

## Review Article

## Homoeopathy &amp; the ‘Sunshine Vitamin’

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**Abstract:** There are four fat soluble vitamins & two water soluble vitamins. The fat soluble vitamins are A, D, E & K. The water soluble ones are B & C. The current article discusses the fat soluble vitamin D & its relation to homoeopathic therapeutics. Among the AYUSH ministry of the Government of India, Homoeopathy is ‘H’ in the AYUSH acronym. In homoeopathic therapeutics, oils are a source of medicine. There are many medicines in homoeopathy that are prepared from oils. The sunshine vitamin medicines are such medicine prepared from oils. The role of these medicines is seen in the light of the role of the vitamin D in the body. The benefits of homoeopathy through its qualities of cost effectiveness, clinical effectiveness & zero side effects can be used for mass coverage. Similarly, masses can benefit through large scale roll out of the medicine prepared from the oil which is the source of vitamin D. The dual benefit of this homoeopathic medicine is that it can be used as a supplement & medicine as well. Therefore, this medicine can be a tool in the vitamin A prophylaxis program, as a supplement in the nutritional programs & finally in bone health through its role in calcium & phosphorus metabolism in the body.

**Keywords:** Vitamin D, Sterols, Calciferol, Homoeopathy, Materia Medica.

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## INTRODUCTION

This vitamin was discovered about 100 years ago as the panacea for rickets that causes weak & deformed bones in children. At the beginning of the millennium, studies suggested that low vitamin D levels could be a factor in cancer, cardiovascular disease, dementia, depression, diabetes, autoimmune diseases,

fractures, respiratory illnesses and even Parkinson’s disease [1, 2].

Vitamin D had taken titles like “revolution” and “miracle.” Some raised a growing concern that people are not getting enough of the vitamin. A broadcasting program in United States declared that 100 million Americans were deficient in vitamin D. Viewers were

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told that they could determine their vitamin D level with a simple blood test. Sunshine was promoted as the best way to get this vitamin. Simultaneously, viewers were advised to take cod liver oil & supplements as well. At the same time, celebrities & vitamin companies advocated that the vitamin is a panacea. As a result, sales of supplements & rate of vitamin D testing soared [1, 2].

Many studies linked low levels of vitamin D to an assortment of medical conditions but scientists informed that the wonder supplement failed to address these myriad problems. This is because redundant receptors for vitamin D are present in most tissues, the idea of marketing the vitamin D in large dosage is recommended. The idea that vitamin D deficiency was widespread also crumbled. National population sampling in the United States showed that most people were getting enough of the vitamin [1, 2, 4, 5].

The story of how vitamin D was discovered rocketed to miracle status and the sudden fall illustrate the jagged path of scientific discovery. There is a need to interpret scientific results with humility which depicts the self-correcting nature of science. It also shows how knowledge becomes honed over time [1, 2].

For much of human history, people got their vitamin D mostly from the sun. It turns out humans are a little bit like plants. Human beings can turn ultraviolet light into vitamin D in a process similar to photosynthesis [1, 2].

When the high-energy rays of UV light (UVB) hit the skin, the body start a chain reaction that converts a compound in the skin called a sterol into a vitamin D precursor. This molecule, after a few more steps, becomes a form of the vitamin that promotes calcium absorption from the gut and increases bone mineralization. Vitamin D also seems to bolster the immune system and tamp down inflammation. It does these things in part by influencing the production of inflammatory compounds and suppressing the buildup of pro inflammatory cells. Currently, researchers are exploring the role of vitamin D in inflammations related to COVID 19 [1, 2, 19].

### Source of Vitamin D

The natural form of vitamin D, Cholecalciferol is formed in the skin by the action of UV light on 7-dehydrocholesterol, a metabolite of cholesterol. Vitamin D is converted in the liver to 25-hydroxyvitamin D[25(OH)D] that is further hydroxylated in the kidneys to 1,25 dihydroxy vitamin D (1,25DHCC)/ [1,25(OH)<sub>2</sub>D], the most active form of vitamin D. This active form activates specific intracellular receptors that influence calcium metabolism, bone mineralization & tissue differentiation. Vitamin D also acts like a hormone in the body. Its active metabolic form 1,25DHCC induces calcium binding protein in the mucosa to facilitate calcium absorption & transport. The synthetic form

ergocalciferol or vitamin D<sub>2</sub> is less potent than the endogenous D<sub>3</sub> [1, 2, 4, 5, 7].

As the source is sunlight, populations residing farther from the equator get low intensity UV rays. That is why at a latitude above 50<sup>0</sup> that include Northern Europe, vitamin D is not synthesized in winter & even above 30<sup>0</sup>, there is seasonal variation. The large body store in the liver normally accumulated in the summer is consumed during the winter [1, 2, 4, 5].

Vitamin D<sub>2</sub> known as Ergocalciferol pr pre-vitamin D & vitamin D<sub>3</sub> known as Cholecalciferol are actually metabolically active forms of Vitamin D. It is called as sunshine vitamin because these two forms are created when the body is exposed to Ultra Violet B (UVB) rays from the sun. D<sub>2</sub> is formed by plants & fungi & D<sub>3</sub> is from animal sources that includes human beings also [1, 2, 4, 5].

The primary natural source of vitamin D is the generation of vitamin D in the skin. Seasonal conditions like low sunshine in winter & other geographical conditions that prevent sun to come out leads to vitamin D deficiency. Similarly, lifestyle practices like excessive sunscreen use, body covered clothing, staying indoors can also lead to deficiency. Dark skinned people's high melanin pigmentation blocks absorption of sunlight & there by leading to deficiency of vitamin D [1, 2, 4, 5].

The geriatric population lack in the presence of an essential precursor of the vitamin D. This precursor is 7-dehydrocholesterol. Lack of this precursor results in inadequate vitamin D synthesis in the body. Factors like lack of vitamin D in diet, poor absorption in the body, need for higher quantities because of a pathological condition also leads to deficiency. People who avoid dairy products, eggs & fish also have deficiency [1, 2, 4, 5].

### Disease or conditions that lead to deficiency

Among the causes of osteomalacia & rickets, the first is the vitamin D deficiency, the second is failure of 1,25 vitamin D synthesis, the third is vitamin D receptor defects, the fourth is defects in phosphate & pyrophosphate metabolism. The fifth & the last is iatrogenic & other causes like bisphosphonate therapy, high fluoride & high aluminium [4].

The first categories of patients are those with ulcerative colitis, crohn's disease or such conditions that hampers fat absorption in the gut. Vitamin D being a fat soluble vitamin depends on dietary fat for being absorbed from the food items. The next categories are obese people as obesity greatly disturbs the vitamin D homeostasis in the body. As there is higher body fat, the vitamin is more sequestered in fat & is very less available in circulation. To add to that, when obese people lose weight, their circulatory vitamin D levels may rise

suddenly. The next ones are those who have had a gastric bypass surgery [1, 2, 4, 5].

Malnourished children with protein deficiency also develop rickets due to poor conversion of cholecalciferol to the active form of vitamin D [7].

The 25-hydroxy vitamin D [25(OH)D] levels in the blood are accepted as markers of vitamin D status & this indicator gives indication of various health conditions in the body [4].

### **Vitamin D deficiency**

The deficiency leads to bone pain, fatigue, weakened immunity that impacts daily life. That is why intake through diet, sun & supplements are crucial. One of the ways is food fortification as very few sources have this vitamin naturally. Fatty fish like salmon, sardines, herring, mackerel, red meat, liver, eggs & fish liver oil are the best sources of vitamin D. Egg yolks & cheese also contain some vitamin D. Some mushrooms contain vitamin D<sub>2</sub>. Commercially sold mushrooms are rich in vitamin D<sub>2</sub> as these mushrooms are bred under higher Ultra Violet (UV) light exposure. Fortified foods & supplements that also include dairy & cereals contain vitamin D. Breakfast cereals, margarines, milk products are widely fortified with vitamin D [1, 2, 5].

Deficiency may lower muscle & bone strength, lead to heart disease, cause diabetes, lowers immunity & lowers cognitive skills [1, 2, 5].

Consuming enough vitamin D through diet is usually challenging. Supplements are best options but these should be taken with caution [1, 2, 5].

Osteomalacia manifests itself initially as pain in bones. Usually it starts during pregnancy when the demand for calcium is raised to meet the increased need of the growing fetus in the womb. After the child birth, the disease may regress but it may recur in a more severe form in the subsequent pregnancies. Ultimately, the bone of the victim may become so bent that the woman is unable to stand upright & the distortion of the pelvis cause child birth very difficult [7].

### **RDA of vitamin D**

World Health Organization's Recommended Daily Intakes mention 10µg of cholecalciferol if the individual is more than 65 years or has no sunlight exposure [1, 3-5].

The Recommended Dietary Allowances (RDAs) for vitamin D is expressed in micrograms (mcg) where 1 mcg equals to 40 International Units (IU). The requirement of vitamin D in 0-12 months age category is 10mcg/day. For boys & girls till the age of 13, it is 15mcg/day. Similarly, the RDA is 15 mcg till the age of 70 for men & women. In the 70+ category, it is 20 mcg.

An additional 15 mcg is needed during pregnancy & lactation [1-5].

### **Vitamin D toxicity**

Toxicity occurs due to overconsumption or too much intake of supplements. Supplementation of vitamin D 1000 micrograms or 40,000 International Units (IU)/day causes toxicity within 1 to 4 months in infants. In adults, taking 1250 micrograms or 50,000 IU/day for several months can lead to toxicity. Excessive doses of cholecalciferol, ergocalciferol or the hydroxylated metabolites cause hypercalcaemia [1-5].

Similarly, overtreatment of hypoparathyroidism may also result in iatrogenic induction of vitamin D toxicity. As a result of toxicity, serum calcium levels increase triggering nausea, weakness, frequent urination & vomiting. Toxicity leads to bone pain, kidney problems like formation of stones in the kidneys [1-5].

The margin of safety for vitamin D is much smaller than for vitamin A. Cases of toxicity in children have been reported even with prolonged daily intakes of a dose as low as 1000 International Units (IU) [7].

### **Benefits of vitamin D**

This vitamin is basically required for musculoskeletal health thereby preventing rickets & osteomalacia. This vitamin has an important role in health. It helps our body absorb & retain calcium & phosphorus. Both these nutrients are critical for bone building. For some subsets of the population such as breastfed infants and people with particular medical conditions, most people probably don't need supplements [1-5].

The benefits go beyond bone health. It bolsters immune system, is anti inflammatory in both acute & chronic conditions. It is even linked to mental health. Thus, it is not only a supplement but also a nutrient for overall vitality. It even slows the growth of cancer cells. An analogue of vitamin D called as calcipotriol is used for treatment of skin conditions called as psoriasis [2-5].

### **Homoeopathic relation to vitamin D**

Usually, cod liver oil supplements are used as vitamin D. The vitamin D solution is also given as cod liver oil. Of late, it has changed to plant oils such as 'Sterogyl'. Fishes are an integral part of homoeopathic material medica. The drugs prepared from fishes are 'Erythrinus', 'Gadus Morrhu', 'Oleum Jecoris Aseli', 'Eel Serum', 'Ichthyolum' & 'Trachinus' [8-15].

Out of these, in homoeopathic therapeutics, the drug known as 'Oleum Jecoris Aselli' is prepared from cod liver oil of *Gadus Morrhu* & some other allied fishes. The other drug is 'Gadus Morrhu'. The third drug is 'Sterogyl' prepared from sterols or vitamin D<sub>2</sub> from plants. Vitamin D<sub>2</sub> has been isolated from Alfalfa. It was

isolated for the first time from yeast in 1931 & its structure was elucidated in 1932 [6, 8].

The drug 'Gadus Morrhu' is indicated for bones & this symptom is similar to vitamin D indications. The other indications are respiratory affections, mental health, skin that attribute to the immunity of the body [8-15].

The drug 'sterogyl' is indicated for bones & conditions for bone affections [17].

The clinical uses of the medicine 'Oleum Jecoris Aseli' are dwarfishness, emaciation, indigestion, liver diseases, malnutrition, marasmus [8-16].

The first grade symptoms of the same medicine are soreness, sore pains, pains in liver region, faulty nutrition, atrophy of infants, emaciated, dwarfish, malnutrition, soreness through chest, palpitations in heart, sacrum pains, burning in palms, dry, hacking, tickling cough, yellowness of skin, hectic fever [8-16].

Among Bowel Nosodes of homoeopathy, Bacillus Number 7 is related to fat metabolism. Vitamin D is absorbed in the presence of fat in the body especially in the gut. Gartner Compound (Bach) is prescribed in cases of nutrition related issues. Hence, these two medicines are associated with vitamin D. These two can be prescribed to maintain a healthy gut as well as augment in absorption of fat through which vitamin D can be absorbed [14, 21].

## CONCLUSION

Drugs made from nutrients, anti oxidants, minerals & elements are an integral part of the homoeopathic therapeutics. In this context, the article brought out a relation between homoeopathy & vitamin D. The benefit of homoeopathy is that it fulfills the triad criteria of the National List of Essential Medicines (NLEM) & the National List of Essential AYUSH Medicines (NLEAM). These criteria are that these drugs are to be used at Primary, Secondary & Tertiary (PST) levels of health care & should be clinically effective, cost effective while having zero side effects [18, 20].

The dilutions/potencies & triturations of 'Oleum Jec', 'Gadus M' & 'Sterogyl' can be used easily as these drugs have no side effects. Long standing cases of Rickets, Osteomalacia, Osteoporosis & Osteopenia can be addressed while addressing those concerns that the modern medicine is not able to address. For example, homoeopathy will have no toxicity like the supplements of modern medicine. The other advantage is that in a poor country like India, homoeopathy can fulfill the needs of the masses in accordance with the benefits of vitamin D through the use of vitamin D related homoeopathic therapeutics [8, 16].

The ministry of AYUSH should link up with the ministry of MOHFW to upscale the vitamin D related needs of the population not only in nutritional aspects but also in therapeutic aspects in various conditions.

## Declaration of the lead author

Prof. Shankar Das, a co-author of the current article was the Ph.D. guide of the lead author at Tata Institute of Social Sciences, Mumbai. Prof. D.P. Singh was the teacher of the lead author at TISS, Mumbai during 1995-1997. The lead author also certifies that he has expressed his personal opinion based upon his public health and clinical experiences. The treatment approach or the medicines suggested are only suggestive in nature.

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