

SIZE: 4 X 7.5 inch

FRONT



COMPOSITION:

Each Softgel Capsule Contains:
Vitamin D3 10000IU
Vitamin K2 1000mcg
(Manufacturer Specs.)

DESCRIPTION:

CENR-D contains Vitamin D3 and Vitamin K2, which are essential nutrients for maintaining healthy bones, teeth, supporting cardiovascular health and supporting a healthy immune system. Vitamin K2 works synergistically with vitamin D to regulate calcium metabolism in the body, ensuring that calcium is properly deposited in bones and teeth rather than in soft tissues.

CENR-D IS BENEFICIAL FOR:

Calcium Absorption: Vitamin D3 helps in the absorption of calcium from the intestines, which is crucial for maintaining healthy bones and teeth. It aids in the regulation of calcium levels in the blood.

Bone Health: It helps in the mineralization of bones and reduces the risk of osteoporosis and fractures. Vitamin K2 works in conjunction with vitamin D3 to support bone health. It helps in the activation of osteocalcin, a protein necessary for bone mineralization.

Immune Function: Vitamin D3 supports the immune system and helps in defending against infections and diseases. It plays a role in modulating immune responses and reducing the risk of autoimmune disorders.

Mood and Mental Health: Vitamin D3 play a role in mood regulation and mental health. Deficiency in vitamin D3 has been associated with an increased risk of depression and other mood disorders.

Blood Clotting: Vitamin K2 is essential for proper blood clotting. It activates proteins involved in the coagulation process, helping to prevent excessive bleeding.

Cardiovascular Health: Vitamin K2 contributes to cardiovascular health by helping to prevent the buildup of calcium in the arteries and reducing the risk of arterial calcification.

Dental Health: Vitamin K2 is believed to promote dental health by supporting the mineralization of teeth and reducing the risk of cavities.

VITAMIN D3:

Vitamin D3 (cholecalciferol) is a form of Vitamin D. It is a fat-soluble vitamin, binding of vitamin D3 to β -lactoglobulin appeared to improve the stability of the vitamin when the vitamin is exposed to UV light. Cholecalciferol is made in the skin following UVB light exposure. It is converted in the liver to calcifediol (25-hydroxyvitamin D) which is then converted in the kidney to calcitriol (1,25-dihydroxyvitamin D). One of its actions is to increase calcium uptake by the intestines. *Absorption:* vitamin D3 is a lipid-soluble molecule that is absorbed into the lacteals in the gastrointestinal tract through chylomicrons. It is then transported via the lymphatic system and subsequently into the blood stream (Charoenngam et al. 2021). *Distribution:* the bound phase of circulating vitamin D3 is around 60%, and the free phase is quickly eliminated into the muscle, and adipose tissue-due to the action of lipoprotein lipase (Haddad et al. 1993). *Metabolism:* metabolism of this vitamin takes place in the liver to (25(OH)D). 25(OH)D is metabolized by 25-hydroxyvitamin D-1- α -hydroxylase (CYP27B1) in the kidneys into the active metabolite 1,25-dihydroxyvitamin D (1,25(OH)2D). *Excretion:* vitamin D3 is mainly excreted through the bile into the feces. As part of the absorbed vitamin D is diluted in the adipose tissue, obese individuals have high risk of vitamin D deficiency.

Health benefits of Vitamin D3:

Bone Health: Vitamin D3 plays a critical role in calcium absorption and helps maintain optimal bone health. It assists in the regulation of calcium and phosphorus levels, promoting proper mineralization of bones and teeth. Sufficient vitamin D3 levels reduce the risk of conditions like osteoporosis, osteomalacia and fractures.

Immune Function: Vitamin D3 is essential for a healthy immune system. It helps regulate the immune response, promotes the production of antimicrobial peptides, and modulates the function of immune cells. Adequate vitamin D3 levels have been associated with a reduced risk of infections, including respiratory tract infections.

Muscle Function: Vitamin D3 is involved in muscle health and function. It plays a role in muscle strength and coordination, which is especially important for older adults in reducing the risk of falls and maintaining mobility.

Mood and Mental Health: Some studies have linked vitamin D3 deficiency to an increased risk of mood disorders such as depression and seasonal affective disorder (SAD). Adequate vitamin D3 levels may contribute to improved mood and overall mental well-being.

Heart Health: Vitamin D3 may have a protective effect on cardiovascular health. Adequate levels of vitamin D3 have been associated with a reduced risk of hypertension, heart disease, and stroke.

Cancer Prevention: While the research is still ongoing, some studies have indicated that sufficient vitamin D3 levels may play a role in reducing the risk of certain cancers, including colorectal, breast, and prostate cancers.

Autoimmune Conditions: There is evidence to suggest that vitamin D3 may have a regulatory effect on the immune system, which may be beneficial in autoimmune conditions such as multiple sclerosis, rheumatoid arthritis, and type 1 diabetes.

VITAMIN K2:

Vitamin K (menaquinone, MK) is a fat-soluble vitamin, important for the function of numerous proteins within the body, such as the coagulation factors (II, VII, IX, X and protein C and protein S), osteocalcin (a bone-forming protein) and matrix-Gla protein (MGP) (an anticalcification protein). Vitamin K exists naturally as vitamin K1 (phyloquinone) and vitamin K2 (menaquinone, MK-4 through MK-10). Vitamin K2 (menaquinone, MK) is an essential vitamin with critical role in bone metabolism. Chemically, the term vitamin K2 encompasses a group of small molecules that contain a common naphthoquinone head group and a polyisoprenyl side chain of variable length.

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BACK

Pharmacokinetics of Vitamin K2

The absorption of K2 takes place from the lumen of ileum and jejunum. Absorption is rapid; Vitamin K2 is incorporated into micelles or TAG-rich lipoproteins and doesn't undergo any change during the process. Micelles are packed into chylomicrons secreted by enterocytes; chylomicrons are then secreted out from within the intestinal villi via exocytosis into lymphatic system through thoracic duct and reach the circulatory system. Changes take place in the apoproteins of chylomicrons that contain Vitamin K2, these changes help in their uptake via endocytosis in the bone osteoblasts, liver, and other tissues; endocytosis is mediated by lipoprotein receptors such as, low-density lipoprotein receptor (LDLR) and low-density receptor related protein (LRP). Excretion of K2 involves shortening of isoprenoid side chains to form metabolites of carboxylic acid with 5-carbon side chains. Further, conjugation of these metabolites with glucuronic acid takes place and finally they are excreted in urine and bile. K2 and other long chain derivatives of vitamin K2 are readily available for the extra-hepatic tissues like vasculature and bone after redistribution to the circulatory system.

Mechanism of Action:

Vitamin K2 facilitates carboxylation of glutamate (Glu) residue present on matrix Gla protein (MGP) leading to formation of carboxylated MGP (cMGP) and aids in phosphorylation of MGP leading to its activation; activated MGP inhibits bone morphogenetic protein 2 (BMP2) resulting in prevention of vascular calcification. K2 also is a cofactor in conversion of undercarboxylated osteocalcin (ucOC) to carboxylated osteocalcin (cOC); cOC has an affinity for calcium ions and facilitates the transport of calcium to bone for bone formation. Receptor activator for nuclear factor kappa ligand (RANKL) binds to RANK receptor and activates osteoclasts which results in bone resorption; vitamin K2 augments the expression of osteoprotegerin (OPG) which is a decoy receptor for RANKL and abrogates RANK-RANKL binding thus inhibiting bone resorption.

Health benefits of Vitamin K2:

Bone Health: Vitamin K2 plays a crucial role in bone health. It works in synergy with other nutrients, including vitamin D and calcium, to support proper bone mineralization. Vitamin K2 activates osteocalcin, a protein involved in the deposition of calcium into the bone matrix, thereby promoting bone strength and reducing the risk of osteoporosis and fractures.

Cardiovascular Health: Emerging research suggests that vitamin K2 may have a positive impact on cardiovascular health. It helps prevent the accumulation of calcium in the arteries, which is a risk factor for atherosclerosis and cardiovascular diseases.

Dental Health: Vitamin K2 is believed to promote dental health by supporting proper tooth mineralization. It helps in the activation of a protein called matrix GLA protein (MGP), which plays a role in preventing the calcification of dental tissues and reducing the risk of cavities and tooth decay.

Blood Clotting: Vitamin K, including K2, is essential for blood clotting. It assists in the activation of clotting factors in the liver, which helps control bleeding and promote wound healing.

Inflammation and Immune Support: Some studies suggest that vitamin K2 may have anti-inflammatory properties and may help modulate immune responses. By reducing inflammation, it may contribute to overall immune function and potentially play a role in autoimmune conditions.

DOSAGE AND ADMINISTRATION

One softgel daily after meals or as directed by the healthcare provider.

SIDE EFFECTS:

Excessive Calcium Absorption: Taking very high doses of vitamin D3 supplements can lead to excessive calcium absorption, resulting in high levels of calcium in the blood (hypercalcemia). This can cause symptoms such as nausea, vomiting, weakness, frequent urination, and kidney problems.

Vitamin D Toxicity: Taking extremely high doses of vitamin D3 for a prolonged period can lead to vitamin D toxicity. Symptoms may include loss of appetite, weight loss, nausea, vomiting, excessive thirst, increased urination, constipation, confusion, and in severe cases, organ damage.

Vitamin K2 is generally well-tolerated, and there are no known serious side effects associated with its use. However, in rare cases, some individuals may experience mild gastrointestinal symptoms such as nausea, diarrhea, or stomach upset.

INSTRUCTIONS:

Protect from light, heat and moisture. Store below 30°C.
Keep out of the reach of children.

HOW SUPPLIED:

Cener-D Softgel available in blister pack of 2 × 10's

Manufacturer Enlistment No. 00323
Product Enlistment No. 0323950782



Manufactured by
NUTRIX HEALTH CARE
P-44, ST, # 3, Small Industrial Area 9km,
Samundri Road, Faisalabad.

Marketed by:



خوراک و ہدایات:
ڈاکٹر کے مشورے کے مطابق استعمال کریں۔
روشنی سے محفوظ، 15-30°C درجہ حرارت پر رکھیں۔
تمام دوائیں بچوں کی پہنچ سے دور، تختہ ڈی اور خشک جگہ پر رکھیں۔