



## **Trace Minerals - A Little Goes A Long Way?**

Unlike macro-minerals such as calcium, which the body needs in gram amounts, trace minerals such as iron, selenium, zinc, silicon, chromium, sulfur, and copper are only needed in milligram or micrograms. However, these small quantities do not reflect the importance of trace minerals, as inadequate intake can have huge effects on the body. Lets discuss a few of these trace minerals.

Iron deficiency is the most common nutritional deficiency worldwide, with 20 to 50 percent of people affected. The average body contains only one teaspoon of iron, but this mineral is crucial in oxygen transportation throughout the bloodstream and into cells. A lack of iron will starve the body of oxygen and energy, which cause the symptoms of iron deficiency to be fatigue, foggy thinking, irritability, headaches, and lethargy.

A lot of athletes have inadequate iron intake, impairing their exercise performance as it decreases hemoglobin levels and the amount of oxygen that is delivered to the muscles while it increases the time that is needed to recover from exercise. Iron is also important in immunity, with optimal iron intake strengthening the immune system and building resistance to colds, infections, and diseases. Even though inadequate intake is a common concern, too much can also cause health problems including stomach and intestinal cramps, nausea, and constipation.

The most important function of selenium is its antioxidant enzyme glutathione peroxidase. This enzyme is invaluable in protecting red blood cells and cell membranes from free radical damage. Selenium works closely with vitamin E, sometimes replacing it in certain situations. Selenium holds an important role in maintaining the immune system and has been shown to reduce the risk of many health problems which include several types of cancer, heart disease, rheumatoid arthritis, and certain birth defects.

Zinc is a valuable antioxidant that supports many aspects of the immune system. Zinc works in the eyes to protect them against sunlight-related free radicals. Zinc supplements have been found to slow the progression of macular degeneration, but high intakes of zinc and other antioxidants have been shown to lower the risk of developing this eye disease in the first place. This mineral can reduce the severity and duration of the common cold when in lozenge form, if started within 24 hours of the first cold symptom and taken every couple of hours. Taking 50mg of zinc daily or higher amounts for short periods of time is a good idea, but amounts over 150mg daily could cause metallic taste, stomach upset, or impair immune function.



Many modern diets contain extremely low amounts of silicon, especially since food processing removes much of the silicon. Silicon improves the elasticity and suppleness to skin that has been damaged by excessive skin exposure. Silicon is also important in natural bone formation, since deficiencies in silicon lead to bone weakness and sluggish wound health. Bone mineral density can be improved in people with osteoporosis by raising the intake of silicon.

Chromium is important in maintaining blood sugar levels, as well as many other roles in the body. Chromium deficiency impairs the blood sugar-insulin relationship, while chromium supplementation improves insulin response. Studies have shown that supplementing with chromium picolinate improves diabetes management by lowering blood sugar, insulin, cholesterol, or triglyceride levels and reducing the reliance on blood sugar medications. This mineral is also important in the metabolism of fat and carbohydrates.

Finally, Sulfur is needed in the joints to keep the connective tissues within them strong and stable. One source of sulfur, MSM, has been shown to significantly relieve pain and improve use of knee joints in studies. Through all of the above, one can see that trace minerals are extremely important contributors to health, even in small amounts.

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