CEVITA – Vitamin C 500 mg Chewable Tablets

INDICATED CLAIMS

- A factor that helps the body to metabolize fats and proteins.
- Helps in the development and maintenance of bones, cartilage, teeth and gums.
- Helps connective tissue formation and in wound healing.
- An antioxidant for the maintenance of good health.

GENERAL INFORMATION

The term vitamin C applies to substances that possess antiscorbutic activity and includes two compounds and their salts: L-ascorbic acid, commonly called ascorbic acid, and L-dehydroascorbic acid. Ascorbic acid is the major dietary form of vitamin C. The terms vitamin C, ascorbic acid, Ascorbic acid, L-ascorbate and ascorbate are commonly used interchangeably.

Vitamin C is a hexose derivative, similar in structure to the six-carbon sugar glucose. It is an essential nutrient for humans, and, as pointed out by Linus Pauling in 1970, "differs from other nutrients in that it is required in the diet by only a few species of animals-man, other primates, the guinea pig, an Indian fruit-eating bat, and the red-vented barbel and some related species of Passeriform birds." It is also an essential nutrient for Coho salmon, rainbow trout, carp and some insects. Most other animals, all higher plant species and probably all algal classes can synthesize vitamin C from glucose or other sugars. Molecules similar to ascorbic acid are made by some fungi but not by bacteria, all vitamin C requiring animals lack the enzyme L-gulanogannm-lactose oxidase, the final step in the synthesis of ascorbic acid from glucose. Plants produce large amounts of ascorbic acid to facilitate resistance to the oxidative stresses associated with the myriad biotic and abiotic challenges inherent to photosynthesis.

The major deficiency syndrome of vitamin C is scurvy. Symptoms of scurvy include inflamed and bleeding gums, petechiae, ecchymosis, follicular hyperkeratosis, coiled hairs, perifollicular hemorrhages, impaired wound healing, dry eyes and mouth (Sjogren's

syndrome), arthralgia, joint effusions, muscle weakness, myalgia, fatigue, depression, frequent infections, anemia, anorexia, diarrhea, and pulmonary and kidney problems that can lead to coma and death all systems of the body are affected by scurvy.

Many of the symptoms of scurvy, particularly those having to do with connective tissue, can be explained by the known biochemical roles of vitamin C, particularly its role as a cofactor for prolyl and lysyl hydroxylase, enzymes important in the formation of collagen. Collagen synthesized in the absence of ascorbic acid-as occurs in scurvy-cannot properly form fibers, resulting in blood-vessel fragility, among other defects. In the prolyl and lysyl hydroxylase reactions, as well as in most of the biochemical reactions ascorbic acid participates in, it acts as a reducing agent. In these reactions, the vitamin reduces ferric and cupric ions to their ferrous and cuprous states, forms which are required for the reactions to proceed.

Ascorbic acid is involved in modulating iron absorption, transport and storage. It aids in the intestinal absorption of iron by reducing ferric iron to ferrous iron and may stimulate ferritin synthesis to promote iron storage in cells. It is involved in the biosynthesis of corticosteroids and aldosterone, the conversion of cholesterol to bile acids and it functions as a reducing agent for mixed-function oxidases.

For all of this, ascorbic acid is best known for its antioxidant properties and its possible role in the prevention of certain chronic degenerative disorders, such as coronary heart disease and cancer. In fact, ascorbic acid may be the most important water-soluble antioxidant in the body.

PHARMIACOKINETICS

Absorption of vitamin C from the lumen of the small intestine depends on the amount of dietary intake. At a dietary intake of 30 milligrams daily, the vitamin is nearly completely absorbed from the lumen of the small intestine into the enterocytes. At an intake of 30 to 180 milligrams daily, about 70% to 90% is absorbed. About 50% of a single close of 1 to 1.5 grams is absorbed. The percentage of a single close absorbed decreases with increasing amounts For example; only 16% of a single dose of 12 grams is absorbed. Maximum vitamin C absorption of large doses is

attained by ingestion of several spaced doses throughout the day rather than by a single large dose. Further, sustained-release forms of large closes will give a higher efficiency of absorption than an equivalent close that is not sustain-released. The type of food consumed does not appear to affect the absorption of supplemental vitamin C or vitamin C found in food

The intestinal absorption of vitamin C from foods and from supplements, up to about 500 milligrams, (teems via II sodium-dependent active transport process. At doses higher than 500 milligrams diffusion processes come into play. The major intestinal vitamin C transporter is SVCTI (sodium- dependent vitamin C transporter1). Some ascorbic acid may be oxidized to dehydroascorbic acid and transported into enterocytes via glucose transporters. Dietary dehydroascorbic acid is absorbed from the lumen of the small intestine into the enterocytes in such a manner. All dehydroascorbic acid within the enterocytes is reduced to ascorbic acid via reduced glutathione, and ascorbic acid leaves the enterocytes to enter, first, the portal and, subsequently, the systemic circulation. Ascorbic acid is distributed to the various tissues of the body

CEVITA – Vitamin C 500 mg Chewable Tablets

Product information

Available as 100 chewable tablets

Each tablet contains:

Vitamin C 500 mg

Non-medicinal ingredients: Compressible Sugar, Sodium Cyclamate, Flavor-Orange (Natural Artificial), Magnesium Stearate, Color-FDC Yellow #6 Lake

Benefits

- Promotes healthy capillaries, gums, and teeth
- Aids in iron absorption
- Helps heal wounds and broken bones
- Prevents and treats scurvy
- Helps treats anemia, especially iron-deficiency anemia
- Clinical and population studies show that Vitamin C intake benefits the body by protecting boosting immune function

EIG CANADA

CONTRAINDICATIONS

Vitamin C is contraindicated in those with known hypersensitivity to the substance or to any ingredient in a vitamin C containing product.
Rose hip vitamin C
Rose hip vitamin C is contraindicated in those with known hypersensitivity to rose hips. There are reports of allergic reactions in those working with rose hips.

PRECAUTIONS

Although oxalic acid is formed when ascorbic acid is metabolized, this is highly unlikely to cause renal problems in healthy individuals without preexisting renal problems or who are not predisposed to increased crystal aggregation. Those with preexisting kidney stone disease or a history of renal insufficiency, defined as serum creative greater than 2 and/or creatinine clear ance less than 30, should exercise caution in the use of higher than RDA amounts of vitamin C

Ascorbic acid is involved in modulating iron absorption and transport. It is highly unlikely that healthy individuals who take supplemental vitamin C will have any problem with iron overload. On the other hand, those with hemochromatosis, thalassemia, sideroblastic anemia, sickle cell anemia and erythrocyte G6PD deficiency might have such a problem if they use large amounts of vitamin C.
Pregnant women and nursing mothers should avoid using supplemental doses of vitamin C higher than RDA amounts.

ADVERSE REACTIONS

In healthy adults, oral closes up to 3 grams daily of vitamin C are unlikely to cause adverse reactions. The most common adverse reaction in those who take oral closes greater than 3 grams daily are gastrointestinal and include nausea, abdominal cramps, diarrhea and flatulent distention. These reactions are attributed to the osmotic effect of unabsorbed vitamin C passing through the intestine. Some advocates of mega dose vitamin C use recommend titrating the daily close of vitamin C to what they refer to as "bowel tolerance", i.e., the point at which the user begins experiencing diarrhea. This is not recommended.

Rare adverse reactions have been reported in healthy individuals taking high oral closes of vitamin C. These include elevation of serum glucose in an adult male taking 4.5 grams daily, a gastrointestinal obstruction in a 66-ycar_ old woman taking 4.5 grams daily of ascorbic acid and esophagitis in one person taking a single 500 milligram dose Daily ingestion of high-dose vitamin C is generally regarded as largely innocuous. However, vitamin C-induced hyper-oxaluria, although rare, has been reported. It was reported (July 2008) that a patient admitted to a hospital in New Zealand developed acute renal failure secondary to vitamin C-induced hyperoxaluria, from which the patient died.

INTERACTIONS:
DRUGS

Aluminum containing antacids: The intake of large doses of vitamin C used at the same time as aluminum-containing antacids has been reported to increase urinary aluminum excretion, suggesting increased aluminum absorption from these antacids. However, this is not well documented.

Aspirin: Chronic use of high close aspirin may lead to impaired vitamin C status.

Chemotherapeutic agents: Vitamin C may potentiate the antineoplastic activity of cisplatin, doxorubicin and paclitaxel. It may also help ameliorate the cardio toxic effect of doxorubicin and the nephrotoxic effect of cisplatin. This is based on in vitro and animal studies. There is a concern by some researchers that supplemental doses of vitamin C may diminish the efficacy of some chemotherapeutic agents. Ascorbic acid has been found to enhance arsenic trioxide--induced cytotoxicity in multiple myeloma cells. It has also been found to overcome drug resistance in myeloma and to significantly increase the anti-myeloma effects of both arsenic trioxide and melphalan in cell culture models and in animal models. Arsenic trioxide is an anticancer drug will multiple actions, and a number of clinical studies are examining the possible synergistic effect that vitamin C may have when administered along with arsenic trioxide. In all of these cases, vitamin C is given parenterally and not orally.

However, a recent report found that vitamin C may antagonize the cytotoxic effects of a number of antineoplastic drugs, including doxorubicin, vincristine, methotrexate, and cisplatin

and imatinib mesylate. This was based on n preliminary in vitro study and requires follow-up before any conclusions can be drawn.

Estrogen: Ascorbic acid may enhance 17 beta-estradiol inhibition of oxidized LDL formation.

Propranolol: Ascorbic acid may affect both the absorption process and the first pass metabolism of propranolol. Heart rate has been found to decrease less when propranolol was administered with ascorbic acid, when compared to controls. The interaction has little biological importance.

VitarninC/Bioflavonoid combinations and drugs that inhibit cytochrome. Preparations containing grapefruit flavonoids may interact with some drugs. Some drugs have up to a three fold greater bioavailability when co administered with grapefruit juice. It is thought that the grapefruit flavonoid naringenin plays some role in this effect. Naringenin and/or other substances found in grapefruit juice inhibit cytochrome. Drugs affected include the calcium channel blocker felodipine; as well as carbamazepine, cyclosporine, lovastatin; sinivastatin, saquinavir and nisoldipine. Those taking these drugs need to exercise some caution in the use of any grapefruit products.

NUTRITIONAL SUPPLEMENTS:

Copper: One study showed that high doses of vitamin C negatively affected copper status in men. Vitamin C may act synergistically with various flavonoids. it is not known if any synergism occurs to any extent in humans.

Glutathione: Ascorbic acid may help maintain reduced glutathione levels in cells.

Iron: Vitamin C used concomitantly with nonheme iron supplements may increase the uptake of iron. This may cause problems in those with high iron stores or with propensity for iron overload, such as those with hemochromatosis, sideroblastic anemia, sickle cell anemia, thalassemia and erythrocyte G6PD deficiency.
Bilirubin assay: High intakes of vitamin C may cause falsely elevated bilirubin values.

Creatinine assay: Large intakes of vitamin C may cause falsely elevated urine and serum creatinine levels. However, this is not well documented.

Glucose assay: Large intakes of vitamin C may cause false positive glucose readings measured by copper reduction methods (e.g., Clinitest) and false negative glucose results as measured by the oxidize methods (e.g., Clinistix and TesTape).

Guaiac assay for occult blood: Intakes of vitamin C greater than 1 gram daily may cause -a false negative guaiac test.

OVERDOSAGE: There are no reports of vitamin C over dosage in the literature.