StrongBones Vegetarian

Code: FE2084 – 180 vegetable capsules

StrongBones Vegetarian* is a food supplement based on calcium triphosphate, vitamins, minerals, plant extracts and amino acids that provides maximum assimilation of calcium and phosphorus along with the most complete support of cofactors to help maintain **bone health**.

*Contains vitamin D3 obtained from lanolin.

HEALTH CLAIMS (EU Regulation 432/2012): *Calcium, phosphorus, magnesium, manganese, zinc, vitamin D and vitamin K are necessary for the maintenance of normal bones. Vitamin C contributes to the natural formation of collagen for normal cartilage and bone function.*

Ingredients: Calcium salts of orthophosphoric acid (calcium phosphate, tribasic), magnesium bisglycinate, L-lysine monohydrochloride, L-proline, vegetable glucosamine hydrochloride (from *Aspergillus niger*), L-ascorbic acid (vit. C), anti-caking agents (magnesium salts of fatty acids and silicon dioxide), natural peppermint flavour, boric acid, grape seed extract (*Vitis vinifera*), lycopene (from *Lycopersicon esculentum*), green tea leaf extract (*Camellia sinensis*), aerial part extract from field horsetail (*Equisetum arvense*), zinc mono-L-methionine sulphate, turmeric root extract (*Curcuma longa*), lutein (from *Tagetes erecta*), vitamin D3 (cholecalciferol), manganese citrate, menaquinone-4 (vit. K2), calcium-L-methylfolate, thiamin hydrochloride (vit. B1), cupric citrate, methylcobalamin (vit. B12), menaquinone-7 (vit. K2), vegetable capsule (glazing agent: hydroxypropylmethylcellulose;

Nutritional information:	**3 caps. (2.38 g)**
Calcium (from calcium phosphate, tribasic)	333 mg (42%*)
Phosphorus (from calcium phosphate, tribasic)	157,4 mg (22%*)
Magnesium (from magnesium bisglycinate)	90 mg (24%*)
Zinc (from zinc mono-L-methionine sulphate)	3,1 mg (31%*)
Manganese (from manganese citrate)	0,93 mg (47%*)
Copper (from cupric citrate)	0,31 mg (31%*)
Boron (from boric acid)	1,1 mg 2,2 mg)
Field horsetail (*Equisetum arvense*) (7% silica)	10 mg
Thiamin (vit. B1) (from thiamin hydrochloride)	1,4 mg (127%*)
Vitamin K2 (from menaquinone-4 and menaquinone-7)	31 µg (41%*)
Vitamin D3 (cholecalciferol) (111 IU/caps.)	8,3 µg (166%*)
Vitamin C (L-ascorbic acid)	62 mg (78%*)
Vitamin B12 (methylcobalamin)	50 µg (2 000%*)
Folate (calcium-L-methylfolate)	166,7 µg (83%*)
L-Lysine 100 mg	200 mg
L-Proline 100 mg	200 mg
Glucosamine (from *Aspergillus niger*)	84 mg
Turmeric (*Curcuma longa*) (95% curcuminoids**)	7,5 mg
Grape seed (*Vitis vinifera*) (80% OPC)	20 mg
Green tea (*Camellia sinensis*) (75% EGCG; 3,5 mg/caps.)	14 mg
Lutein (from *Tagetes erecta*)	0,7 mg
Lycopene (*from Lycopersicon esculentum*)	1,7 mg

*NRV: Nutrient Reference Value in %

***provides curcumin I, demetoxicurcumin and bisdemetoxicurcumin

Size and format:
180 vegetable capsules

Recommended daily dose:
3 capsules one to two times daily with food. If you are taking medications, take this product a few hours before or after taking them.

Do not exceed the stated recommended daily dose (6 caps.). Do not consume a daily amount of 800 mg of EGCG or more.

Indications and uses:

Prevention and treatment of decalcification processes such as osteoporosis.

Cautions:
Should not be used by pregnant or lactating women, children below 18 years old, if you are already using other products containing green tea, or on empty stomach. Consult a health-care practitioner prior to use if you are treated with medication (anticoagulants or antiplatalete agents) or if you have a special medical condition (ulcers or gallstones).

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Strong Bones Vegetarian helps build and maintain a strong, healthy skeletal system with bone-building nutrients that help prevent the onset of osteoporosis.

It contains a comprehensive list of vitamins, minerals and nutrients critical for building bone-forming cells, increasing healthy bone growth and reversing osteoporosis by building new bone mass.

It provides 1,000 mg of calcium and 472.23 mg phosphorus per daily dose in the form of tribasic calcium phosphate. Vitamin D3 (cholecalciferol) improves calcium absorption, and nutrients such as green tea extract stimulate bone growth and mineralisation while interfering with the activity of cells that break down bone.

Strong Bones Vegetarian is the ideal supplement for maintenance of healthy bones that serve as the basis for virtually all aspects of your health and vitality.

INGREDIENTS:

CALCIUM: It is essential for healthy bones and teeth. It increases both bone growth and mineral density, and inhibits bone absorption of toxic metals such as lead. Calcium deficiency contributes to age-related bone loss. Therefore, any preventive approach to osteoporosis should include a dietary calcium adjustment. The ideal calcium supplement will result in increased bioavailability [1-3].

PHOSPHORUS: This micronutrient is another of the main components of bone. It is found in bone mineral content, as part of hydroxyapatite. It is important to keep an optimal calcium-phosphorus ratio in the diet since phosphorus affects the body's calcium balance and can negatively impact bone metabolism. It is vital for bone and tooth development and cell growth [4].

MAGNESIUM: the body contains 20 to 28 g of magnesium of which about 60% is found in the bones as part of the bone matrix. This mineral is involved in the actions of the parathyroid hormone, which regulates calcium and vitamin D3 metabolism in bone. Magnesium supplementation is known to increase bone density and reduce the risk of fracture in menopausal women. In our formula, magnesium has been incorporated in the form of bisglycinate to increase its absorption and bioavailability, making its absorption about four times faster than other forms of magnesium [5,6].

ZINC, BORON, MANGANESE and COPPER (TRACE ELEMENTS): among the minerals related to bone health, in addition to those mentioned above (calcium, phosphorus, magnesium, silicon) are zinc, boron, manganese and copper. **ZINC** is vital for osteoblastic activity, collagen synthesis and the activity of alkaline phosphatase, an enzyme involved in bone mineralisation. It has been shown that dietary zinc intake can influence the peak bone mass achieved in adolescence. Supplementation with magnesium, zinc and copper has been associated with decreased bone loss in menopause [7]. **BORON** is essential for the metabolism of calcium, phosphorus, magnesium and vitamin D3. It influences mineral metabolism by improving calcium absorption and reducing urinary excretion. It also appears to act on collagen turnover, as boron intake increases collagen synthesis which may contribute to bone formation [8]. **MANGANESE** is involved in the synthesis of the mucopolysaccharides of the bone matrix. **COPPER** is necessary for the collagen and elastin structure of this matrix [5].

HORSE TAIL: due to its high silica content accelerates repair of connective tissue, providing strength and elasticity. A population-based study to determine the association between silica and bone health concluded that an increased intake of silicon may have beneficial effects on bone tissue, because silicon stimulates the production of osteoblasts, neutralises hydroxyl radicals and participates in the formation of type I collagen, promoting its structural stability [9,10].

VITAMIN B1 (THIAMINE): is involved in enzymatic processes of carbohydrate metabolism for the formation of energy. It is also essential for normal functioning of heart and nerve tissues. In this formulation it acts in synergy with **vitamin C** and **manganese** in the correct development of bone tissue. In addition, it relieves non-specific muscle pain [11,12].

VITAMIN K2: behaves as a cofactor involved in the gamma carboxylation of glutamic acid, which is an important factor in the production of osteocalcin, a bone-specific protein. There is a relationship between vitamin K intake, bone mineral density and fracture risk in the elderly. This may be due to the fact that in the presence of low vitamin K intake, a less carboxylated and therefore less functional protein is produced. An inverse relationship between vitamin K intake and risk of hip fracture has been found in 72,327 women. In our formulation we have incorporated it in the form of menaquinone 4 and 7, which are the most bioavailable forms [13,14].

VITAMIN D3 (cholecalciferol): vitamin D3 is the most effective form of vitamin D that regulates the synthesis of other hormones related to calcium metabolism, such as parathyroid hormone (PTH), and it acts in various organs involved in calcium homeostasis, particularly in the intestine, promoting intestinal absorption of calcium, being the main regulator of its active absorption. Vitamin D deficiency contributes to increased bone turnover and bone loss. Thus, two out of three women being treated for osteoporosis are vitamin D deficient, and among the elderly, 40% are vitamin D deficient, a figure that rises to 80% among those living in nursing homes or hospitals [11,15].

VITAMIN C (Ascorbic Acid): is involved in the maintenance of proper bone tissue structure. It is necessary for the hydroxylation of proline and lysine in procollagen and for stabilising hydroxyproline in the collagen structure. It prevents excessive extracellular accumulation of pyridinoline, which would reduce bone elasticity. It also promotes the differentiation of cells involved in bone development and growth. It is essential in the maturation of osteoclasts. Vitamin C has been linked to both bone density and fracture risk. Several studies have associated high vitamin C intake with increased bone mineral density and it has been shown that patients with significant vitamin C deficiency are more prone to fractures. Low vitamin C intake increases the risk of fracture by up to five times in smokers, and high serum vitamin C values are associated with a decreased prevalence of fractures in post-menopausal female smokers. In another study to determine whether vitamin C was related to osteoporotic fractures in non-smoking elderly women, it was found that elderly women with osteoporotic fracture had low serum vitamin C concentrations [16].

FOLATE and VITAMIN B12: Low levels of folic acid and vitamin B12 have been associated with lower bone mineral density and an increased risk of osteoporosis. The relationship between these two vitamins and bone health is based on the fact that these two vitamins participate as cofactors in the metabolism of homocysteine. Homocysteine is involved in osteocalcin synthesis and osteoblast maintenance. In addition, it may interfere with collagen bridging and the function of various bone matrix proteins and may increase osteoclastogenesis. Administration of vitamin B12 to patients with pernicious anaemia resulted in increased biomarkers of bone formation and improved bone mineral density [13,17].

L-PROLINE AND L-LYSINE: The deterioration of bone microarchitecture is directly related to the quality of the osteoid matrix, 90% of which is made up of collagen. Any alteration in the collagen of the matrix modifies the bone support necessary for mineralisation and results in a more fragile and fracture-prone material. Proline and lysine are two amino acids essential for collagen formation. In a study of osteoporotic postmenopausal women given lysine, it was concluded that lysine could increase intestinal calcium absorption and improve renal retention of absorbed calcium. In our formulation both proline and lysine are presented in their free form for better absorption and assimilation [18].

GLUCOSAMINE: is an aminosaccharide involved in the synthesis of glycosaminoglycans and proteoglycans by the chondrocytes that make up joint cartilage. The administration of glucosamine promotes cartilage restoration and stimulates the synthesis of the above compounds to maintain the integrity of bone matrix and improve joint function. Glucosamine sulphate has also been attributed with an anti-inflammatory action that alleviates symptoms in arthritic processes [19].

TURMERIC: The main compound in turmeric, curcumin, is responsible for its anti-inflammatory action by reducing the concentration of cyclooxygenase-2 (COX-2). A high antioxidant action, far superior to that of vitamin E, has also been reported. Numerous studies have linked curcumin to bone microarchitecture. The administration of curcumin in an animal model for 12 months produced changes in bone turnover preventing deterioration of the skeletal structure, and an increase in trabecular bone mass was observed [20].

GRAPE SEED: The seed extract contains proanthocyanidins, which are powerful antioxidants. A number of experimental studies have demonstrated the action of proanthocyanidins on bone density. A study on an arthritic model showed that administration of grape seed proanthocyanidins attenuated the severity of arthritis in a dose-dependent manner by reducing synovial inflammation, cartilage erosion and bone erosion. In another study it was shown that co-administration of calcium and proanthocyanidins was more effective in reversing weakness of the mandibular bone [21,22].

GREEN TEA: Several studies have shown a link between green tea polyphenols, specifically catechins, including EGCG, and bone health. These polyphenols appear to mitigate deterioration and improve bone integrity. They act by suppressing bone erosion and modulate the cancellous and endocortical bone compartment by increasing bone mass. The mechanisms of action through which green tea polyphenols may exert their protective action on bone health have been detailed in a recent review [23]. Green tea polyphenols would act as potent antioxidants on oxidative stress, as anti-inflammatories, enhance osteoblastogenesis, suppress osteoclastogenesis and probably exert an osteoimmunological action [24,25].

LYCOPENE AND LUTEIN (CAROTENOIDS): Different studies have suggested that carotenoids may have a protective effect against the risk of bone loss. In our formulation we have incorporated two carotenoids, namely **LYCOPENE** and **LUTEIN**. LYCOPENE is found mainly in tomatoes and acts as an antioxidant by reducing oxidative stress and the risk of osteoporosis. A recent study sought to determine the effects of a restrictive diet on lycopene and bone turnover markers in postmenopausal women. The researchers concluded that lycopene acts as an antioxidant by decreasing bone destruction and that this could be beneficial in reducing the risk of osteoporosis. The Framingham Osteoporosis Study showed a correlation between high intake of carotenoids including LUTEIN and lower incidence of osteoporotic hip fractures [26,27].

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