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OsteoForce™ is a unique blend of nutrients formulated to restore and maintain healthy bones, with required vitamins and minerals provided in their most absorbable forms. The key minerals in OsteoForce™ – calcium and magnesium – are bound to malic acid for enhanced absorption, and synergistic zinc, copper and manganese are chelated for superior bioavailability.

OsteoForce™ Features:

Highly Absorbable Minerals

A mineral amino acid chelate is made up of an amino acid that has two or more donor groups combined with the mineral so that the molecular structure contains one or more rings. Chelate structures contain covalent bonds, setting them apart from traditional ionically-bonded mineral salt forms. Albion® has combined science and technology to create organic molecules in a form the body can readily assimilate, resulting in superior absorption. True chelates are not only absorbed better than mineral salts, but they are retained better in body tissue (such as bone).

Complexing calcium and magnesium with malic acid allows delivery of higher elemental amounts of these minerals. It also facilitates better absorption and retention, while preventing some of the unpleasant gastrointestinal side effects common with other forms of these minerals, such as calcium carbonate. Owing to its superior bioavailability, the amount of calcium in OsteoForce™ is lower than that of most mass-produced calcium supplements, which typically employ less effective calcium salts. Additionally, calcium is better absorbed in divided doses, rather than in a single, large dose, as is often provided in calcium-only supplements.

The Importance of Vitamins D & K in Bone Health

Vitamin D facilitates calcium absorption in the small intestine by stimulating the synthesis of calcium binding proteins, as well as being involved in bone turnover. Vitamin D deficiency is common, and a myriad of newly identified downstream effects have been elucidated as the importance of this nutrient has come to the forefront in functional medicine. Contributing factors to vitamin D insufficiency include avoidance of sun exposure, use of medications which bind fat and/or reduce cholesterol synthesis and absorption (anticonvulsants, steroid drugs, laxatives, bile acid sequestrants), and women with low hormone levels, as estrogen and progesterone deficiencies impair formation of the active form of vitamin D.^{1,2}

Vitamin D status declines with age, due to reduced dietary intake, diminished absorption from food, and decreased capacity of the liver and kidneys to hydroxylate and activate vitamin D. Additionally, aging skin has a reduced capacity for vitamin D synthesis via ultraviolet light exposure. A substantial proportion of patients with hip fractures present with osteomalacia, due to vitamin D deficiency.³ Vitamin D deficiency may also be associated with reduced muscular function, which may increase risk for falling and injury in older populations.⁴ Age is not the only factor that may increase need for bone-supporting nutrients. Younger women experiencing the “female athlete triad” may benefit from a bone-building formula, due to insufficient caloric intake, reduced estrogen levels and increased wear-and-tear on the bones.^{5,6}

OsteoForce™ includes vitamin K for its crucial role in regulating calcium trafficking in the body. Vitamin K is required for activating proteins that deposit calcium into bones and teeth, while protecting against its deposition into soft tissue. The latter function is due to this nutrient’s role as a coenzyme for matrix Gla protein (MGP), a potent inhibitor of arterial calcification. MGP attracts positive calcium ions, enhancing their incorporation into the hydroxyapatite matrix, thereby increasing bone mass. Vitamin K also serves to keep a key bone protein, osteocalcin, carboxylated.^{7,8} Undercarboxylated osteocalcin cannot regulate calcium, leading it to circulate freely in the bloodstream, and potentially be deposited in the soft tissues, which may result in calcification of arteries and joints, or precipitation into renal calculi (kidney stones). High levels of undercarboxylated osteocalcin are associated with low bone mineral density and increased hip fractures.⁹⁻¹² Vitamin K also helps to reduce urinary Ca excretion, and improve bone turnover profile.^{13,14}

Supplement Facts

Amount Per Serving	% Daily Value
Serving Size 4 tablets Servings Per Container 30	
Vitamin C (as Calcium Ascorbate)	100 mg 170%
Vitamin D (as Cholecalciferol)	600 IU 150%
Vitamin K (as Vitamin K1 Phytanadione)	1000 mcg 1250%
Calcium (as DimaCal™ Di-Calcium Malate, Calcium Ascorbate)	800 mg 80%
Magnesium (as Di-Magnesium Malate)	400 mg 100%
Zinc (TRAACS® Zinc Glycinate Chelate)	5 mg 35%
Copper (TRAACS® Copper Glycinate Chelate)	1 mg 50%
Manganese (TRAACS® Manganese Glycinate Chelate)	2 mg 100%
Potassium (as Potassium Glycinate Complex)	50 mg 2%
Boron (as Bororganic Glycine)	4 mg *

*Daily Value not established.

Other Ingredients: Stearates (vegetable source), microcrystalline cellulose, croscarmellose sodium, cellulose, silicon dioxide.



Additional Highlights

Zinc and copper are essential for healthy skeletal development and maintenance.¹⁵ A study on zinc deficiency in animals concluded that zinc deficiency may lower parathyroid hormone and calcitonin levels in the blood, thereby affecting bone mineral deposition and causing defects in bone mineralization.¹⁶ Serum osteocalcin concentrations and bone mineral density of the spine were significantly reduced in rats fed a zinc-deficient diet compared to rats with higher intakes of zinc.¹⁷

Zinc influences bone turnover by regulating secretion of calcitonin from the parafollicular cells of the thyroid gland. Copper promotes low bone turnover by suppressing the function of both osteoblasts and osteoclasts. A study that analyzed mineral concentrations in bone and hair of osteoporotic patients compared to healthy subjects revealed significantly lower amounts of zinc, copper and manganese in the osteoporotic patients.¹⁸

Another study found that low dietary zinc resulted in undesirable changes in circulating calcitonin and osteocalcin. It also found that a moderately high intake of zinc decreased magnesium balance, which supports taking both of these minerals along with calcium to maximize bone density. In post-menopausal women, a moderately high intake compared to a low intake of zinc increased magnesium excretion, but low zinc intake resulted in unfavorable changes in markers of bone remodeling. Animal studies indicate a role for manganese in inhibiting bone loss in the axial and the peripheral skeleton after ovariectomy. On the whole, research findings regarding the influence of vitamins and minerals on bone turnover emphasize the importance of balancing micronutrients for supporting optimal bone health.^{19,20}

How to take:

- Take four tablets per day with meals or as directed by your health care provider.
- When taken together, OsteoForce™ and Twice Daily Multi™ make a perfect match with little overlap of nutrients. Other supportive formulas include Thyroid Synergy™, Adrenotone™ and PaleoGreens™.

References

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