

Vitamin C & D 500 mg/500 IU Tablets



Product Summary:

Vitamin C with D Chewable Tablet is a dietary supplement that can be used daily for the maintenance of good health. Vitamin C is a water-soluble vitamin that is used in the body to form collagen, cartilage, muscles and blood vessels. Vitamin C promotes wound healing, supports immune function and gum health and has strong antioxidant properties. Vitamin D plays an important role in maintaining normal calcium and phosphorous levels, which are necessary to build and maintain bones and teeth. The majority of Vitamin D is manufactured in the body via sunlight exposure to the skin. Small amounts are available in food sources such as fatty fish, fortified foods and larger amounts via supplementation.

Chewable vitamin C with vitamin D provides an easy delivery method, particularly for individuals who may have concerns with hard pills or tablets.

Properties/Uses:

The claim as approved by the *Natural Health Product Directorate* (NHPD): An antioxidant for the maintenance of good health. Helps in the development and maintenance of bones, cartilage, teeth and gums. Vitamin D helps in the absorption and use of calcium and phosphorus.



GENERAL HEALTH
& WELLNESS



Pharmacology:

Vitamin C: Vitamin C (ascorbic acid) is an essential nutrient that supports numerous aspects in human health. Vitamin C is best known for its effects as an antioxidant and its role in maintaining proper immune function.¹ Vitamin C is used to enhance immune competence¹ and the production of quality collagen.² It also participates in the antioxidant network;³ Vitamin C is also used for allergies, cataracts, diabetes, atherosclerosis prevention, and to lower blood pressure.⁴ Its primary function is collagen production – the main protein for body structure.

Vitamin C provides a reduced risk of cardiovascular disease through its antioxidant effect, by lowering total cholesterol and raising HDL, by helping to lower blood pressure, and by inhibiting platelet aggregation.⁵ An epidemiology study published in 1997 further reveals the broader health enhancement role of vitamin C. James E. Enstrom, PhD, of UCLA followed 12,000 people for over 10 years, looking at the effects on health by different levels of vitamin C intake. It was found that men who consumed 300 mg of vitamin C daily had a 45% lower risk of heart disease than those who consumed only 49 milligrams daily.^{3,6}

There is considerable epidemiological evidence that vitamin C plays a significant role in cancer risk reduction. Vitamin C provides an antioxidant effect, thus protecting cellular structures, and DNA in particular. Vitamin C mitigates many metabolic risk factors for cancer including detoxification of environmental pollution that reduces critical exposure to carcinogens.^{7,8}

Cataract risk reduction may be afforded by vitamin C, preventing photon generated oxidation of lens protein fibers. As early as 1939, Bouton showed that supplementing with 1000 mg per day was able to arrest for 11 years further cataract formation. Some had already had cataract surgery.⁹ In general, studies that have found a relationship suggest that vitamin C intake may have to be higher than 300 mg/day for a number of years before a protective effect can be detected.¹⁰


Recent research indicated that vitamin C is needed in the nerve cells in the eye and brain. This research provides support for the importance of regular and optimal vitamin C dietary intake and the findings could have implication for other diseases, like glaucoma and epilepsy.¹¹

In addition, vitamin C is a major player in lowering the risk of diabetic complications.

Smokers lose a considerable amount of vitamin C due to oxidative stress in the lungs and elsewhere in the body. Smokers would benefit vitamin C supplements depending on the extent of smoking, to compensate for vitamin C. Additionally, asthmatics and those with allergies may benefit from supplemented vitamin C by virtue of its antioxidant and antihistamine effects.

Vitamin D: Vitamin D3 (cholecalciferol) is the designation for the form of vitamin D produced in the skin, from cholesterol through the direct action of sunlight on the skin. Vitamin D3 is essentially inactive until biotransformed into 25-hydroxy-vitamin D3 in the liver, becoming five times more active than D3, and then into 1,25-dihydroxy-vitamin D3 in the kidneys, becoming ten times more active than D3.⁴

Vitamin D plays an important role in maintaining normal calcium and phosphorus levels, as well as bone and tooth health. Vitamin D is obtained through exposure to sunlight and is also available in small amounts in fatty fish, “fortified” beverages, and through vitamin supplementation.





Supplementation is used for the treatment and prevention of rickets in children and osteomalacia in adults.¹² Inadequate vitamin D intake has been associated with an increased risk of fractures, falls, poor immunity, cardiovascular disease and multiple sclerosis.¹³ Vitamin D may also be useful in people with a history of cancer or with a family history of cancer, working as a risk reducer of cancer through vitamin D-dependent cellular differentiation.

Several regional studies have reported relatively low concentrations of vitamin D in a high percentage of Canadian children, adults, pregnant women and their infants, Aboriginal populations, and the elderly.¹³ Vitamin D supplementation is especially important for the elderly because their vitamin D production abilities have declined. It is also important for people with limited sun exposure, people living in northern latitudes and dark-skinned people. To minimize health risks associated with UVB radiation exposure, while maximizing Vitamin D benefits, supplementation combined with small amounts of sun exposure is the recommended way to assure optimum levels of vitamin D.¹⁴

Vitamin D performs three indispensable functions in developing and maintaining bone mineral density:

1. It facilitates dietary or supplemental calcium absorption from the intestines;
2. It decreases urinary calcium losses due to normal kidney filtration; and
3. It facilitates the incorporation of calcium into the bones.

While osteoporosis is more often thought about as a risk factor for post-menopausal women due to estrogen decline, men are also at significant risk. Osteoporosis Canada indicates that 1 in 4 women and 1 in 8 men over the age of 50 have osteoporosis, with 1 in 3 women and 1 in 5 men likely to suffer an osteoporosis related fracture in their lifetime.¹⁵ Even a subtle protracted deficiency of vitamin D3 will lead to increased risk of bone loss over time and osteoporosis fractures.¹⁶ Numerous studies document that up to 80% of all hip fracture patients may exhibit vitamin D deficiency.¹⁷ There is a growing clinical recognition of vitamin D deficiency in the general population, leading to the conclusion that current levels of so-called adequate intake are too low.^{16,18} Separate clinical investigations using 700 and 800 IUs instead of the usual 400 IUs have demonstrated lower hip fracture rates compared to placebo.¹⁹ The omission of vitamin D3 supplementation by those with thinned bones or full-blown osteoporosis is a strategic error in judgment by physician and patient.

There has been a resurgence of interest in vitamin D for its health enhancements beyond bone health. Recent studies suggest a link between vitamin D deficiency and upper respiratory tract infections.²⁰ Vitamin D may play a role in the prevention of childhood and adult diseases.³⁷ Inadequate intake of vitamin D and low serum concentrations in pregnancy has been associated with higher risk of respiratory infections and wheezing illnesses in children.^{22,23} Clinical studies show that adolescents with type 1 diabetes have a lower bone mass compared to their peers and a high prevalence of vitamin D deficiency.²⁴ Epidemiologic evidence has been shown to support the role of maternal vitamin D deficiency as a risk factor for the development of infantile autism.²⁵



Vitamin D has also received much attention for its potential role in cancer prevention. It has been found to reduce cellular proliferation, induce differentiation and apoptosis and prevent angiogenesis.²⁶ It is of interest that the incidence of breast cancer is observed to rise in proportion to the distance from the equator and this has been interpreted to mean reduced endogenous vitamin D3 is involved in breast cancer risk and probably other cancers as well. A study published in The American Journal of Clinical Nutrition found that taking Vitamin D supplements and calcium lowers all-cancer risk in postmenopausal women. Those with a history of cancer in themselves or in their families may be well advised to ensure higher levels of vitamin D3.²⁷





Manufactured product information:

Manufacturer:

WN Pharmaceuticals® Ltd.

Size/UPC:

75's.....7 77747 10346 1

NPN:

80041057

Expiry Date:

36 months from date of manufacture

Active Ingredients:

Each tablet contains:

Vitamin C (sodium ascorbate, ascorbic acid).....500 mg

Vitamin D3 (cholecalciferol) 12.5 mcg (500 IU)

Also contains 7 mg of the following herbal blend:

Rosehips (Rosa canina) (fruit)1.4 mg

Rutin (Styphnolobium japonicum) (flower bud)1.4 mg

Hesperidin (Citrus sinensis) (fruit).1.4 mg

Citrus bioflavonoids (Citrus sinensis, Citrus reticulate, Citrus paradisi,

Citrus limon, Citrus aurantiifolia) (fruit peel) (13% hesperidin).....1.4 mg

Acerola (Malpighia glabra) (fruit) (25% vitamin C).....1.4 mg

Non-Medicinal Ingredients (in descending order):

Sucrose, sorbitol, dextrose, natural flavours (cherry, cream), magnesium stearate, natural colour (red and purple carmine), sucralose.

Appearance:

Purplish red round tablet.

Packaging:

175 white round bottle with safety seal under a 38 mm white induction sealed cap with vented interior seal and a label applied to the bottle. Lot number and expiry date are printed on label applied to exterior of bottle.

Storage:

Store in tight, light resistant containers in a cool, dry place.





Dose:

Dose information for Vitamin C presented as dose per day:28

Vitamin C (mg/day)

LIFE STAGE GROUP		VITAMIN C (MG/DAY)		
		Minimum*	RDI	Maximum
Children	1-3 years of age	2.2	15	400
	4-8 years of age	2.2	25	650
Adolescents	9-13 years of age	2.2	45	1,200
	14-18 years of age	6.0	65-75	1,800
Adults	≥ 19 years of age	6.0	75-90	2,000
Pregnancy	14-18 years of age		80	1,800
	19-50 years of age		85	2,000
Lactation	14-18 years of age		115	1,800
	19-50 years of age		120	2,000

Smokers are at increased risk of vitamin C deficiency because smoking increases oxidative stress and metabolic turnover of vitamin C; therefore, the requirement for smokers is increased by 35 mg/day.²⁹

A broad base of nutritionally oriented health care providers generally agree on a recommended range of 250 mg to 1000 mg per day, preferably in divided amounts of no more than 250 mg, with meals to enhance absorption. In adults, the acute phase of an infection can be treated with 1000 to 8000 mg per day to shorten the course of the infection.³⁰ In children, recommend a body-size proportional amount if that conforms to the physician's guidance.

Diabetics will benefit from 1000 mg to 3000 mg per day in divided amounts to overcome a critical intracellular vitamin C deficiency.^{3,4}

Marginal deficiencies are common among the elderly, alcoholics, and those with chronic illness.³¹



Health Canada Recommendations for Vitamin D Supplementation³²

AGE GROUP	RECOMMENDED DIETARY ALLOWANCE (RDA) PER DAY	TOLERABLE UPPER INTAKE LEVEL (UL) PER DAY
Infants 0-6 months	400 IU (10 mcg) *	1000 IU (25 mcg)
Infants 7-12 months	400 IU (10 mcg) *	1500 IU (38 mcg)
Children 1-3 years	600 IU (15 mcg)	2500 IU (63 mcg)
Children 4-8 years	600 IU (15 mcg)	3000 IU (75 mcg)
Children and Adults 9-70 years	600 IU (15 mcg)	4000 IU (100 mcg)
Adults > 70 years		4000 IU (100 mcg)
Pregnancy & Lactation		4000 IU (100 mcg)

*Adequate Intake rather than Recommended Dietary Allowance.

The Canadian Cancer Society recommends adults living in Canada should consider taking vitamin D supplementation of 1,000 IU a day during the fall and winter. In addition, adults at higher risk of having lower vitamin D levels should consider supplementation of 1,000 IU per day all year round. This includes people who are older, with dark skin, who do not go outside often, and who wear clothing that covers most of their skin.³³

Directions:

(Adults): 2 tablets daily or as recommended by a physician.

Caution:

The caution as approved by the *Natural Health Product Directorate* (NHPD): KEEP OUT OF THE REACH OF CHILDREN. Do not use if you are pregnant or breastfeeding. STORE AT ROOM TEMPERATURE IN A DARK, DRY PLACE. DO NOT USE IF SEAL UNDER CAP IS BROKEN OR MISSING.





Deficiency Symptoms:

Vitamin C: Vitamin C must be consumed in the diet, as the body cannot manufacture its own source. Scurvy is the result of severe vitamin C deficiency. Scurvy is rare in developed countries.

Anemia may be another symptom as vitamin C helps the body absorb and use iron. Low vitamin C levels can result in a reduced immune system efficiency.

Vitamin D: Vitamin D deficiency is characterized by inadequate mineralization or demineralization of the skeleton. In children, this deficiency can result in rickets; in adults, it can result in osteomalacia. In addition, secondary hyperparathyroidism due to vitamin D deficiency enhances mobilization of calcium from the skeleton, resulting in porous bone. It is well recognized that vitamin D deficiency causes abnormalities in calcium and bone metabolism.³⁴ Vitamin D deficiency is linked to an increased risk of falls.¹²

Drug Interactions /Contraindications:

Vitamin C: Alcohol, analgesics, antidepressants, anticoagulants, oral contraceptives, and steroids may reduce levels of vitamin C in the body. Smoking causes a serious depletion of vitamin C.³⁵

Vitamin C enhances iron absorption. Its supplementation should be provisionally contraindicated in hemochromatosis until the user has been guided by their physician on how much and how to use vitamin C.

Vitamin E and vitamin C interact beneficially with C regenerating E, making it again active as a membrane radical chain-breaking antioxidant.

Vitamin B12 may be destroyed by vitamin C. Advise patients to take the supplements at least 2 hours apart.

Folic acid may be partially inactivated if taken at the same time with vitamin C and iron.³⁶

There is a possible interaction between vitamin C and aspirin, with increased excretion of vitamin C when dietary vitamin C levels are low in those who regularly use aspirin.³⁷

Daily vitamin C supplementation (1000 mg) may increase blood levels of estrogen, impacting on birth control and HRT medications, and increasing the risk of estrogen related cancers. Side effects may become more noticeable. This interaction is controversial and may not be significant.³⁷

Large daily doses (5 grams) of vitamin C may interfere with the effectiveness of blood thinners like warfarin.³⁷

Stomach acid-lowering drugs may allow bacteria to produce the carcinogen, nitrosamine, from dietary nitrite, which can lead to gastric cancer. Vitamin C is known to block gastric nitrosamine production.³⁷

Regular and large consumption of alcohol effectively reduces vitamin C absorption.³⁷





Patients with kidney disease, gout, a history of kidney stones or on hemodialysis, should consult their physician for dosage information on vitamin C.³⁷

Chewable vitamin C tablets could damage teeth enamel.

Vitamin D : Vitamin D3 is oil soluble and can be absorbed only via fat/oil absorption, making mealtime dosing the best time to supplement. The higher the dose of vitamin D3, the greater is the need of fat or oil in the meal.

Use of Olestra has been reported to diminish absorption of the fat-soluble vitamins, A, D, E, and K.

Magnesium supplementation is required to convert vitamin D2 to D3.

Bile acid sequestrants like Cholestyramine, corticosteroids, Dilantin, barbiturates, Phenobarbital, etidronate, tuberculosis drugs, and mineral oil interfere with vitamin D absorption and /or metabolism.^{4,37}

Toxicity/Adverse Reactions:

Vitamin C: Vitamin C has been consistently found to be a safe nutritional supplement when used within the recommended optimal dosage range stated above. When absorption capacity is exceeded or tissues are saturated, diarrhea and intestinal gas and/or distention usually results.^{4,30}

Other possible side effects include nausea, vomiting, heartburn or abdominal cramps. Such adverse effects are thought to extend from the acid nature of vitamin C. If high doses are deemed to be essential, they should be introduced more gradually and taken with food. High doses of vitamin C appear to be better tolerated at times of acute sickness, or when under increased stress loads, when tissue levels are being expended.

Even with high amounts, the blood levels of vitamin C do not exceed 1.5 to 2.0 mg/dl because of decreased absorption and increased kidney excretion.³⁰ The primary medical concern with high amounts of vitamin C (> 10 grams per day) is the possible development of calcium oxalate kidney stones. This is a particular concern for those already suffering recurrent kidney stones, those on hemodialysis, and in those suffering from kidney disease, or even gout. However, vitamin C up to 10 grams per day has been shown not to increase urinary oxalate levels.^{38,39}

In children, large amounts of vitamin C disproportional to body size may cause nausea and diarrhea, and lead to red blood cell hemolysis and reduced white blood cell bactericidal activity.⁶⁵

Vitamin D: Vitamin D toxicity is not widely reported in North America. Prolonged intake of up to 2400 IUs per day has a wide margin of safety.¹⁹ However, in practical terms, most supplementation does not call for more than 1000 IUs per day, unless prescribed by a physician. Vitamin D toxicity is manifested as exaggerated calcium blood levels that can lead to calcium deposits in joints and internal organs, and cause kidney stones.⁴



Allergen Content/Ingredient Sensitivity:

NO	YES
Artificial Color	Artificial Sweeteners
Artificial Flavor	Corn Products
Egg Products	Milk Products
Fish	Starch/Modified Starch
Gluten	
Hydrolyzed Plant Protein	
Lecithin	
Peanuts	
Preservatives	
Sesame Products	
Shellfish	
Soy Products	
Sulphites	
Tartrazine	
Tree Nuts	
Wheat Products	
Yeast	

NOT ACCEPTABLE FOR THE FOLLOWING DIETARY RESTRICTIONS:

Free of animal products

Kosher





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