



## Dietary Supplements: Vitamin D

### Overview

Vitamin D has several forms. It functions like a hormone throughout the body, not just in bones. Historically, our ancestors generated their own vitamin D through the skin's ability to use sunlight to transform cholesterol into vitamin D. As we moved indoors, wore clothing, and used sunscreen, we've obtained more of our vitamin D from fortified foods and supplements.

### Types of Vitamin D

There are 3 major forms of vitamin D:

1. **25 Hydroxy (OH) (vitamin D)**  
This is the form that circulates in the blood and the one used to check for suboptimal or deficient levels.
2. **Ergocalciferol (vitamin D2)**  
Made by plants, this vitamin D is often the kind in supplements.
3. **Cholecalciferol (vitamin D3)**  
D3 cholecalciferol is produced in our skin with the help of UV-B rays from the sun and is also found in fish and fish products.

### Sources of Vitamin D

Good dietary sources of vitamin D include:

Cod liver oil

Oysters

Herring

Vitamin-fortified dairy  
products and cereals

Sardines

Most vitamin D supplements tested by ConsumerLab have met their quality standards for having the amount of vitamin D listed on the label and properly decomposing in the stomach and intestines. Products that also contain calcium and other vitamins or minerals may have more problems with contamination (such as lead). Most multivitamins contain some vitamin D. See [www.consumerlab.com](http://www.consumerlab.com) for more details about supplement quality.

### Importance of Vitamin D

Vitamin D is important for:

- Healthy bones (preventing rickets in children and osteomalacia/osteoporosis in adults).
- Maintaining the balance of calcium and phosphorous throughout the body

- Reducing the risk of falls in the elderly (See the US Preventive Services Task Force recommendations)
- Reducing the risk of some inflammatory and auto-immune disorders such as type 1 diabetes, rheumatoid arthritis, lupus, and multiple sclerosis; promoting innate immunity to prevent viral, bacterial and TB infections
- Reducing the risk of respiratory diseases like pneumonia and influenza
- Reducing the risk of heart attacks and strokes in adults
- Reducing the risk of depression
- Reducing the risk of prostate, colorectal, ovarian, and breast cancer
- Reducing all-cause mortality

### Intake Recommendations

Most physicians recommend keeping levels above 30 ng/mL. African Americans normally have levels about 10 ng/mL lower than Caucasians. There is no known reason for keeping your levels above 50 ng/mL. To increase your blood level by 10 ng/mL, most adults need an extra 1000 IU vitamin D daily. Obese individuals may need twice that amount because of the larger volume of distribution.

It can take 6-8 weeks to achieve an increased level of vitamin D from this modest increase in intake. Taking the supplement with a meal containing fat can increase its absorption, so it's better to take vitamin D with a meal than on any empty stomach.

In the summer, an adult in a bathing suit whose body is exposed to 10 – 15 minutes of full sunshine makes 10,000 – 20,000 IU of D<sub>3</sub>. Sunscreen reduces vitamin D production by 95%; darkly pigmented and obese people require 5 – 10 times longer exposure to generate similar amounts of vitamin D. In North America, the UV levels are insufficient to produce Vitamin D during most winter months.

The skin, intestines, liver, kidneys, bones, and parathyroid glands are all important in vitamin D metabolism. Diseases in any of these organs and taking medications like phenytoin, phenobarbital, and steroids can lower vitamin D. Most studies have found suboptimal Vitamin D levels in more than 50% of teens. Low levels are associated with fatigue and pain in the muscles and joints.

### Safety

Although it is easy to get sunburned from too much sun, it is not possible to make too much vitamin D in our skin from sun exposure. Getting vitamin D from food is safe. Excessive intake of supplements can increase calcium to toxic levels in the blood, nausea, constipation, and weight loss, confusion and heart rhythm problems. Adults should avoid taking more than 10,000 IU daily unless a severe deficiency has been demonstrated. Seek assistance from a qualified health professional.

**According to the 2008 guidelines from the American Academy of Pediatrics**, the **minimum** daily intake for: Infants, children, and adolescents should be: 400 IU of vitamin D (cholecalciferol)

Women who are pregnant or nursing should ensure optimal Vitamin D intake, and breastfed infants should receive vitamin D supplements.

Formula fed infants who consume less than 1 quart daily of formula should also receive vitamin D supplements to ensure a minimum intake of 400 IU daily. NOTE: fortified milk contains 400 IU per quart.

Many experts recommend substantially higher intakes and higher levels.

For additional information, see the US Office of Dietary Supplements Fact Sheet on Vitamin D.

### Product Information

**Suggested Vitamin D supplements based on ConsumerLab.com testing include:**

**Vitamin D Only**

Product	Dose	Notes
Country Life® Vitamin D3	5,000 IU	Lowest cost for high dose vitamin D
Kirkland Signature Vitamin D3	2,000 IU	Lowest price for moderate dose vitamin D (Available at Costco)
Simply Right ® Vitamin D3	2,000 IU	Lowest price for moderate dose vitamin D. (Available at Sam's Club)
Source Naturals® Vitamin D3 drops	2,000 IU	Lowest cost for 1,000 IU pill
Spring Valley® Vitamin D3	1,000 IU	Lowest cost for 1,000 IU pill (Available at Walmart)
Rexall® Vitamin D3	1,000 – 2,000 IU	Lowest cost for 1,000 IU pill
Vitamin Shoppe® Vitamin D3	2,000 IU	lowest price for moderate dose vitamin D

***Other approved lower cost vitamin D***

Product	Dose
CVS Pharmacy Vitamin D3	1,000 IU
GNC Vitamin D3	1,000 IU and 2,000 IU
Jamieson® Laboratories D3	1,000 IU
NatureMade® Vitamin D3	2,000 IU
Nature's Bounty® D3	1,000 IU
Puritan's Pride® Vitamin D3	1,000 – 5,000 IU
Solaray® Dry D	1,000 IU
Solgar® Natural Vitamin D2	1,000 – 2,000 IU
Vitafusion® Vitamin D3 gummies	2,000 IU
Vitamin World® Vitamin D3	1,000 IU
Walgreen's Finest Nutrition Vitamin D3	1,000 IU
Whole Foods™ Vitamin D3	1,000 IU

See ConsumerLab.com for Pediatric products, Vitamin D + Calcium, Vitamin D+K, Vitamin D+ Calcium + Magnesium and other combinations

According to ConsumerLab in 2013, Trader Joe's Calcium Citrate with Vitamin D is **not approved** because this product contains MORE than labelled amounts of vitamin D and it does not disintegrate within 60 minutes. Also, Viactiv® Calcium Plus D softchews are **not approved** because they contain more than 180% of labeled amounts of vitamin D.

Pure Essence Labs Ionic Fizz™ Super D-K Calcium Plus™ orange-vanilla flavor is **not approved** because it contains lead.