Eye Health Supplements *(products containing Lutein and Zeaxanthin)*

+ Sources and References

- 1 U.S. CDC, NCHS Data Brief No. 399, February 2021
- 2 American Osteopathic Association January 16, 2019
- 3 Bitchute, Interview With Tyler Lebaron March 1, 2023
- 4 Scientific Reports volume 11, Article number: 10641 (2021)
- 5 YouTube, Dr. John Campbell February 1, 2023, 14:07
- 6 Pharmaceuticals (Basel). 2023 Jan; 16(1): 130., Abstract
- 7 International Journal of Nanomedicine January 19. 2018; 2018(13): 455-466
- 8, 9 BMJ Open Heart 2018
- 10 Aging (Albany NY). 2019 Jan 31; 11(2): 289–290
- 11 medRxiv July 7, 2020; DOI: 10.1101/2020.07.06.20147025
- 12 Factors Determining the Apoptotic Response of Colorectal Carcinoma Cells to Butyrate, a Fermentation Product Derived from Dietary Fiber (2009)
- 13 Translational Psychiatry June 3, 2022
- 14 The Journal of Neuroscience May 1, 2013; 33(18):7770-7
- 15 Translational Psychiatry June 3, 2022, Discussion
- 16 BMJ 2022;376:e066452
- 17 Journal of the American College of Cardiology December 13, 2022, Volume 80, Issue 24, Pages 2269-2285, Results
- 18 Journal of Clinical Lipidology, 2018;12(3):718
- 19 EurekAlert! March 15, 2018
- 20 Business Wire September 9, 2020
- 21, 22 A Comparison of Synthetic Ethyl Ester Form Fish Oil vs. Natural Triglyceride Form (PDF), What Are Triglycerides and Ethyl Esters?
- 23 Environ Sci Pollut Res Int. 2020 Feb;27(4):3950-3961. doi: 10.1007/s11356-019-06983-1. Epub 2019 Dec 10
- 24 Clinical and Translational Medicine March 27, 2021, Section 4.13
- 25 Medical Hypotheses January 15, 2019
- 26 Indian Journal of Clinical Biochemistry 1994, 9 (2)
- 27 Clinical and Translational Medicine March 27, 2021, Abstract, Results
- 28 Journal of Infectious Diseases and Preventive Medicine May 24, 2014; 2: 111
- 29 International Journal of General Medicine June 8, 2021; 14: 2359-2366
- 30 Integrative Medicine (Encinitas) February 2015
- 31 The Journal of Nutrition November 1, 2004: 134(11); 3100-3105 (The Rotterdam Study)
- 32 Journal of Medical Nutrition & Nutraceuticals 2015; 4(1): 47-53
- 33 Curr Med Res Opin. 2008 May;24(5):1485-96
- 34 J Med Food. 2016 Sep;19(9):836-43
- 35 J Med Food. 2010 Apr;13(2):399-405
- 36 Science Direct, Carnosine