

Mineral Absorption
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A large range of minerals are vital for a healthy body and recommended daily allowances of these mineral have been published to address these health concerns. Just by consuming the recommended daily allowance in minerals is not the answer to the problem of mineral deficiency, the problem in mineral deficiency is the absorption of minerals.

Absorption is the process in which nutrients are passed into the bloodstream. The absorption of minerals by the body is affected by many factors. Different minerals have different absorption rates, mineral absorption rate is affected by an unhealthy diet, diet can also affect absorption level by influencing the elimination rate, the condition of the intestine can affect absorption levels, choosing the right mineral balance and form of mineral will also affect absorption. These are a few of the problems associated with mineral absorption.

Diet is a major factor in our mineral absorption. Due to soil depletion and demineralization, many of the foods we eat today are lacking in minerals. Processed foods, excess protein and refined sugars need extra minerals that are stored in our bodies to digest and remove them. This removal process requires enzymes, which in turn need minerals such as zinc, chromium and copper to work. This cycle promotes mineral deficiency. To add to the problem, milk, alcohol, dairy products, drugs and a high fiber diet all inhibit the absorption of minerals. The western diet of processed foods contributes to the formation of mucoid plaque onto the lining of the colon. This plaque prevents water and minerals from being reabsorbed by the body.

A phenomenon known as secondary deficiency is another cause of poor mineral absorption. This is when an excess of one mineral causes a deficiency in another. This is because minerals will compete with each other for absorption and the same binding sites. Iron, copper and zinc are competitive in this way. Copper is needed for the conversion of iron to hemoglobin, but if there is too much zinc then less iron will be available for conversion. This in turn may cause a secondary deficiency in iron (anemia), all due to too much zinc. Mineral supplements are a main factor in secondary deficiency.

The over use of prescription drugs also helps in the deficiency of minerals. Antibiotics, Tylenol, Advil, Motrin, and aspirin all inhibit the absorption of minerals especially zinc, chromium and calcium. Moreover, the bodies own store of minerals are depleted when the body draws on them when it tries to metabolize these drugs. The most common drug culprits for this are laxatives, diuretics, chemotherapy drugs, and NSAIDs.

Bioavailability is the main issue that really counts with minerals. Minerals must be in a form that can make it to the cells. Minerals that are not bioavailable just pass straight through the body. Bioavailability has a precursor, which is absorption. To do any good

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minerals must be absorbed through the intestine walls into the blood stream. Getting enough minerals through food is difficult due to modern farming practices; supplements are a good way but come in many different forms – elemental, ionic, colloidal and chelated. However, which is the best form for absorption.

Elemental minerals are the cheapest to produce, which makes them the most common form of supplement in shops. The problem is that only 1% to 8% of the mineral supplement is absorbed by the body which makes it an inefficient way of absorbing the correct amount of minerals. In addition, many of the excipients used to bind these cheaper supplements can act as blockers in absorption.

Ionic mineral are the next step up. The term Ionic means in the form of ions. An ion is an incomplete unstable molecule that wants to bind with another molecule. Ions are absorbed through the gut by becoming attached or chelated with special carrier proteins in the intestine wall. To do this energy is needed. Ionic minerals are a good source of nutrient for the body but they require an acidic environment to be absorbed. The first few centimeters of the small intestine are the best acidic environment for ionic minerals to be absorbed. For the body to absorb an ionic mineral right condition and timing needs to be in place – proper pH and the right area of the intestine.

Colloidal minerals are minerals that are suspended in a solution. The theory with colloidal minerals is that they are easier to absorb because the mineral particles are suspended in a liquid solution. The research into this theory has not even been carried out and proven.

Chelate is from the Greek word meaning ‘claw’, a chelate is a when a mineral is bound up with or attached with a carrier molecule. Certain pairs of amino acids (dipeptides) are the easiest of all chelates to be absorbed. Dipeptide chelates are absorbed faster than ionic minerals because the chelated mineral is bonded tighter keeping its integrity, which allows it to be absorbed easier, faster and requiring less metabolic energy. Research has shown the best bioavailable minerals are amino acid chelated minerals.

Other chelated agents in the diet such as fiber, which contains phytates, tea that contains tannins and rhubarb, which contains oxalates, are known as bad chelates. This is because phytates, tannins and oxalates bind the minerals in the body to themselves in the same way that amino acids do, this results in the minerals not being absorbed by the body but excreted instead.

So in summary factors that help mineral absorption include the form of the mineral ingested, small particle size, solubility, ascorbic acid, and a good intestinal state. Factors that slow down absorption are oxalic acid, phytic acid, fiber, sodium, tannins, caffeine, protein, fat, antacids, rapid transit time, malabsorption syndromes, precipitation by alkalization, other minerals, hormones and nutritional status.

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In conclusion, there are many problems with mineral absorption and if an individual needs mineral supplements to compliment their diet then it is best to take the supplements in a chelated form. This offers many benefits, which includes better absorption that is more natural and less irritation to the digestive system, which reduces the 'competition' for absorption between minerals.

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