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**SUPPLEMENTS**



# Introduction

Dietary supplements or nutritional supplements include vitamins, minerals, amino acids, fatty acids, enzymes, and herbal ingredients. Supplements help provide the body with these nutrients when they are not consumed in appropriate amounts in the diet.

Although nutritional supplements cannot replace good eating habits, when used carefully, they can provide the body with adequate vital nutrients, which helps ensure the body's optimal functioning. They can be used to control vitamin or mineral deficiencies, maintain general health, lower the risk of diseases, and support mental and sport-related performance. Some individuals require supplements more than others, including pregnant women, older adults, people with allergies, and people on restricted diets, such as the vegan diet.

Supplements can be taken in various forms including tablets, capsules, powders, or liquids. Moreover, they are available in various doses and combinations. There are many supplements available in the market, making it difficult and confusing to choose from.

Here is a guide to help you choose from the Top 10 supplements available!

# SUPPLEMENTS

## MY SHOPPING LIST

Supplement	I Need This 
Omega-3 Fatty Acids	
Creatine	
Vitamin D	
Protein	
Turmeric	
Probiotics	
Psyllium Fiber	
Green Tea	
Acetyl-L-Carnitine	
Magnesium	

Omega-3 Fatty Acids are essential for every cell wall structure. They also provide energy and aid in the proper functioning of your heart, lungs, blood vessels, and immune system. Fish, vegetable oils, walnuts, flax seeds, flaxseed oil, and green vegetables are all high in Omega-3 Fatty Acids.

However, they can also be consumed in the form of supplements to combat several conditions, including

**Heart disease** - The greatest health benefit omega-3 fatty acids offer is combating heart disease. Omega-3 fats lower blood pressure and heart rate and enhance blood vessel function. Moreover, when consumed in higher dosages, they can lower triglycerides and potentially reduce inflammation, which is linked to the development of atherosclerosis.

**Depression** - Research has shown that people who take omega-3 fatty acids regularly are less likely to be depressed or their depression improves.

**Rheumatoid Arthritis** - Omega-3 fatty acids may help reduce joint stiffness and pain. Anti-inflammatory medicines appear to be more effective when omega-3 supplements are taken.

**Neuropsychiatric disorders** - Omega-3 fatty acids may protect against Alzheimer's disease, dementia, and memory loss. Moreover, it may also help children with ADHD improve their mental abilities such as thinking, remembering, and learning.

**Asthma** - Omega-3s help decrease inflammation which is a key factor of asthma



## How to take Omega-3 Fatty Acids Supplements?

These supplements can be taken in the form of fish oil gel capsules, which contain Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), two essential fatty acids. The correct dosage, which is usually under three grams of fish oil, should be taken to prevent bleeding risk.

Omega-3 fatty acids are also available on prescription to ensure you get the correct dose if you suffer from any medical condition.



Creatine (methylguanidine acetic acid) is an amino acid-derived substance that occurs naturally. It combines with phosphate, forming creatine phosphate, which serves as a readily available source of energy. Almost all of the creatine is stored in skeletal muscle cells and used during high intensity physical exertion.

Creatine supplements help increase creatine phosphate stores in your muscles during high-intensity exercise. The increased creatine stores help produce more energy (as ATP) and ensure that working muscles have an uninterrupted source of energy.

Therefore, creatine supplements are usually taken by athletes or those who want to enhance sports or body-building performance.

## **Benefits of Creatine:**

**Boosts muscle growth** - Creatine promotes both short-term and long-term muscle growth. It benefits a wide range of people, including those with a sedentary lifestyle, senior citizens, and professional athletes. Vegans can also increase muscle growth and energy with creatine intake.

Studies have shown that creatine boosts muscle fiber growth 2-3 times more than exercise alone.

Moreover, among all the supplements available, creatine is the most beneficial for adding muscle mass, according to several studies.

**Improves several diseases and disorders** – Creatine phosphate is also stored in the brain; therefore, increased creatine stores produce more ATP, which is used by the brain for optimal functioning.

This benefits several conditions, including brain or spinal cord injuries, Alzheimer's disease, motor neuron disease, epilepsy, ischemic stroke, Huntington's disease, depression, and multiple sclerosis.

## How to take Creatine Supplements?

Creatine supplements are available in several forms; however, creatine monohydrate is the most researched form. It is available in capsules, powders, and liquids.

A "loading period" is followed when you first take creatine supplements. During this period, creatine intake is significantly increased by taking doses of up to 20 g for a few days to increase creatine stores in muscles.

After the loading period, creatine intake is decreased to maintenance levels of 3 to 5 g a day. It is necessary to stay hydrated throughout the day when supplementing with creatine since it pulls water into your muscle cells.



Vitamin D is an essential nutrient for the body that helps retain calcium and phosphorus to maintain healthy bones. It helps prevent osteoporosis and also serves several other functions by:

- Helping your nerve cells carry messages from the brain to the rest of your body
- Aiding in muscle movement
- Improving the function of the immune system in fighting invading bacteria and viruses
- Supporting diabetes management but regulating insulin levels
- Promoting pulmonary and cardiovascular health

Most of the vitamin D people receive is through sunlight exposure.

Your body makes vitamin D when you are exposed to sunlight; therefore, people in colder climates may experience vitamin D deficiencies since sunlight is limited or because they spend most of their time indoors.

Although vitamin D can also be consumed through some foods, such as eggs and fish; however, these often do not provide enough levels needed to treat vitamin D deficiencies. Vitamin D supplements can help prevent and treat deficiencies.

**If you are deficient in vitamin D, you may experience the following symptoms:**

- Fatigue
- Aches and pains
- Severe bone or muscle weakness or pain
- Depression



## How to take Vitamin D Supplements?

Vitamin D supplements are available as tablets, liquids, and powders. Vitamin D supplements are of two types, Ergocalciferol (vitamin D2) and cholecalciferol (vitamin D3). While both forms can effectively raise vitamin D levels, vitamin D3 can do so more effectively and for a longer period of time.

For adults and children over the age of four, the recommended Daily Value (DV) for vitamin D is 800 IU (International Units).

People with a deficiency, on the other hand, may require more. Physicians may prescribe more than 4000 IU to treat vitamin D deficiency.



Athletes, recreationally active individuals, and soldiers use protein supplements to build muscle mass, improve workout recovery, and improve exercise-related performance.

Resistance and endurance exercise can cause a net negative protein balance, resulting in muscle atrophy (muscle wasting) and delayed exercise recovery if the body lacks sufficient quantities of amino acids (building blocks of protein) before and after exercise.

Maximum strength and lean mass gains are impossible to accomplish when protein intake is too low. Therefore, athletes and bodybuilders take protein supplements for muscle mass and strength development to help them meet the extra demands of training or competition.

Protein supplements are also beneficial for those on a vegan diet to help fulfill their daily macronutrient needs. Protein supplements in the form of whey powder can even aid in weight management since protein helps people feel fuller for longer.

## Types of Protein Supplements:

Protein Supplements are usually of three types:

**Whey Protein** - whey protein powder is the most common form of protein supplement. Whey protein is derived from milk, includes all essential amino acids, and is easily digested. As a result, it's frequently consumed quickly after a workout to maximize muscle growth. It also helps increase muscle strength for strength training.

**Casein Protein** – casein protein is also found in milk, but it is digested and absorbed slowly, unlike whey protein. Therefore, it is commonly taken at night, before sleeping, to avoid muscle breakdown.


**Plant-based Protein** - Plant-based protein, unlike whey and casein, does not contain all of the essential amino acids that the body requires. However, it is suitable for vegans or for those who have lactose intolerance or allergy.

### How to take Protein Supplements?

Protein supplements are usually taken in the form of powders, which are blended to make a shake. The recommended quantity of protein to grow muscle for people who train moderately three times or less per week is 2.2 grams per kilogram of body weight. However, if you are moderately active, you can consume 1.6 grams per kg of body weight.







Turmeric comes from the turmeric plant, which is used as a spice. Turmeric contains curcumin, a powerful antioxidant responsible for its health benefits.

### **Turmeric supplements' help:**

- **Lessens Inflammation** - curcumin and other compounds in turmeric help reduce inflammation. As a result, turmeric can be useful in the treatment of inflammatory disorders.
- **Reduces Pain** - the anti-inflammatory effects of turmeric also help reduce pain, such as joint pain, muscle aches, and pain from conditions such as arthritis. According to some studies, turmeric intake helped relieve osteoarthritis pain as effectively as ibuprofen.

- **Lowers Cholesterol Levels** - studies have shown that consuming turmeric extract twice daily for three months reduces total cholesterol, bad cholesterol, and triglycerides in overweight individuals.
- **Diabetes** - According to preliminary studies, taking turmeric extract twice daily for nine months can reduce the number of people with prediabetes who develop diabetes.

### **Turmeric may also help the following conditions:**

- Liver problems
- Jaundice
- Heartburn
- Fatigue
- Diarrhea
- Intestinal gas
- Stomach pain
- Menstrual problems

## How to take Turmeric Supplements?

Turmeric supplements come in the form of capsules, tablets, powders, liquids, and chewable gummies. The recommended general daily dose of turmeric is 0.6 mg per kg of body weight.

For individuals with high cholesterol, the recommended amount is 1.4 grams of turmeric extract in two divided doses a day for three months. For individuals with osteoarthritis, the recommended dose is 500 mg four times a day for four to six weeks.



Probiotics are live bacteria and yeasts that are beneficial to your overall health, particularly your digestive system. Your digestive tract is full of bacteria, both good and bad.

When you get sick or have an infection, the bad bacteria often outnumber good bacteria. Taking probiotic supplements provides your body with good bacteria and helps return the balance your body needs to function well.

Seven main groups of probiotic bacteria are typically used in probiotic supplements. These include *Lactobacillus*, *Saccharomyces*, *Bifidobacterium*, *Streptococcus*, *Enterococcus*, *Bacillus*, and *Escherichia*.

However, *Lactobacillus* and *Bifidobacterium* species are mostly added to probiotic supplements and are the most commonly studied among all the strains

Probiotic yeasts in supplements usually include *Saccharomyces cerevisiae* and *Saccharomyces boulardii*.

## Benefits

- Assist your body in digesting food.
- Improving nutrient absorption during the digestion process.
- Prevent harmful bacteria from taking over and making you sick.
- Creating vitamins.
- Support the cells lining your stomach to keep dangerous bacteria out of your bloodstream that you may have absorbed (via food or drinks).
- Breakdown and absorb medications.
- Reduce the risk of developing cancer or cardiovascular disease.



Probiotics can also help with other conditions, such as

- Bacterial vaginosis
- Irritable Bowel Syndrome
- Crohn's disease
- Upper Respiratory Tract Infections
- Diarrhea

## How to take Probiotics supplements?


Probiotic supplements are available in capsule form and should be taken once or twice daily.

The various types of probiotics address different health conditions. Therefore, choosing the type of probiotic that meets your desired needs is essential. Broad-spectrum probiotic supplements, often known as multi-probiotics, include multiple species of probiotics, which can address several conditions.

Each serving of probiotic supplements contains billions of different populations of bacteria or yeasts.

Probiotics are measured in colony-forming units (CFUs). The number of live bacteria per dose is represented by these units. For example, probiotic supplements labeled as  $1 \times 10^9$  CFU contain 1 billion live bacteria per dose. Most supplements contain 1-10 billion CFUs per dose. However, some supplements contain much higher amounts.

Probiotics must be taken in large doses to provide positive effects on the body. This is because much of the probiotics are killed during digestion. Therefore, at least  $10^6$  (1,000,000) viable CFUs per gram should be present in probiotics to survive digestion. The recommended daily dose for children is 5 to 10 billion CFUs, and for adults, it is 10 to 20 billion CFUs.



Psyllium fiber, also known as psyllium husk, is a fiber produced from the husks of the seeds of the *Plantago ovata* plant.

It's a bulk-forming laxative and behaves like other soluble fibers. It travels through the small intestine without being completely digested or absorbed. Instead, it absorbs water and transforms into a viscous substance that makes bowel movements easier, aiding with constipation and diarrhea.

Psyllium fiber supplements can be used as a one-time remedy for constipation or as part of a daily diet to improve stool regularity and digestive health. Psyllium fiber is also prebiotic, meaning that it is utilized as a source of food for your gut bacteria.

Although it is typically used as a laxative, it also helps with:

- **Weight reduction** – psyllium fiber helps with appetite control and increases satiety by slowing down stomach emptying. This can result in weight-loss or help with weight management.
- **Lowering blood sugar** – Fiber supplements, particularly water-soluble fibers like psyllium, can help regulate the body's glycemic response to a meal by lowering insulin and blood sugar levels. The viscous gel formed with psyllium slows down food digestion, which helps regulate blood sugar levels.
- **Lowering blood pressure** – psyllium fiber, similar to other dietary fibers, can help reduce blood triglycerides and lower blood pressure. This also helps lower the risk of heart disease and stroke.



## How to take Psyllium Fiber?

Psyllium fiber is available in the form of capsules, powders, granules, liquids, wafers, and in its natural husk form. Some manufacturers also add psyllium fiber to breakfast cereals and baked goods.

Start with a low dose of  $\frac{1}{2}$  teaspoon of psyllium fiber powder in an 8-ounce glass of water a day. The dose can be gradually increased according to your needs.

Bowel movements will usually be produced within 12 to 72 hours of taking psyllium fiber.



Green tea is produced from the *Camellia sinensis* plant, responsible for making all types of tea (except herbal).

It is not processed as much as black tea and is unfermented; therefore, it is richer in antioxidants, typically catechins. Catechins help protect your body from several diseases and prevent cell damage.

## The benefits of green tea include:

**Lowers the risk of developing cancer** - the antioxidant properties of green tea help lower cancer risk. Research has shown that green tea is linked to the prevention of different types of cancer, including mouth, esophagus, lung, stomach, small intestine, kidney, pancreas, mammary glands, and colon cancer.

**Lowers blood pressure** - green tea lowers blood pressure which decreases the risk of coronary heart disease and stroke.

**Treating diarrhea and typhoid** - green tea has been used to treat diarrhea and typhoid in Asia for centuries. This is because it possesses an inhibitory effect on *Helicobacter pylori* infection, responsible for the diseases.

**Lowers the risk of neurodegenerative diseases** - green tea protects the brain from oxidative damage and helps with memory, which reduces the risk of developing Alzheimer's disease and dementia.

**Weight-loss** - one of the most popular reasons for consuming green tea is because of weight-loss effects. Green tea contains catechins as well as caffeine. Both of these substances help improve energy metabolism by enhancing thermogenesis. Thermogenesis burns calories to digest food and produce heat, leading to weight-loss.



**Other effects** - green tea also benefits several other conditions such as osteoporosis, genital warts, cervical cell changes due to human papillomavirus (HPV), diabetes, infertility, and respiratory infections.

## How to consume Green Tea?

Although green tea can be consumed by boiling the green tea leaves and drinking it, it is also sold as a herbal supplement.

Green tea supplements are available in the form of tablets, extracts, and powders. Use the green tea supplements as directed on the package.

If you are consuming it in tea form, boil one teaspoon of tea leaves in 8 ounces of water and drink it 1-5 times daily.



Acetyl-L-Carnitine is a naturally occurring amino acid derivative; however, it is also taken as a dietary supplement.

Acetyl-L-Carnitine plays a vital role in energy production by transporting fatty acids into the mitochondria of cells, which utilize these fats to create energy. It also helps assist in removing waste products from cells to prevent them from collecting and causing issues.

### **Benefits of Acetyl-L-Carnitine:**

**Weight-loss** - Acetyl-L-Carnitine helps burn fat and at higher levels allows your body to burn fat more efficiently. Therefore, your fat stores get decreased, aiding in weight-loss. It does not only burn subcutaneous fat (the visible fat you can see as you gain weight), but also visceral fat, which surrounds your inner organs.

**Brain health** - Acetyl-L-Carnitine may help prevent age-related mental decline, including loss of memory and thinking skills. This also extends to preventing age-related neurological disorders, such as Alzheimer's disease.

When taken by mouth, it may slow Alzheimer's disease progression and improve mental function and memory. Moreover, it is also effective at lessening the symptoms of neuropsychiatric disorders, such as depression. Studies show that Acetyl-L-Carnitine supplementation decreases depressive symptoms with comparable effects to depressive agents with lesser side effects.

**Heart health** - Acetyl-L-Carnitine helps reduce blood pressure and inflammation, which helps prevent cardiovascular disease. Studies have shown that Acetyl-L-Carnitine displayed improvements in chronic heart failure and coronary artery disease patients.

**Other benefits** - Acetyl-L-Carnitine can be used to manage cholesterol levels and nerve pain; it may also reduce tingling sensations in the hands and feet in some patients. Patients can also use it to treat blood vessel problems in their legs, allowing them to walk better and with less pain. It may also aid in the improvement of appetite and energy levels.

## How to take Acetyl-L-Carnitine?

Acetyl-L-Carnitine supplements can be taken in the form of tablets. Adults can take doses of 1.5 - 3 grams daily for up to 33 months.



Magnesium is the fourth most abundant mineral in the body and is crucial for several vital processes. It is utilized in hundreds of biochemical reactions in your body.

Therefore, it is responsible for the following:

- **Produces energy by activating ATP.** Therefore, the nutrients you consume cannot be metabolized into energy with low magnesium levels.
- **Builds important proteins**
- **Maintains bone health**

It also regulates several important functions, including:

- **Blood sugar levels** - Magnesium helps increase insulin sensitivity, aiding in blood sugar control. Moreover, studies show that magnesium intake can help lower type 2 diabetes risk.

- **Blood pressure** - Its ability to lower blood pressure can lower the risk of heart disease and stroke.
- **Myocardial contraction** - It maintains a healthy heartbeat by competing with calcium. Calcium makes your heart muscles contract, and magnesium makes them relax. Therefore, lower magnesium levels can cause irregular heartbeats.
- **Muscular contraction** - similar to its effects on the heart muscles, magnesium helps the muscles in your entire body relax by acting as a calcium blocker. Low magnesium levels may cause the over contraction of muscles resulting in spasms or cramps.

## How to take Magnesium Supplements?

Magnesium supplements are available in tablets, capsules, gummies, liquids, and powders. It is available in various forms, including

- magnesium citrate
- magnesium aspartate
- magnesium lactate
- magnesium taurate
- magnesium chloride
- magnesium malate

The average recommended daily intake of magnesium is 420 mg for men and 320 mg for women. However, check the label to get the most appropriate dose since product formulations may vary according to different manufacturers.





# ARE SUPPLEMENTS SAFE?

Supplements are generally safe when used properly. They can help reduce the risk of several diseases. They can even help improve the quality of life by relieving the discomfort caused by certain medical conditions or medications. Most people can safely use dietary supplements if they don't take them beyond their recommended dosages.

Always make sure to read the label provided, especially to see if it interacts with any medical conditions you possess or medications you're taking.

Dietary supplements are not regulated, unlike medicines. Therefore, only buy supplements from a trustworthy manufacturer to ensure no harmful substances, such as heavy metals, are present. Also, check if the product includes a third-party testing certification. This ensures that the product was tested in a lab and meets quality and safety standards.

Furthermore, it is best to talk to your doctor before taking any supplements to avoid health risks.

