Minerals: Lithium

Lithium is usually found in nature not as a metal but as lithium salts. Its name comes from lithos, the Greek word for "stone," as the lithium crystals are beautiful and very hard rocks. Aside from hydrogen, which is present in almost all of life, lithium is the lightest element in use. It is unique among the minerals in that it is used in medical treatment of manic-depressive disorders, commonly as lithium carbonate. It is chemically similar to sodium and can displace sodium (and vice versa) in many bodily reactions. Its involvement in sodium transport across cell membranes probably accounts for lithium's therapeutic support of people with manic disorders. Although it has been used in this area since about 1950, its acceptance has been slow, possibly because it is a natural mineral and not as profitable for the pharmaceutical companies as synthetic drugs. Recent evidence indicates that lithium may be an essential element, needed in trace amounts (minute in comparison to the high doses used in treatment).

We have in our body only about 2-3 mg. of lithium. Absorption from the intestine is good, about 70-90 percent. People with mania often have very good absorption of lithium. Excess lithium is eliminated in urine and feces.

Sources: We do not completely understand what effect lithium in foods has, or what particular foods are high in lithium. Some natural mineral waters are high in lithium, and these are said to calm the nerves, cheer the spirit, and soothe the digestion. Sugarcane and seaweed have been shown to contain lithium. Tobacco has some lithium, but the effect of inhaled lithium is not known.

Function: It is not yet known what particular function of lithium may make it an essential nutrient. It is thought to stabilize serotonin transmission in the nervous system; it influences sodium transport; and it may even increase lymphocytic (white blood cell) proliferation and depress the suppressor cell activity, thus strengthening the immune system. There is also speculation that lithium is in some way involved in cancer genesis or prevention.
**Uses:** Lithium's main use is in treating manic-depressive disorders, for which it is used in what could be considered megadosages. Certain depression problems, probably those sensitive to sodium transport difficulties, may be helped by lithium, even where there is little or no manic component. Manic symptoms of insomnia, hyperactivity, talkativeness, grandiose thinking, and delusions can usually be controlled with lithium therapy. Dosages of between 600 and 1000 mg. per day are needed to obtain the appropriate blood level to treat mania.

Lithium has occasionally been used in treating alcoholism, where it apparently decreased the taste for alcohol and generated a more cheerful attitude toward life. Lithium treatment does, however, produce some side effects, such as a metallic taste in the mouth, increased thirst, and more frequent urination. It is not routinely taken as a nutritional supplement but is used primarily as a medicinal drug.

**Deficiency and toxicity:** Deficiency of lithium is not really known. The theory that a deficiency of lithium can cause an increase in depression has not been adequately proved.

Lithium toxicity, however, is a very real possibility when it is used as a medicine. In the treatment of manic disorders, there is a fine line between therapeutic and toxic levels. Since it is cleared in the urine, anyone with kidney disease must take lithium with caution. It is given in therapeutic doses only by prescription, with blood levels followed closely by the doctor.

Lithium produces some of its symptoms by upsetting the fluid balance and mineral transport across cell membranes. Symptoms of lithium toxicity include nausea, vomiting, diarrhea, thirst, increased urination, tremors, drowsiness, confusion, delirium, and muscle weakness. Skin eruptions may also occur. With further toxicity, staggering, seizures, kidney damage, coma, and even death may occur.

**Requirements:** There is no specific RDA for lithium, nor is it known how much, if any, we need. Dietary studies estimate that we get about 2 mg. daily. A therapeutic intake can vary from 500-1,500 mg. daily, though usually 300 mg. of lithium carbonate three times daily will provide the blood levels needed to treat manic disorders, which may require long-term therapy. Under these circumstances, blood levels should be checked occasionally to make sure there are sufficient amounts.
present, and symptoms (side effects) of lithium toxicity should be watched for carefully.