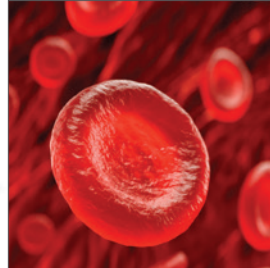


# Mineral Nutrients



Calcium



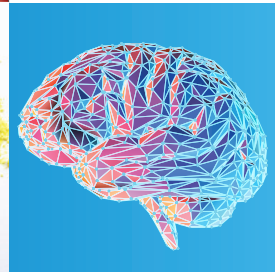
Potassium



Iron



Sulfur



NOW® Guide to Mineral Nutrients

A microscopic view of plant cells, showing cell walls and internal structures, rendered in various shades of blue and green. The cells are arranged in a somewhat regular pattern, with some showing more detail than others. The overall appearance is that of a cross-section of a plant stem or leaf.

The Health Benefits of  
**Mineral  
Nutrients**

## *Mineral Nutrients*

Mineral nutrients (also called dietary elements and dietary minerals) are inorganic substances that are essential for life. While they're often referred to as minerals, mineral nutrients are correctly classified as elements. All living cells and organisms require these elements in addition to the four basic elements oxygen, hydrogen, nitrogen, and carbon.

Mineral nutrients are naturally present on Earth, and many are found in soil and water. Plants and other vegetation obtain them primarily from soil. Animals, including humans, obtain them through the ingestion of plants and other animals.

The mineral content of soil and water varies significantly depending on region; and modern food processing methods can rob our foods of minerals and vitamins. Supplementation can be a convenient alternative for ensuring adequate intake of these essential nutrients.

Mineral nutrients are required for our skeletal structure, including teeth. They're essential components of bodily tissues and fluids and are required for the normal function of all bodily enzyme systems. Almost every function of our bodies is in some way dependent on mineral nutrients.



## *Form Makes a Difference*

If you read supplement labels you may notice that there are different forms of minerals. One calcium supplement may contain calcium citrate while another has calcium carbonate. The following are just a few of the many different forms of mineral nutrients you'll find in dietary supplements, as well as one of the main benefits for each of these forms.

**Citrate** is a mineral bonded to citric acid. Citrates are often combined with other mineral nutrients, such as calcium from calcium carbonate, to enhance solubility.

**Carbonate** is a mineral bonded to the salt of carbonic acid. It's an alkaline substance that's primarily found in rocks.

**Malate** is a mineral bonded to the salts and esters of malic acid, an organic acid that gives many fruits their pleasing sour taste. Like citrate, malic acid is combined with mineral nutrients to enhance their bioavailability.

**Gluconate** is a mineral bonded to gluconic acid. Like citrates or malates, this enhances bioavailability.

**Glycinate** is a mineral bonded to the amino acid glycine to enhance bioavailability. This lessens the likelihood of constipation or diarrhea that can be caused by certain minerals.

Other forms include aspartate, lactate, oxide, chloride, and picolinate. The form can have an effect on the mineral nutrient's absorption, bioavailability and efficacy depending on the target site. It can also be a functional method to deliver an additional nutrient to the target tissue, such as binding magnesium to the amino acid taurine since both are important for the heart and nervous system function.\* If you're unsure of the form that's best suited for your nutritional needs, seek the help of your doctor or a certified nutritionist.

## Main Minerals

**Calcium** is probably the most well-known of the mineral nutrients. It's also the one found most abundantly in the human body. While many of us know calcium as the bone mineral we need to maintain healthy skeletal structure, this is just the tip of the iceberg in regard to its roles in the body.\* It's crucial for proper neuromuscular and vascular function.\* Calcium is also necessary for normal clotting function, healthy endocrine function and intercellular signaling.\*

Our bodies cannot produce calcium, so we must obtain it from our diet. Throughout our lives our bones and teeth are in a constant state of calcium deposition and resorption. During childhood and adolescence the deposition of calcium is greater than resorption.



*\*These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.*

## Main Minerals (continued)

During early and mid-adulthood they're basically even. But late in life resorption begins to outpace deposition, leading to bone loss and the health concerns that accompany it. Optimum dietary intake can help offset this imbalance.\*

**Magnesium**, like calcium, is found abundantly in the human body and is vital to our health and well-being.

This important mineral nutrient is a cofactor in more than 300 metabolic reactions.\*

Our immune, cardiovascular, and nervous systems all need magnesium to function normally, and it works with calcium to maintain skeletal health.\*

It also helps regulate blood glucose and plays a key role in the processes used to produce energy.\* Magnesium deficiency is becoming more and more common, with one study

showing that more than 50% of the U.S. population does not meet the U.S. Recommended Daily Intake (RDI) for dietary intake of magnesium.

**Phosphorous** is an essential mineral needed by every cell in your body for normal function.\* It's one of the principal structural components of bone and a major component of cellular membranes.\* Almost all reactions involved in the production of energy are reliant on phosphorylated compounds, such as adenosine triphosphate (ATP).\* Phosphorous is an important buffer in the maintenance of the body's acid-base balance (pH).\*

**Potassium** is an important electrolyte mineral whose main function is to regulate the balance of water and minerals throughout the body.\* It is required for normal muscle and nerve function and helps to regulate blood pressure in conjunction with the mineral sodium.\*

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**Sodium** is found abundantly in the human diet and is necessary for proper body pH and water/mineral balance.\* It works with potassium to regulate blood pressure.\* The balance of sodium and potassium in cellular membranes is tightly controlled; this is critical for essential body functions such as cardiovascular function, nerve impulse transmission, and muscle contraction, to name a few.\*

**Sulfur** is required by all life forms and is a necessary component in a vast array of biochemical processes.\* It's one of the few elements that serves as both an electron donor and electron acceptor in certain metabolic reactions.\* Sulfur is an essential component of all body tissues and is a component of the sulfur-containing amino acids cysteine, methionine, and taurine.\* As an integral part of glutathione and alpha-lipoic acid, it's a stout defender, helping to protect our bodies from oxidation and toxins we're exposed to from internal and environmental sources.\*

It's also a necessary component of bile.\* MSM is the most common supplemental form of sulfur.\*

## *Minor (Trace) Minerals*

**Boron** is referred to as an ultra-trace element, and its role in human health isn't clearly understood. It's known to play a role in several biochemical processes, primarily in the regulation of calcium and magnesium uptake and utilization.\*

**Chromium** is an important trace mineral that plays a vital role in the maintenance of blood sugar levels through its function as a cofactor for the hormone insulin.\* Not only is insulin important for blood sugar regulation, it also helps the body metabolize fats,

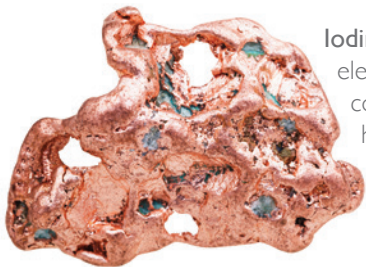


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## Minor (Trace) Minerals (continued)

carbohydrates, and protein for energy. Research indicates that chromium may also play a direct role in the metabolism of these substances, independent of insulin.\*

**Copper**, like most mineral nutrients, is essential for our health and well-being.\* It is important for proper iron utilization, and along with iron it plays an important role in the production of red blood cells.\* It is critical for collagen formation, and it plays an important role in both nervous and immune system health.\* Copper also plays a role in energy production.\*



**Iodine** is an essential trace element that's an important component of the thyroid hormones thyroxine (T4) and triiodothyronine (T3).\* These hormones

are important for healthy metabolism and for the proper growth and development of the brain.\* This is why iodine is so important for pregnant women and infants.\*

**Iron** is absolutely essential for life. Dietary iron is necessary for the production of new red blood cells.\* It is a component of hemoglobin, which transports oxygen from the lungs to other tissues in the body, and it's also found in myoglobin, which is necessary for the storage and diffusion of oxygen in muscle cells.\*

**Manganese**, not to be confused with magnesium, is a trace element that's important for the formation of connective tissue and bones.\* It's required for healthy nerve and brain function, and is a component in the formation of blood clotting factors.\* Like most other minerals, it's important for the metabolism of fat, protein and carbohydrates.\*

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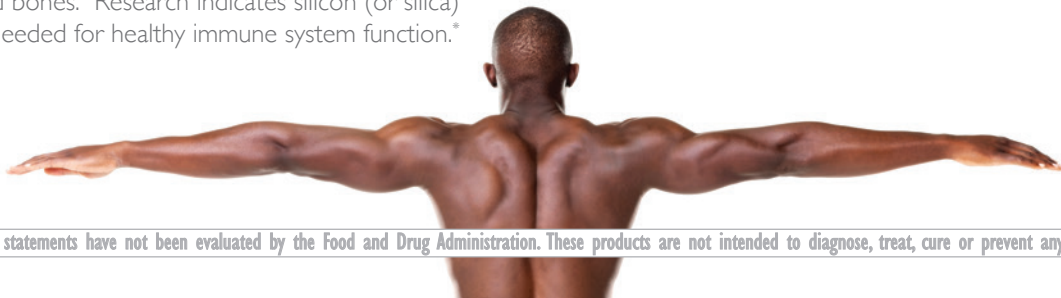
**Molybdenum** is important for nitrogen metabolism.\* Molybdenum is also necessary for the activation of certain enzymes and is needed by cells to function normally.\*

**Selenium** is a component of more than 25 different proteins, called selenoproteins, which are necessary for a wide array of important physiological processes.\* In addition, it is essential for the production of glutathione, which is a critical detoxification and free radical-neutralizing enzyme.\*

**Silicon** is an abundant mineral nutrient that's needed by the human body for the synthesis of collagen, making it important for healthy hair, skin, nails, and bones.\* Research indicates silicon (or silica) is needed for healthy immune system function.\*

**Vanadium** is a trace mineral whose benefits for human health are still not fully understood. Studies indicate that vanadium may help support normal glucose metabolism, but the scientific research on this mineral is still not conclusive.\*

**Zinc** is an important mineral for human health and is widely found in multivitamins and immune support supplements.\* Zinc is essential for healthy growth and development, and is found in many important enzymes.\* It's necessary for the formation of collagen and the synthesis of protein, and it supports healthy immune system function.\*



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## Other Mineral Sources

In addition to the aforementioned mineral nutrients, NOW® utilizes several other unique mineral nutrient ingredients in our products.

**TRAACS®** – In some of our formulations you'll find TRAACS®, an abbreviation for "The Real Amino Acid Chelate System." TRAACS® minerals are patented mineral nutrient/amino acid chelates,



or combinations, from Albion Labs that greatly improve the body's absorption and utilization of specific minerals. Minerals in their natural mineral salt form often aren't well-absorbed by our bodies. However, scientists have discovered that attaching a mineral salt to an amino acid or certain other acids greatly improves absorption.

**Red Mineral Algae** – Red mineral algae is a mineral-rich extract derived from calcified red marine algae *Lithothamnium calcareum*. These marine algae absorb minerals from salt water and concentrate them in their fronds as carbonate salts. Over time these fronds become densely mineralized and can contain up to 70 trace minerals, making red marine algae an ideal vegetarian source of mineral nutrients. A number of studies have been done on red mineral algae in regard to its purported benefits for temporary relief of pain associated with overexertion.\*

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## The NOW® Difference

With NOW's great selection of mineral supplements it's easy to ensure you're obtaining the recommended daily intake of mineral nutrients. We offer a variety of different delivery forms, including capsules, vegetable capsules, tablets, softgels, lozenges, powders and liquids. Combine our superior quality with our affordable prices and the choice for your mineral supplement needs is clear.



# Mineral Nutrients



*NOW® Guide to Mineral Nutrients*

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