

CalMag D

Recommended Use:

- ▶ Bone support
- ▶ Cardiovascular support
- ▶ Muscle health

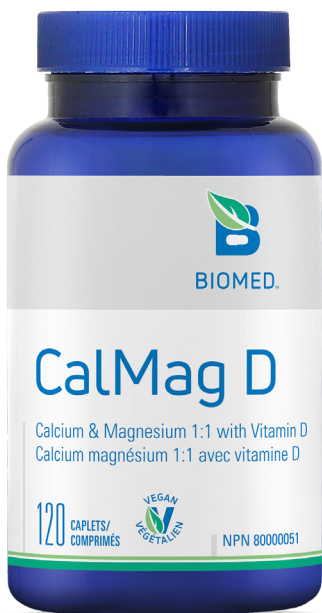
Calcium offers many benefits to human health, including building of bones and teeth. Calcium plays a strong role in the growth and contraction of muscles; preventing muscle cramps; regulating heartbeat; transmitting nerve impulses; combating cholesterol by increasing HDL; activating enzymes such as lipase; preventing heart disease; reducing high blood pressure; promoting weight loss and reducing the occurrence of kidney stones. Calcium also inhibits the absorption of heavy metals, such as lead, into the bones and teeth and may be protective against colon and breast cancers. A deficiency of calcium can result in: brittle bones, including osteoporosis; sore joints, including rheumatoid arthritis; muscle cramps and numbness in the arms and legs; tooth decay and cracked nails; heart palpitations and high blood pressure; PMS symptoms; and even cognitive impairment and depression.

Magnesium plays an important role in most of the body's systems and assists with calcium metabolism. Magnesium is vital for maintaining arterial health, normal blood pressure and normal heart rhythm (refer to Biomed's monograph on Mag-Citrate for more information on the benefits of magnesium). Calcium and magnesium work together, calcium forming the structure of the bone and magnesium aiding the transportation of calcium within the body to where it is needed the most.

Vitamin D increases the absorption of calcium, as it works with the parathyroid hormone to regulate calcium in the bloodstream. Vitamin D is important in promoting normal growth, in developing strong bones in children, in preventing

muscle weakness and in regulating the heartbeat. Vitamin D is also important in the treatment of osteoarthritis, osteoporosis, hypocalcemia and in enhancing the immune system. Adults who are severely deficient of vitamin D can develop osteomalacia (a bone-softening disease), whereas lack of vitamin D can cause rickets in children. Since vitamin D deficiency is relatively common, especially in older adults, supplementation is important, especially during low-sun months.

Ingredient	Mode of Action:
Calcium citrate	Regulates heartbeat and prevents heart disease. Aids the growth and contraction of muscles. Combats cholesterol by increasing HDL. Reduces the occurrence of kidney stones. Reduces high blood pressure. Prevents muscle cramping. Transmits nerve impulses.
Magnesium citrate	Assists calcium metabolism. Helps maintain arterial health, normal blood pressure and normal heart rhythm. Works with calcium to form the structure of the bone. Aids in calcium transportation where most needed within the body.
Vitamin D2	Increases calcium absorption. Is important in the treatment of osteoarthritis, osteoporosis, hypocalcemia and in enhancing the immune system.



Medicinal ingredients: Each caplet contains:

Calcium (citrate)	100 mg
Magnesium (citrate)	100 mg
Vitamin D2 (ergocalciferol)	100 IU (2.5 mcg)

Non-medicinal ingredients: Hydrogenated cottonseed oil, magnesium stearate, microcrystalline cellulose, silicon dioxide, croscarmellose sodium.

Recommended dose (adults): Take 2 caplets with meal once daily, or as directed by a health care practitioner.

Caution/warnings: Avoid using two hours prior to or until four hours after taking other medications or natural health products.

NPN 80000051 • 120, 240 caplets



Calcium Assimilation

Calcium can be provided in many types of delivery systems: carbonate, lactate, hydroxyapatite, HVP chelate, and citrate. Citrate is considered to be one of the better forms of calcium not only due to its increased solubility (relative to carbonate), but its effect on increasing bone mass in postmenopausal women. In one controlled study, postmenopausal women receiving 400 mg of calcium citrate twice daily for two years pre-vented bone loss and stabilized bone density in the spine, femoral neck, and radial shaft compared to placebo. A second study comparing calcium citrate to calcium carbonate and a placebo in postmenopausal women, showing that calcium citrate was more bioavailable when given with a meal (provided 46 greater peak-basal variation and 94% higher change in area under the curve for serum calcium and 41% greater increment in urinary calcium). A recent study published in the New England Journal of Medicine proved calcium citrate (elemental dose used was 500 mg per day) completely stopped bone loss, improved bone mass and cut the fracture rate by over 50%.

Daily Nutritional Intake

Although calcium and magnesium can be received from many dietary sources, calcium is the one most commonly deficient in North American diets. In Canada the recommended daily nutritional intake (RNI) for calcium ranges from 600 mg of elemental calcium for children age 4 to 6 to 1,200 - 1,500mg for pregnant and breast-feeding females. The RNI for adolescents and adults (both male and female) is 700 - 1,100 mg. Pregnant women, nursing mothers, children and adolescents are particular groups that may require calcium supplementation to augment dietary calcium. Whereas, postmenopausal women may take calcium supplements above the RNI to combat the potential onset of osteoporosis.

Osteoporosis

Calcium deficiency is most prevalent in women who have had children and have not supplemented their diets with calcium. Once calcium is lost from the bones, signs of osteopenia develop and is often hard to reverse. Each year the incidence of osteoporosis in Canada increases. The major public health costs associated with osteoporosis relates to bone fractures, particularly hip fractures. Fractures are most prevalent in older postmenopausal women. One of the essential adjunctive therapies in the treatment of osteoporosis is the use of calcium with magnesium and Vitamin D. Together these minerals and vitamin provide important nutritional building blocks necessary for healthy bones.

A recent study of postmenopausal women aged 45-75 found that calcium supplementation was critical for maintaining bone mass. A further study reveals that supplementation with calcium and vitamin D to institutionalized elderly people could reduce the risk of hip fractures by over 30%. Adequate calcium intake from childhood to the end of life is critical for the formation and retention of a healthy skeleton.

High Blood Pressure and Obesity

Studies have shown that calcium plays an important role in controlling high blood pressure. The evidence suggests that a person with a calcium deficiency has an increased risk of high blood pressure which higher calcium availability can help to control. In one study, hypertensive patients given 1,000 mg of oral calcium supplements for eight weeks were compared to a placebo group. The calcium supplement group showed a significant improvement in BP reading, whereas the placebo group showed no change. Clinical evidence suggests calcium intake has a significant anti-obesity effect.

Studies to date indicate that increasing calcium intake may result in reductions in fat mass as well as in blood pressure.

References:

1. Moyad MA. Osteoporosis. Part III - Not just for bone loss: potential benefits of calcium and vitamin D for overall general health. *Urol Nurs*. 2003 Feb;23(1): 69-74.
2. Barger-Lux MJ, Heaney RP. The role of calcium intake in preventing bone fragility, hypertension, and certain cancers. *J Nutr*. 1994 Aug;124(8 Suppl):1406S-1411S.
3. Thys-Jacobs S, Starkey P, Bernstein D, Tian J, and the Premenstrual Syndrome Study Group: Calcium carbonate and the premenstrual syndrome: effects on premenstrual and menstrual symptoms. *Am J Obstet Gynecol* 179: 444-452, 1998.
4. Sakhaee K, Bhuket T, Adams-Huet B, Rao DS. Meta-analysis of calcium bioavailability: a comparison of calcium citrate with calcium carbonate. *Am J Ther*. 1999 Nov;6(6):313-21.
5. Ruml LA, Sakhaee K, Peterson R, Adams-Huet B, Pak CY. The effect of calcium citrate on bone density in the early and mid-postmenopausal period: a randomized placebo-controlled study. *Am J Ther*. 1999 Nov;6(6):303-11.
6. Heller HJ, Greer LG, Haynes SD, Pointexter JR, Pak CY. Pharmacokinetic and pharmacodynamic comparison of two calcium supplements in postmenopausal women. *J Clin Pharmacol* 2001 Jan;41(1): page 116.
7. Medline pl. Calcium Supplements (Systemic). National Library of Health, National Institute of Health, 2004.
8. Brown JP, Josse RG. 2002 clinical practice guidelines for the diagnosis and management of osteoporosis in Canada. *CMAJ* 2002;167 (suppl 10):S1-S34.
9. Vitamin D is also important for the absorption of calcium.
10. Suzuki Y, Davidson KS, Chilibeck PD. Total calcium intake is associated with cortical bone mineral density in a cohort of postmenopausal women not taking estrogen. *J Nutr Health Aging*. 2007(5): pages 296-99.
11. Advini S, Wimalawansa SJ. Bones and nutrition: common sense supplementation for osteoporosis. *Current Women's Health Rep*. 2003 Jun: 3(3); pages 187-192.
12. Zemel MB. Calcium Modulation of Hypertension and Obesity: Mechanism and Implications. *J Am Coll Nutr*. 2001 Oct; 20(5 Suppl): pages 428S-435S; discussion pages 440S-442S.
13. McCarron DA, Morris CD. Blood Pressure response to oral calcium in persons with mild to moderate hypertension. *Ann. Int. Med.*, 1985: pages 103-106, Part1: pages 825-831.
14. Ibid.
15. Moyad MA. Osteoporosis. Part III - Not just for bone loss: potential benefits of calcium and vitamin D for overall general health. *Urol Nurs*. 2003 Feb;23(1): 69-74.