

Bonesure™

Recommended Use:

- ▶ Bone support
- ▶ Increase bone density
- ▶ Reverse bone loss
- ▶ Complete mineral complex
- ▶ Organic plant sourced calcium
- ▶ Collagen formation

BoneSure™ is a full spectrum bone building formula that containing plant based calcium and magnesium from Aquamin, boron, vitamin C, vitamin D3 and vitamin K2. It is targeted for reversing bone loss, increasing bone mineral density and reducing the risk of developing osteoporosis. The bone building vitamins and minerals in BoneSure have been clinically proved to increase bone mineral density, due to greater absorption due to high bioavailability and solubility of the above minerals and more than 70 trace minerals and phyto-nutrients.

This marine plant draws calcium from sea water and pre-digests the nutrients into a matrix, so the calcium is bio-active at about 97% (using a 30 minute disintegration testing). Aquamin® is porous in nature, similar to a sponge that has high surface area. Aquamin® also contains high levels of natural magnesium, plus other trace minerals such as copper, iron, potassium, silicon, sodium, and zinc.

Aquamin is a natural, marine-sourced multi-mineral, which is derived from the cytoskeleton of the red algal *Lithothamnion* spp. Over the course of the aquatic plant's life, minerals are accumulated from the seawater, and stored as carbonate salts in the plant. 74 components have been identified in total. Other than washing and milling, Aquamin is unaltered from the raw material and as such represents a natural multi-mineral material that has FDA GRAS certification and is suitable for many food and supplement applications.

Boron is a necessary mineral for the metabolism of calcium, phosphorus and magnesium and is one of the most critical components for supporting a healthy bone matrix. Boron increases calcium absorption and studies indicate it is required in maintaining and improving bone health and preventing post-menopausal osteoporosis.

Vitamin D3 has a large impact on bone health and is required for absorption and utilization of calcium and phosphorus. Vitamin D3 works with the parathyroid to regulate calcium in the bloodstream, and is important for prevention of osteoporosis, osteoarthritis and hypocalcemia. It is a necessary vitamin for the normal growth of bones and teeth. When Vitamin D3 is acquired through food, it first requires conversion by the liver and then by the kidneys, thus there is an increased risk of osteoporosis in cases of kidney or liver disorders.

Vitamin K2 is known for its role in blood clotting, however it is also essential for bone formation and repair, as it is necessary for the synthesis of osteocalcin, the protein in bone tissue in which calcium crystallizes. Vitamin K2 is both manufactured by intestinal bacterial and can be sourced from natto which is fermented soybeans. Japanese clinical studies show impressive increases in bone mineral density with natto consumption.

Vitamin C is effective as an antioxidant, immune booster, and for collagen formation. It also has the ability to increase bone density, thus plays a role in



Medicinal Ingredients: Each vegetarian capsule contains:

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| Aquamin® (<i>Lithothamnion spp.</i>) | 630 mg |
| Calcium: 30% (189 mg), Magnesium: 3% (18.9 mg) | |
| Vitamin C (<i>Calcium ascorbate</i>) | 62 mg |
| Boron (<i>Boron citrate</i>) | 0.8 mg |
| Vitamin K2 (<i>Menaquinone-7</i>) | 25 mcg |
| Vitamin D3 (<i>Cholecalciferol</i>) | (240 IU) 6 mcg |

Non-medicinal Ingredients: Hydroxypropyl methylcellulose, rice flour & magnesium stearate.

Recommended Dose (adults): Take 2 capsules two times a day or as directed by a health care practitioner.

Caution/Warnings: Consult a health care practitioner prior to use in cases where an estrogen-dependent cancer exists. Consult a health care practitioner if you are taking blood thinners.

Contraindications: Do not use if pregnant or breastfeeding.



preventing and treating osteoporosis. In a study involving 994 post-menopausal women, Vitamin C supplementation use had a beneficial effect on the levels of bone mineral density. Another study observed estrogen deficiency correlated with sub-optimal levels of antioxidants in the bone. With additional Vitamin C, estrogen levels rose in the bone marrow substantially, leading to bone loss was preventable in post-menopausal women.

Magnesium is the second most prevalent mineral in the body with a specific role in bone health. Magnesium aids in calcium metabolism and works together with calcium within the body.

Calcium is one of the most important nutrients in the body. More than 99% of calcium is stored in the bones and teeth, where it supports structure and is ready to be called to action for many other critical functions. The bones of the human body are continually remodeling, through a process of breaking down (osteoclasts) and building up (osteoblasts) with deposition of calcium into new bone formation. As one ages, the balance between bone resorption and deposition changes, with bone breakdown exceeding formation. This can lead to bone loss and an increased risk for osteoporosis.

Calcium Absorption

Based on a report from the Centre d'Etude et de Valorisation des Algues (Study centre for the valorization of algae, CEVA¹) published in February 2007, a comparison of Caltrate 600 and Aquamin[®] powder on their in-vitro calcium absorption performance was recorded. Results show both products have good calcium bioavailability. However, Aquamin[®] contains 75% of calcium initial concentration whereas Caltrate 600 contains only 69%.¹

Increase Bone Mineral Density (BMD) - Human Trial

In addition, a clinical trial called "Bone-Health Program" involving 176 individuals was performed for 90 days to evaluate the formulation using

Aquamin[®] (ex. BoneSure). The participants experienced greater mean increases in BMD than expected based on age-adjusted national norms. The results shows the Aquamin[®] Bone-Health plan can facilitate positive increases in mean Bone-Mineral-Density (BMD).²

*Boron statement for estrogen dependent cancer.

The BoneSure label has a statement: *Consult a health care practitioner prior to use in cases where an estrogen dependant cancer exists.*

This statement is required on the label by the NHPD because boron has similar effects to estrogen and studies indicate that boron supplementation increases 17-beta-estradiol levels³. There is a connection between higher levels of endogenous sex hormone levels (including estradiol) and increased breast cancer risk in postmenopausal women⁴. Therefore, we have put the warning on our label about caution with patients at risk or with a history of estrogen dependant cancer.

The maximum permissible total daily dosage of boron by Health Canada is 6.72 mg/day. This total takes into consideration boron intake from food and water, leaving the recommended maximum total in oral supplementation as 3.36 mg/day. BoneSure contains a daily dosage (four capsules) of 3.2 milligrams of boron.

There is a body of scientific data showing that boron is an essential micro-element and deficiency of boron in the diet has been linked to several conditions, including some forms of cancer, osteoporosis and osteoarthritis. Interestingly, research shows that diets rich in boron could significantly reduce some cancer types, especially breast (not including estrogen-dependant breast cancer), prostate, lung and cervical forms of cancer.⁵

References:

1. As a Technical Centre, the CEVA is unique in Europe, it provides services for companies interested in finalizing and developing industrial products with marine based ingredients: macro-algae, micro-algae, marine plants and sea-water, and for the local municipalities faced with the problems of increasing amounts of washed-up seaweeds and sea plants.
2. Michalek J.E., Preuss H.A. et al. Currently under review for publication.
3. Nielsen, F.H.; Hunt, C.D.; Mullen, L.M. & Hunt, J.R. (1987). Effect of dietary boron on mineral, estrogen, and testosterone metabolism in postmenopausal women. FASEB Journal, Vol. 1, pp. 394-7.
4. Eliassen AH, Missmer SA, Tworoger SS, Spiegelman D, Barbieri RL, Dowsett M, Hankinson SE. Endogenous steroid hormone concentrations and risk of breast cancer among premenopausal women. J Natl Cancer Inst. 2006 Oct. 4;98(19):1406-15.
5. Scorei, I.R. Boron Compounds in the Breast Cancer Cells Chemoprevention and Chemotherapy Biochemistry Department, University of Craiova, Craiova, Dolj, Romania