

Beat Cancer with Vitamin D

By Al Sears, MD

The recent announcement by the *Canadian Cancer Society* reinforced what I've known for years: Vitamin D is most effective way to prevent cancer ever discovered.

The landmark discovery revealed that vitamin D slashes your risk of all cancers by 77%.¹

In this report, I'll show you why that's true. I'll reveal vitamin D's unique health-enhancing power and tell you exactly how to get the right dose you need to prevent today's chronic killers.

It's much easier than you think... The two best sources of vitamin D are cod liver oil and sunshine.

But the levels of vitamin D in your diet keep shrinking. And the media's campaign to keep you out of the sun – and covered in sunscreen – cuts down your only other source of this critical nutrient.

Vitamin D Isn't Just a Vitamin...

By definition, a "vitamin" is an organic substance that's required by the body, but can't be made by the body. Vitamins must be acquired through the diet. A hormone, on the other hand, is a substance produced by specific organs and carried through the bloodstream affecting other organ systems.

By these definitions vitamin D isn't only a "vitamin." It's also a hormone. Your body makes vitamin D when the sun's ultraviolet rays strike your skin. Yet vitamin D can also come from the food you eat.

If you're deficient in vitamin D, genes designed to protect your health can't work properly, because they need vitamin D to switch them on.

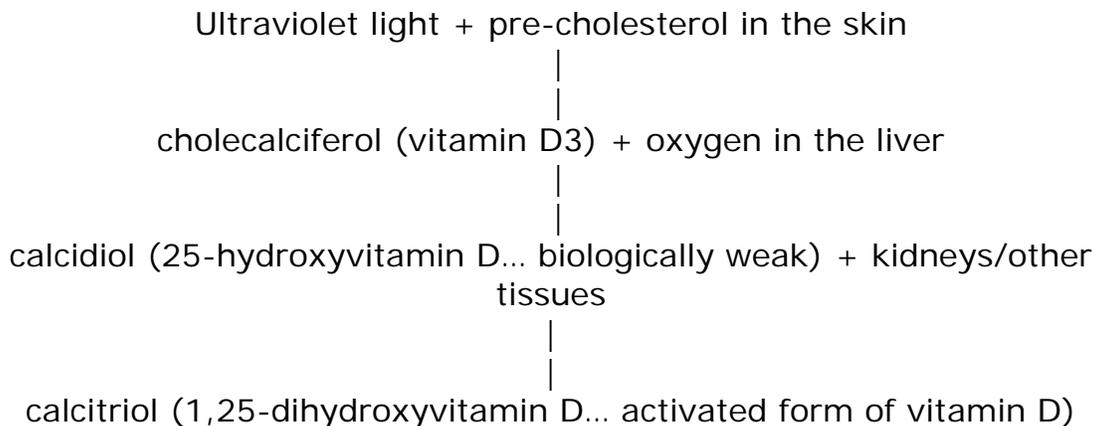
Vitamin D plays a vital role in human health. To understand vitamin D's significance in keeping your body well, it is important to understand how your body makes and uses it.

Your Body Uses Sunshine to Make Vitamin D

Your endocrine system produces vitamin D. The endocrine system is a series of ductless glands that regulate your body's functions by producing hormones and releasing them into the blood stream. The endocrine system creates vitamin D in three steps:

1. Sunlight strikes pre-cholesterol molecules in your skin, transforming them into large quantities of **cholecalciferol** (vitamin D3). This is the naturally occurring form of vitamin D. It can also be taken as a supplement. The best form by far is cod liver oil.
2. Your bloodstream absorbs this cholecalciferol and transports it to the liver where it's converted to **calcidiol** (25-hydroxyvitamin D). Although this form of vitamin D doesn't have significant biological activity, it's vital in the next step of the vitamin D process.
3. Calcidiol is then transported to the kidneys first and then to other tissues of the body where it is converted into the potent steroid hormone **calcitriol** (1,25-dihydroxyvitamin D). It is this form of "activated" vitamin D that goes to work protecting your body from disease.

Here's a flow chart of this process.



This final form of vitamin D is the most potent steroid hormone in the human body. It's active in amounts as small as a picogram. That's 1 trillionth of a gram.

We are just now beginning to understand how this complex system works

Vitamin D is Your Body's Building Block

Your physiology is as linked to the sun as plants are. Plants use sunlight to photosynthesize chlorophyll. Your body uses a comparable process to photosynthesize vitamin D. Sunlight and vitamin D touch virtually every aspect of your biochemistry and physiology.

In fact, vitamin D is so important to your body, that soon after we began to move away from the equator, some of us began to develop fair skin. With fair skin, we could still synthesize vitamin D with the weaker northern sun. But for even fair-skinned people to produce vitamin D, they must still expose their skin to unblocked sunlight.

Let's look more closely at the vital role vitamin D plays in your health.

- Autocrine cellular functions – this process occurs within cells and helps cells to regulate the expression of genes.
- Paracrine cellular functions – in this process a cell produces hormones, growth factors, or other substances, which affect other local cells.
- Genetic expression
- Calcium Absorption
- Cell growth
- Immunity
- Energy metabolism
- Muscle strength and coordination
- Neurotransmitter production
- Apoptosis (cell death)
- Reduction of C-reactive protein (CRP) and other markers of inflammation
- Brain development
- Insulin production stimulation
- Modulates immune system function
- Has an effect on myocardial contractility... in other words it helps your heart to beat properly.
- Prevents inflammatory bowel disease.
- Inhibits the blood pressure hormone *rennin*.

You see how varied the important work that vitamin D does in your body really is. Let's look more closely at two of the biggest benefits of

vitamin D—maintaining calcium levels in your blood and preventing disease in your genes.

Build Unbreakable Bones and a Disease-Proof Body

A primary role of vitamin D is to maintain normal calcium levels in the blood.

Vitamin D is necessary for good bone health. Of course, calcium is essential for the maintenance of bone tissue. What you may not realize is that when it comes to your bones—and more—calcium and vitamin D have a symbiotic relationship. If you're missing either one, the other can't do its job.

First, healthy calcium levels are crucial. Calcium controls innumerable processes in your body including responses in your muscles, bones and glands. In general, calcium:

- Helps the central nervous system transmit nerve impulses.
- Helps the muscles to contract.
- Influences the secretion of insulin by the pancreas.
- Regulates the immune system.

You get calcium from the food you eat, or from supplements. Your body needs vitamin D to absorb calcium and phosphorus from the intestinal tract. No matter how much calcium you ingest, without enough vitamin D your body can't absorb it from the small intestine.

A Lack of Vitamin D Puts You at High Risk for Cancer

Your body's first priority for calcidiol, the weak form of vitamin D, is to transport it to the kidneys to make calcitriol (activated vitamin D).

Activated vitamin D circulating in the blood keeps your blood calcium levels high. Calcium is essential for far more than just bones. Research shows that calcium and vitamin D deficiency in combination puts you at risk for a wide array of chronic diseases.ⁱⁱ

But your body needs calcidiol for a second vital function. After the kidneys have enough calcidiol, the rest goes directly to your cells, where they convert it to activated vitamin D in a form that your tissues can use. This activated vitamin D goes to work on a cellular level fighting cancer and disease.

Why does this matter? If you are chronically short of calcidiol, your tissues won't receive any. Think of it like a gas tank. When you keep your tank full of vitamin D, you ensure that it will flow to every part of the body that needs it. And it appears that the more calcidiol your tissues receive, the more activated vitamin D they will create.

Calcium and vitamin D work together to decrease the risk of malignancies in the colon, breasts and prostate and help prevent a wide range of inflammatory, autoimmune, and metabolic disorders.ⁱⁱⁱ

Studies suggest that 90% of the population is deficient in one, the other, or both.

Fight Brittle Bones the Easy Way...

When your body is short of calcium, it takes it from your bones. This leads to osteoporosis.

The process works like this. You have a gland called the parathyroid gland. It has a calcium sensor. When your body needs calcium, this gland produces a hormone called PTH. PTH signals the kidneys to make more vitamin D, so that you get the calcium you need from the food you eat by absorbing it through your intestines.

When there is not enough calcium available from your food, vitamin D and the parathyroid hormone (PTH) work together to draw calcium from the bones. The result is osteoporosis.

Ideally, you want to have low levels of PTH, so your body never gets the signal to draw calcium from the bones. Vitamin D helps absorb calcium from food, which in turn keeps PTH levels low and prevents calcium loss from your bones.

To keep your PTH levels low, you need enough calcium in your system. To keep enough calcium in your system, you need enough vitamin D.

Your Body Cries Out for Vitamin D

Does it seem strange that vitamin D has such a wide range of therapeutic and health-related benefits? The reason is that almost all the cells and tissues in your body have a receptor for vitamin D.

Activated vitamin D is one of the most potent regulators of cell growth in both normal and cancerous cells. It helps to determine what each

cell becomes. As a result, vitamin D can dramatically decrease your risk of cancer.

You see, vitamin D inhibits abnormal cell growth. It also causes cells to mature and die when they are supposed to. When these processes go haywire cancer can get a foothold in your body.

Scientists have also found that your body has Vitamin D receptor sites throughout all the organs. These receptor sites are genetically designed to bind with activated vitamin D. Think of these receptor sites as puzzle pieces.

Without the matching piece of the puzzle—activated vitamin D—they don't fulfill their function of turning genes on and off as the body needs. These genes that normally resist cancer, can actually promote cancer without activated vitamin D.

The more activated vitamin D your body can create, the better.

Amount of Calcidiol	Course in the body	Result
Severely deficient due to lack of sunshine and subsequent lack of calcidiol.	The body has little calcidiol for the kidney to make <i>calcitriol</i> for the blood.	Calcium levels in blood are compromised and virtually no calcidiol gets to the tissues.
More is available, but still deficient.	Virtually all of the calcidiol is still sent to the kidneys to make <i>calcitriol</i> in the blood.	The body has enough to maintain calcium levels in the blood; almost none gets to the tissues.
Adequate calcidiol due to sunshine and/or vitamin D supplementation.	After the kidneys have enough, the rest floods directly to cells where <i>calcitriol</i> is made for the tissues.	Maintenance of calcium levels AND flooding of receptor sites throughout your body with activated vitamin D.

You should do everything you can to make sure your body has enough activated vitamin D to go around!

Your Whole Body Depends on Vitamin D

In tissues throughout your body, activated vitamin D signals your genes to make hundreds of different enzymes, proteins, hormones and neurotransmitters that are crucial to maintaining health and fighting disease. Tissues in the prostate, breasts, colon, small intestine, bones, immune cells, brain, heart, skin, testicles, and most other organs in the body can activate vitamin D and use it for their specific needs.

If you have sufficient vitamin D to get to your tissues, your cells will convert it to activated vitamin D. The activated vitamin D works inside your cells triggering certain genes to switch on and off. This is important because these genes are either fighting or promoting cancer. In fact, billions of cells use vitamin D to respond to a wide variety of diseases and help the body heal.

In the monthly newsletter produced by the Vitamin D Council, Dr. John Cannell describes five of the many ways activated vitamin D helps you prevent or heal disease through controlling your genes.

Your Body Has a Genius Problem Solver:

Activated Vitamin D	The Problem	Vitamin D's Solution
Protects you from cardiovascular disease and arthritis	Your body is producing too much of the inflammatory C-reactive protein (CRP)	Turns off the gene that makes CRP
Controls your blood sugar	Your pancreas needs to produce more insulin to control blood sugar	Turns on the gene to make more insulin
Regulates your blood pressure	Your kidney produces too much of a certain protein that raises your blood pressure	Turns off the gene that makes that protein
Helps prevent cloudy	Your brain is not	Increases production

thinking and depression	making enough neurotransmitters	of the enzyme you need to make these neurotransmitters
Helps you prevent cancer	Your breast or prostate begins to develop cancer cells	Forces those cells to remain normal and then die when they are supposed to

The more we learn, the more we understand that activated vitamin D plays a role in virtually every aspect of your health. More than thirty different tissues in the body have receptor sites to collect and use it, including the heart, stomach, pancreas, brain, skin, testicles and white blood cells of the immune system (lymphocytes).^{iv}

Calcitriol is so potent that it is active in minute quantities. Dr. John Cannell tells us in his article "*The Secrets of Vitamin D Production*" that vitamin D becomes active in picogram quantities or 1/1,000,000,000,000 of a gram.^v It is one of the most potent, powerful nutrients you can give to your body.

You can Take a Simple Test for Vitamin D

So how much vitamin D do you need to ensure that your kidneys *and* your tissues receive it? What's the best way to get it? Good questions.

But first, let's look at the best way to determine if you're deficient in vitamin D. Most people are, but it's important to know your individual levels, before you can decide what actions you need to take for better health.

If you are not getting out in the sun almost daily and not eating appropriate vitamin D-rich foods or taking supplements, you are at high risk for a deficiency and the myriad diseases that can result.

The best way to know if you are deficient is to have a yearly measurement of 25-hydroxyvitamin D as part of your annual physical examination.

Many people have their cholesterol checked ever year, although the evidence that cholesterol levels increase heart attack risk is controversial. Optimal levels of vitamin D are more important to

overall health than low cholesterol, but hardly anyone routinely checks their levels of the sunshine vitamin.

Take Action: Get Your Levels Tested

Your next step toward better health is to get your vitamin D levels tested. If you haven't been to your doctor in the last year make an appointment today. If you have an appointment scheduled, write a note to yourself reminding you to request a vitamin D test.

The test you should ask for is a 25-hydroxyvitamin D test. This test measures levels of calcidiol in your blood and is the only test you should use to determine vitamin D deficiency. There is a second test that measures calcitriol but the 25(OH)D test measuring calcidiol is the better marker for overall health.

<p>Optimal 25-hydroxyvitamin D values are:</p> <p>45-50 ng/ml or 115-128 nmol/l</p>	<p>Normal 25-hydroxyvitamin D lab values are:</p> <p>20-56 ng/ml 50-140 nmol/l</p>
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If you're concerned your doctor won't support you in your decision to test your vitamin D levels, you can arrange to have the test done without a doctor's appointment. Just visit www.DirectLabs.com to learn more.

One advantage to a home test is that you can analyze your results. Doctors rarely use optimum levels as their guide. Instead they look at anything within the normal range as fine, even though levels in the low range of normal can increase your risks of disease and cause problems.

Also remember, when looking at your results that you may see some seasonal variations. In other words, your levels will likely be a little lower in the winter than in the summer. It's best to measure your levels twice a year, once at the end of winter when your levels are lowest, and once at the end of fall when your levels are highest. At the very least, you should get an annual measurement.

The Best Ways to Get More Vitamin D

When you can't get enough vitamin D from the sun, dietary supplements are your next best bet. Most people should supplement in the late fall, winter, and early spring.

You should also consider supplementing year round if you have darkly pigmented skin, are over 65, if you're overweight, or if you just can't bring yourself to go into the sun without sunscreen.

You can start by adding a good quality multivitamin to your daily routine. But most multivitamins are only a start. The average multi contains 400 international units of vitamin D, only 40% of what you need.

Beyond a multi-vitamin, you can take a dedicated vitamin D supplement. Just make sure that it contains only the natural form of vitamin D3. This may be listed as cholecalciferol on the label.

Also, work with your doctor. You want to measure your vitamin D levels periodically to make sure that you're succeeding in bringing your levels into a healthy range... and to make sure you're not overdoing it. Of course, if you don't take more than 3000 units in a day, you should be just fine.

Easy-to-Find Food Sources of Vitamin D

You can also get vitamin D from food sources.

Cod liver oil is the most concentrated natural food source of vitamin D. One tablespoon contains about 1200 to 1400 IU.

Cod liver oil also offers several other health benefits. It's a rich source of vitamin A.^{vi} It contains the powerful anti-oxidant coenzyme Q10. It's one of the very best sources of beneficial omega-3 essential fatty acids. These cancer and inflammation fighting nutrients are hard to get in sufficient amounts in the modern diet.

Taking fish oils isn't the same as taking cod liver oil. Although fish oil has omega-3 essential fatty acids it doesn't contain vitamins A and D. What's more, cod liver oil has far more omega-3 fatty acids than your average fish oil. One tablespoon of regular cod liver oil or one-half

tablespoon of high-vitamin cod liver oil provides the equivalent of omega-3 fatty acids found in twelve 1,000 mg fish oil capsules!

Your body needs cholecalciferol, or vitamin D3. This is the compound your skin makes naturally when exposed to sunlight. The vitamin D in fortified foods such as milk usually isn't the same as the naturally occurring vitamin D, cholecalciferol.

There are few foods that contain cholecalciferol, and even those that do, contain small amounts. Below is a table of foods that contain natural vitamin D.

Natural Sources of Vitamin D^{vii}

Food Source	Amount	Vitamin D
Cod Liver Oil	1 tablespoon	1360 IU
Salmon (cooked)	3.5 ounces	360 IU
Sardines (canned)	3.5 ounces	270 IU
Tuna (canned)	3 ounces	200 IU
Egg (yolk)	1 egg	25 IU
Beef Liver (cooked)	3.5 ounces	15 IU
Swiss Cheese	1 ounces	12 IU

If you're deficient in vitamin D, the first thing you should do is to start consuming more of these foods. Two of the best sources are Alaskan wild salmon and sardines. These fish not only supply a decent amount of vitamin D, they're also free of mercury.

Avoid Foods "Fortified" with Vitamin D

What about fortified foods? I'm sure you've heard that fortified milk is a good source of vitamin D. Unfortunately, that's not usually the case. Often fortified foods contain a different form of vitamin D called ergocalciferol or vitamin D2.

Now, if you're deficient, any form of vitamin D is preferable to the higher risk of cancer, heart disease and other chronic health problems. Still, the natural form is far superior to the manufactured form.

1) **The manufactured version isn't as potent and doesn't last as long in your body.** The vitamin D found in milk, most fortified foods and even most vitamins is the synthetic version of vitamin D known as ergocalciferol. This man-made version is not nearly as potent, and it

doesn't last as long in the body. Research shows the natural form of vitamin D is nearly twice as effective at raising circulating vitamin D levels than the synthetic version.^{viii}

2) Synthetic vitamin D is linked to health problems. Synthetic vitamin D is now added to almost all milk, even baby foods, cereal, pasta, and flour. Already a number of prominent researchers have raised questions about the safety of long term use of synthetic vitamin D.^{ix} In Dr. Zane Kime's book *Sunlight*, published in 1980, he references a number of studies that link synthetic vitamin D to irritation of the lining of blood vessels.

3) It's much easier to overdose synthetic vitamin D. Research shows synthetic vitamin D becomes toxic in the body at far lower levels than natural vitamin D. Some studies also suggest that milk can amplify the effect of synthetic vitamin D. In an experiment involving school children, the effects produced by 90 units of synthetic vitamin D were greater than the effects of ten times that, 900 units of natural vitamin D in the form of cod liver oil.^x

4) You can never be sure your body's getting enough. When Dr. Michael Holick and his colleagues at the Boston University School of Medicine tested samples of milk, they found 8 out of 10 samples contained either 20% less or 20% more vitamin D than the amount the label advertised. And some of the milk tested contained no vitamin D at all!^{xi}

Vitamin D fortified foods are a gamble. As you can see, you don't want to rely on them solely to ensure healthy levels of vitamin D. If you insist on staying out of the sun and refuse to get regular, moderate exposure, it's essential to supplement. However, before supplementing with vitamin D, it's wise to have your levels tested.

The Most Neglected Health Epidemic in History

If vitamin D deficiency is so widespread and so clearly implicated in a variety of different life threatening health problems, why don't most doctors know about it?

While some of the best scientists are doctors, very few doctors are scientists. Doctors don't spend their time in a lab, they spend their time treating patients. Few of them have extra time to keep up with the latest scientific discoveries in all fields of medical study. In fact,

new research is so prolific, that trying to follow it all could easily become a full time job in itself.

So doctors skim research to learn what's new. It's unfortunate that researchers with the most money to fund studies and reach out to doctors are the ones backed by drug companies. The sad fact is that unless a drug company has a profit-making reason to promote a new research discovery, they just don't.

When it comes to vitamin D, no matter how beneficial and effective it is, sunlight is free. There's not way to profit from it. Vitamin D itself simply cannot be patented. Most market research will continue to ignore the deficiency unless they develop a patentable analog to natural vitamin D to make it profitable.

Getting the Right Dose of Vitamin D

Firs of all, remember that sunlight is your very best source of vitamin D. It is the safest source. It is completely natural. And it will not produce toxicity.

However, for most Americans, even the sun is not an adequate source in the winter. You should still get some sun every day possible in the winter, but you can't count on it to adequately boost your vitamin D.

You need dietary sources and possibly a supplement during the late fall, early spring, and winter months. Consider supplementing year round if you are overweight, over the age of 65, have dark skin, or always use sunscreen.

As we've seen, studies show that you can supplement with 3000 to 5000 IU of vitamin D a day, and your body will use all of it.

If you take a multi-vitamin, you probably get 400 IU a day. Your body would still use 2600 to 4600 more every day if you if it can get it.

One way to get this is to take a daily supplement of just vitamin D. If you do this, here are some guidelines.

1. Aim to take 2000 IU a day... this leaves room for you to safely get additional vitamin D from other sources like the weak winter sun or from your diet.
2. Take a supplement that contains cholecalciferol (vitamin D3) rather than ergocalciferol (vitamin D2).

3. One of the best natural sources is cod liver oil. Take one to two tablespoons of cod liver oil a day with food. There is 1200 to 1400 IU of vitamin D in a tablespoon of cod liver oil.

To boost your dietary intake of vitamin D, add Alaskan salmon, sardines, and eggs to your diet. Eggs are a great way to start your day. Despite the cholesterol-phobia that surrounded eggs once upon a time, you can eat one or two eggs each morning without worrying about a negative health impact.

Aim to eat salmon and sardines one or twice a week. Alaskan salmon is the cleanest kind of salmon available... it contains little-to-no mercury. It's also versatile, and makes for a tasty dinner. Sardines are readily available in cans. Try topping your salad at lunch with sardines a couple of times each week. Add a spicy thousand island dressing, and you've got a tasty meal.

By taking these steps in the wintertime, you can boost your vitamin D to a healthy level year round and dramatically reduce your risks of many chronic diseases.

Remember if you fall into a high-risk category and need to supplement year round, work with your doctor to do this. Your doctor can help you monitor your levels so that you reach your target without overshooting it.

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