



## Boron

**Boron is a vital trace mineral that is required for normal growth and health of the body.** Many disease conditions like arthritis, menopausal symptoms and osteoporosis among others are naturally managed by boron.

It is believed that boron improves the natural ability of human body to absorb calcium and magnesium.



Boron seems to be essential for healthy bone and joint function, possibly via effects on the balance and absorption of calcium, magnesium and phosphorus. It seems to affect cell membranes and the way signals are transmitted across these membranes. Boron affects the metabolism of steroid hormones and may also play a role in converting vitamin D to its more active form, thus increasing calcium uptake and deposition into bone. Boron also increases male sex hormone levels. Boron is efficiently absorbed and excreted in the urine.

Boron deficiency seems to affect calcium and magnesium metabolism, and affects the composition, structure and strength of bone, leading to changes similar to those seen in osteoporosis. This is likely to be due to decreased absorption and increased excretion of calcium and magnesium. Boron deficiency combined with magnesium deficiency appears especially damaging in cases of osteoporosis. Due to its effects on calcium and magnesium metabolism, boron deficiency may also contribute to the formation of kidney stones. Boron deficiency also seems to decrease mental alertness.



The use of boron in the treatment of arthritis is a fairly new concept. In the early 1900's, Doctor Rex E. Newnham, an Australian doctor suffering from arthritis, hypothesized that since boron has positive effects on bone health, it can be used to treat arthritis. For over a decade, he traveled all over the world, studying how the levels of boron in the soil could affect arthritis. His research took him to Africa, New Zealand, and northwest Australia among other regions. He concluded that plant foods containing higher levels of boron protected the local population from arthritis.

Since after this pioneering study, other health institutions carried out similar studies. The Royal Melbourne Hospital found that the majority of people who suffer from arthritis felt well from taking boron supplements. Meanwhile, the U.S. Human Nutrition Research Center investigated how exactly boron works to relieve pain and cure arthritis. It concluded that boron helps control a parathyroid gland that controls the mineralization of bones.

Epidemiological studies indicate that in countries such as Mauritius and Jamaica, where boron intake is low, the incidence of osteoarthritis is around 50 to 70 percent. In countries such as the USA, UK and Australia, where boron intake is relatively high, the incidence of osteoarthritis is around 20 percent.

Boron content in arthritic bones may be lower than that of normal bones and extra boron may increase bone hardness. Boron is increasingly used in calcium and bone-replenishing nutritional formulas. It may be particularly useful in those whose magnesium intake is low. This effect may be useful in the prevention of kidney stones.

Boron may be beneficial in the treatment of osteoporosis. Supplements have been shown to enhance the effects of estrogen in postmenopausal women. This is likely to contribute to its beneficial effects on bone health. Because of its sex hormone enhancing effects, boron may help to protect against atherosclerosis.

Boron works with calcium, magnesium, phosphorus and vitamin D in bone metabolism, growth and development. Animal studies show that a deficiency of vitamin D increases the need for boron.

### **Benefits of boron:**

- May prevent arthritis: Boron is a successful treatment option for arthritis and in more than 95% of cases significant improvement was noticed by bringing about effective calcium integration into the cartilage and bone. With increase in age the bones might become weak and porous and boron can stem this deterioration effectively.
- May Reduce severity of rheumatoid arthritis: Boron is thought to greatly reduce the allergic conditions that are typically associated with rheumatoid arthritis.
- May Help in bone building: The bone building capacities of boron are often ignored in favor of calcium. However, it is boron that works in unison with calcium to strengthen the bones. It plays a very important role in minimizing the risks of osteoporosis and arthritis. Boron helps in the metabolism of minerals that are involved in bone development such as calcium, magnesium and copper. Boron also affects the hormones of estrogen and testosterone that are also related to the overall health of the bones.
- May Help in production of estrogen: Boron might improve the production of estrogen in menopausal women, bringing back their sex drive within a few days of treatment. Boron increases the level of natural sex hormones in the body, thereby reducing the need for hormone replacement therapy.
- May Prevent postmenopausal osteoporosis: Boron may ease the symptoms such as hot flashes and night sweats that are typically associated with menopause.
- Might be Useful in cancer therapy: Boron neutron capture agents are used for cancer

therapy and in the development of strong enzyme inhibitors. Boron compounds are also used as antibody mimics that can easily identify biologically important saccharides.

- Thought to Help to maintain proper cell membrane function: Boron plays an important role in maintaining transmembrane functions and in stabilizing the hormone reception.
- May Help in preventing blood clots: It is believed that boron can influence some of the blood clotting factors in the body. However, more studies need to be done to authenticate this finding.
- May Reduce congestive heart failure conditions: Boron can significantly alleviate the difficulties caused by congestive heart failure conditions.
- Lowers plasma lipid levels: Boron helps to reduce lipid accumulation and may enable the removal of cholesterol.
- May Decrease the severity of fungal infections: Boron is thought to protect the body from a host of parasitic attacks such as Candida Albicans.
- May Improve brain function and cognitive performance: Studies have shown that boron can enhance brain function, eye-hand coordination, short memory and concentration.
- It serves as enzyme inhibitors: Boron might inhibit some enzymes while serving as a cofactor for yet another enzymatic reaction.

**Deficiency symptoms:** Some symptoms include hyperthyroidism, sex hormone imbalances, osteoporosis, arthritis and brain malfunction.

**Symptoms of overdose toxicity** would include nausea, vomiting, weakness, loose motion, and dermatitis. Normally boron is easily absorbed, and excreted through urine. In persons with kidney problems, boron might accumulate in heart, kidneys, brain and tissues.



Be sure to try NSP's Calcium-Magnesium, SynerPro® (240 tabs), Trace Mineral Maintenance (450 tabs), or Nature's Sea Calcium (120 caps).

## References

- <http://www.organicfacts.net/health-benefits/minerals/health-benefits-of-boron.html>
- <http://www.howtodothings.com/health-fitness/use-boron-to-treat-arthritis>
- <http://www.jctonic.com/include/minerals/boron.htm>

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**Yours in Good Health!**

Sincerely,

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