
EMULVIT-D

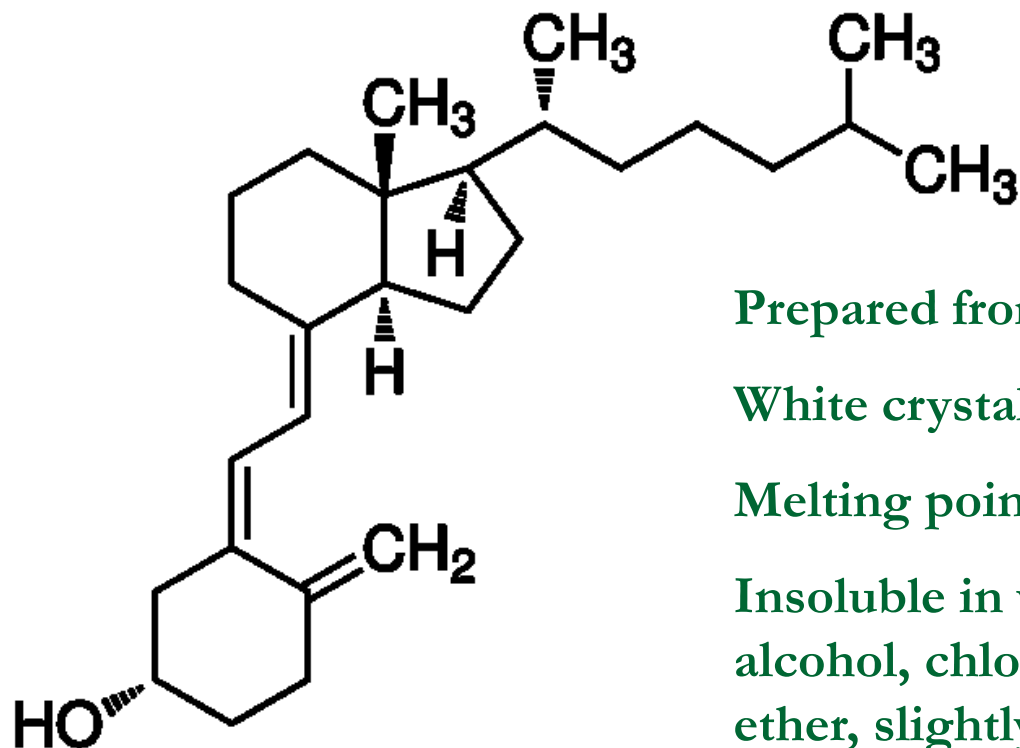
VITAMIN D₃ CONCENTRATED NANOEMULSION

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CHOLECALCIFEROL (VITAMIN D₃)



Prepared from sheep wool wax extract

White crystalline powder

Melting point 84 – 87°C

Insoluble in water; soluble in ethyl alcohol, chloroform, acetone, diethyl ether, slightly soluble in vegetable oils

Vitamin D

- The main form of vitamin D3, ***Cholecalciferol***, is synthesized in the skin upon exposure to UVB in sun light
 - Vitamin D is well established as essential for maintaining the mineral balance in the body and building and maintaining healthy bones
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BONES STRENGTHENING

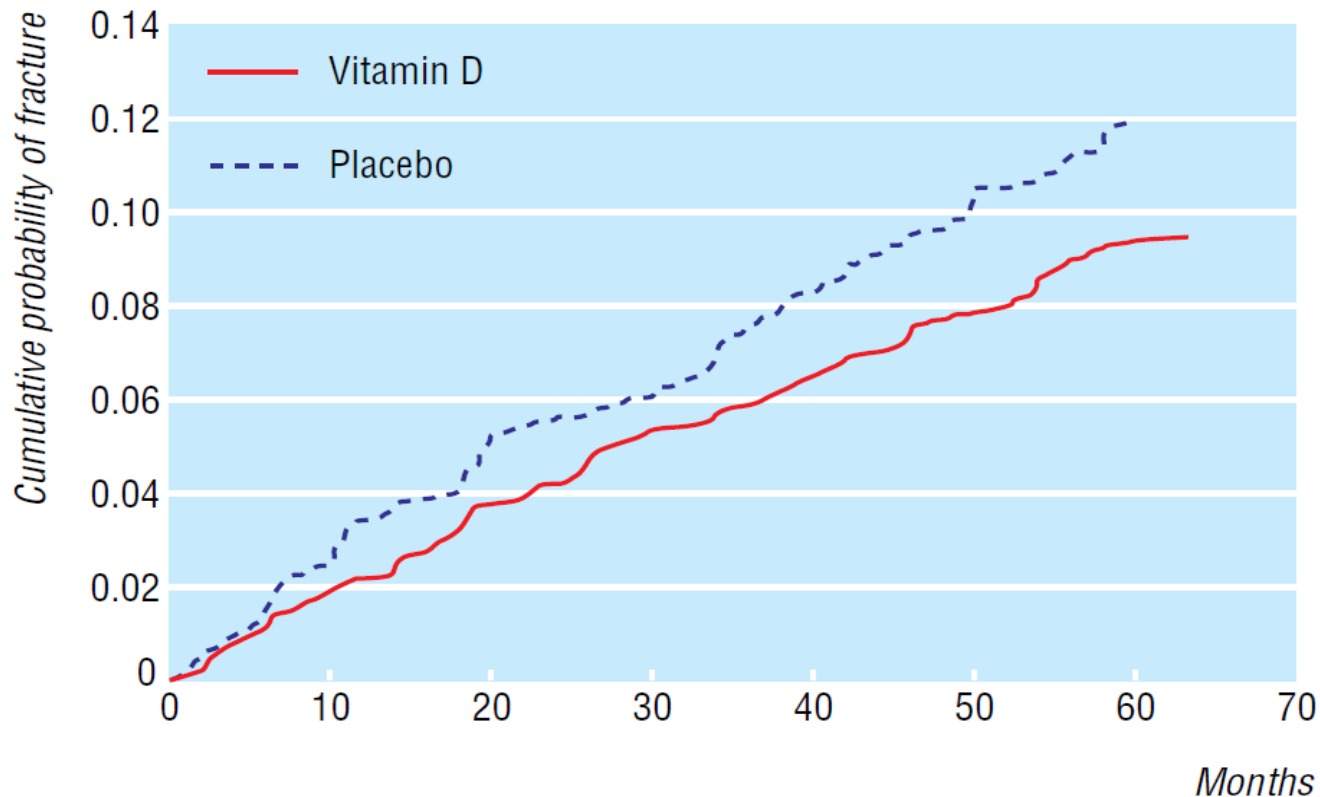


Fig 1 Cumulative probability of any first fracture according to treatment with vitamin D (n=1345) or placebo (n=1341), based on Cox regression; difference between two groups, $P=0.04$

Main functions of vitamin D:

- Regulation of calcium uptake, transport and bone mineralization
 - Control of cell proliferation and differentiation
 - Modulation of immune system
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Vitamin D physiology and deficiency

- ***Cholecalciferol*** is formed in the skin under direct sunlight. Glass or sun protection creams virtually preventing vitamin D formation in the skin.
- Studies show that if a person goes out into the mid-day summer sun in a swimming suit until the skin just begins to turn pink, it lead to production of 10,000 to 50,000 units of ***Cholecalciferol*** in the skin. That means a few minutes in the summer sun produces 20 - 50 times more vitamin D than the amount suggested by health authorities for daily consumption as a food supplement.

Vitamin D physiology and deficiency

- Vitamin D receptors were found in tissues other than the gut and bone - particularly the brain, breast, prostate and lymphocytes. Recent research suggests the need in higher amounts of vitamin D₃ in order to maintain and improve patients' health.
- The majority of people do not synthesize in their bodies sufficient quantities of vitamin D in order to meet physiological requirements. Vitamin D deficiency is widespread in the world. Additionally, the previously defined Upper Limit for safe intake of vitamin D (~1000 IU/day) was set far too low, and the physiologic requirement is significantly higher than previously believed.

Vitamin D metabolism

- After production in the skin or consumption with the food or as a dietary supplement, **Cholecalciferol** is transported to the liver where it is metabolized into **Calcidiol** or 25(OH)D. Calcidiol is now considered by some scientists as an active molecule with steroid hormone properties.
- The most important **Calcidiol** function is maintaining of blood calcium level. Another significant role of **Calcidiol** is to serve as a storage form of vitamin D. **Calcidiol** is what fills your vitamin D depository. If blood level of **Calcidiol** is less than 40 ng/ml, it means your warehouse is empty, and you should fill it up and keep it full unless you have one of those rare medical conditions called vitamin D hypersensitivity

Vitamin D metabolism and distribution

- After ***Calcidiol*** is formed in liver, it follows one of two possible pathways. The first route is the most vital and has an advantage over the second route which means that in case there is not enough Vitamin D in the body to cover both pathways all ***Cholecalciferol*** will be used for the first route.
 - The first direction leads to the kidneys, where ***Calcidiol*** is turned into ***Calcitriol***. ***Calcitriol*** is a potent steroid hormone; in fact, it is the most potent steroid hormone in the human body.
 - ***Calcitriol*** made by the kidneys circulates in the blood to maintain blood calcium levels. The first priority for ***Calcidiol*** is to go to the kidney to provide enough ***Calcitriol*** to assure blood calcium regulation.
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Vitamin D metabolism and distribution

- The second pathway of vitamin D leads to different tissues and organs where other physiological functions of Vitamin D can be accomplished. All of the important health benefits of vitamin D discovered in the last 10 years associated with the second pathway of vitamin D.
- If the resource of Vitamin D exceeds the requirement of the first route, all the remaining amount will go to the second pathway and reach different tissues and cells. There are the autocrine (inside cell) and paracrine (around the cell) function of vitamin D. These physiological findings are essential for understanding the necessity of Vitamin D proper level maintaining.

EMULVIT D Nanoemulsion

- Highly concentrated (20,000 units/ml)
 - Convenient dosage form
 - Pleasant taste
 - Fast and complete absorption
 - Easily dose selection and adjustment
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EMULVIT D Nanoemulsion

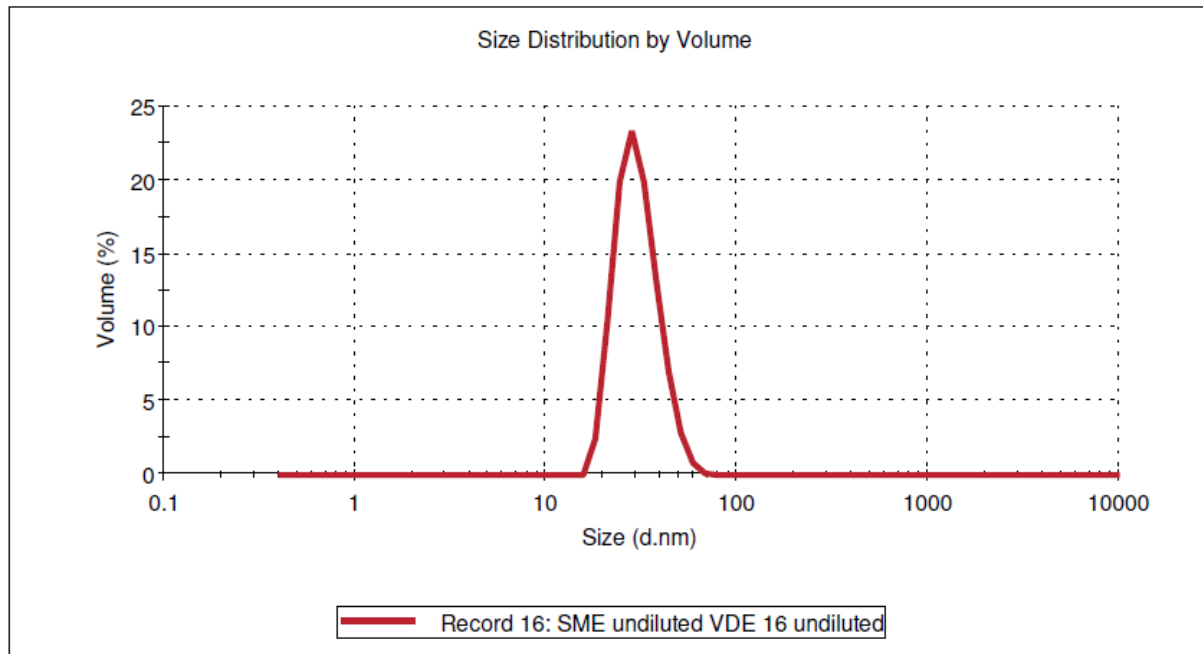
- ***Cholecalciferol*** in Emulvit D is incorporated into extremely small droplets of nanoemulsion which are effectively absorbed in the mouth and stomach. It allows to avoid losses and degradation of the molecule in gastro-intestinal tract, and the vitamin reaches liver much faster than traditional crystalline or oily formulations.
 - Emulvit D nanoemulsion demonstrated visible improvement of skin conditions and effectively decreases winter depression symptoms after oral administration.
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EMULVIT D Nanoemulsion

- High-tech product
 - Genuine nanoemulsion
 - Advanced technology allowing preparation of nanoemulsion without excess of energy
 - Stable and scalable product
 - Contains natural vitamins and antioxidants
 - Based on pharmaceutical grade excipients
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Particle size distribution of Vitamin D₃ nanoemulsion

		Diam. (nm)	% Volume	Width (nm)
Z-Average (d.nm): 33.8	Peak 1:	30.7	100.0	7.90
PdI: 0.098	Peak 2:	0.00	0.0	0.00
Intercept: 0.960	Peak 3:	0.00	0.0	0.00



EMULVIT D



Active ingredients: Vitamin D3
(Cholecalciferol) 20,000 IU/ml

Other ingredients: Peppermint oil,
Vitamin E, Fractionated coconut oil,
Lecithin, Grain alcohol, Non-ionic
surfactants (Plant origin), Potassium
sorbate, Citric acid, Sodium citrate,
Sorbitol, Purified water.