



Follow the trend vs. First Principles?

It's popular to follow the trend. However, try first, the physics approach of first principles. First principles is, rather than reasoning by analogy or statistics, you boil things down to the most fundamental truths you can imagine and reason up from there. In physics or mathematics Euclid called first principles axioms, in philosophy or logic Aristotle and Kant called first principles postulates.

Let's take an example of a popular trend of taking fish oil for omega 3 fatty acids or vitamin D. We see study after study which suggests consumption of fish oil and fish promotes both Omega-3 Fatty Acids as well as Vitamin D, which in turn is healthy for brain, sperm and retina development as well as the density and growth of our bones in addition to other health benefits.

So, let's break this down into the first principles of physics approach. Yes, it is true that fish and fish oil contain Vitamin D and Omega-3 fatty acids and it is true that these promote brain, sperm and retina development and calcium absorption in the gut which is needed for bone growth and density. Sounds like we are tracking well with most books and popular diet articles, doctors and many nutritionists.

The part that is left out of the analysis by most diet articles, doctors and many nutritionists is that fish and fish oil also contain LDL cholesterol which causes atherosclerosis or heart disease. While this may not be an issue in small amounts and if your LDLs are below 99 mg/dL read on if

you want to reduce your risk of heart disease and the development of Alzheimers, yet keep the benefits of Vitamin D and Omega 3s.

Where do the fish get Omegas and Vitamin D?

First principles would tell us to step back from the observations of popular culture, diet articles, doctors and many nutritionists. Well what do the fish eat? Where do the fish get this Omega-3 Fatty Acid and Vitamin D? Intuitively, we may guess algae and seaweed. If that was our guess, we would be correct. From a first principles of superiority of origin perspective, the source is better than the derivative in nutrition or for that matter most anything in life.

Our bodies naturally make all the cholesterol we need and our bodies are lazy. If we take in cholesterol from an egg, meat, fish, dairy product, our body says "Hmmm...I don't need to work hard, so I will take what is given from the outside source". The problem is then that our body makes less of the healthy cholesterol and we load up on the unhealthy cholesterol (LDL) which comes from outside sources.

Using this analysis above, we may learn that we can eat vegetable sushi wrapped in seaweed to get both Omega 3 and Vitamin D from the same



source as the fish, but without the downside of added LDL cholesterol that comes with eating the fish rather than the food source for the fish. Other wonderful sources of Vitamin D or Omega 3 without LDL cholesterol can be found in such products as Nordic Naturals

Algae Omega, Source Vegan Omega 3s or other Algae plant oils. We do not endorse any specific

product, but they all may be found in quality health food stores.

Again, moving to the source and first principles, our bodies also naturally produce



endogenously when ultraviolet (UV) rays from sunlight strike the skin and trigger vitamin D synthesis. These first principles methods are the most superior methods of obtaining Omega 3 and Vitamin D without the downside of animal based cholesterol.

Vitamin D obtained from sun exposure, foods, and supplements is biologically inert and must undergo two hydroxylations in the body for activation. The first hydroxylation, which occurs in the liver, converts vitamin D to 25-hydroxyvitamin D [25(OH)D], also known as “calcidiol.” The second hydroxylation occurs primarily in the kidney and forms the physiologically active 1,25-dihydroxyvitamin D [1,25(OH)2D], also known as “calcitriol”.

Vitamin D promotes calcium absorption in the gut and maintains adequate serum calcium and phosphate concentrations to enable normal bone mineralization and to prevent hypocalcemic tetany (involuntary contraction of muscles, leading to cramps and spasms). It is also needed for bone growth and bone remodeling by osteoblasts and osteoclasts. Without sufficient vitamin D, bones can become thin, brittle, or misshapen. Vitamin D sufficiency prevents rickets in children and osteomalacia in

adults. Together with calcium, vitamin D also helps protect older adults from osteoporosis.

Vitamin D has other roles in the body, including reduction of inflammation as well as modulation of such processes as cell growth, neuromuscular and immune function, and glucose metabolism. Many genes encoding proteins that regulate cell proliferation, differentiation, and apoptosis are modulated in part by vitamin D. Many tissues have vitamin D receptors, and some convert 25(OH)D to 1,25(OH)2D.

In foods and dietary supplements, vitamin D has two main forms, D2 (ergocalciferol) and D3 (cholecalciferol), that differ chemically only in their side-chain structures. Both forms are well absorbed in the small intestine. Absorption occurs by simple passive diffusion and by a mechanism that involves intestinal membrane carrier proteins. The concurrent presence of fat in the gut enhances vitamin D absorption, but some vitamin D is absorbed even without dietary fat. Neither aging nor obesity alters vitamin D absorption from the gut.

Serum concentration of 25(OH)D is currently the main indicator of vitamin D status. It reflects vitamin D produced endogenously and that obtained from foods and supplements [1]. In serum, 25(OH)D has a fairly long circulating half-life of 15 days. Serum concentrations of 25(OH)D are reported in both nanomoles per liter (nmol/L) and nanograms per milliliter (ng/mL). One nmol/L is equal to 0.4 ng/mL, and 1 ng/mL is equal to 2.5 nmol/L.

Assessing vitamin D status by measuring serum 25(OH)D concentrations is complicated by the considerable variability of the available assays (the two most common ones involve antibodies or chromatography) used by laboratories that conduct the analyses. As a result, a finding can be falsely low or falsely high, depending on the assay used and the laboratory. The international Vitamin D Standardization

Program has developed procedures for standardizing the laboratory measurement of 25(OH)D to improve clinical and public health practice.

In contrast to 25(OH)D, circulating 1,25(OH)₂D is generally not a good indicator of vitamin D status because it has a short half-life measured in hours, and serum levels are tightly regulated by parathyroid hormone, calcium, and phosphate. Levels of 1,25(OH)₂D do not typically decrease until vitamin D deficiency is severe.

What should I do?

Sadly, the government recommends such sources of Vitamin D and Omega 3 such as The flesh of fatty fish (such as trout, salmon, tuna, and mackerel) and fish liver oils as among the best sources. While animal and fish sources do contain Vitamin D and Omega 3s. Just think “First Principles” as the grocery store or in other words: “Where did this animal get its food?”. This first principles type of reasoning will lead you to superior and more efficient solutions for your health. Mushrooms also alternatively provide variable amounts of vitamin D₂. Some mushrooms available on the market have been treated with UV light to increase their levels of vitamin D₂. In addition, the Food and Drug Administration (FDA) has approved UV-treated mushroom powder as a food additive for use as a source of vitamin D₂ in food products.

Fortified foods provide most of the vitamin D in American diets even though this fact does not follow the first principles analysis or theory. For example, almost all of the U.S. milk supply is voluntarily fortified with about 3 mcg/cup (120 IU), usually in the form of vitamin D₃ (why would we ingest a product loaded with LDL cholesterol when there are superior alternatives). In Canada, milk must be fortified with 0.88–1.0 mcg/100 mL (35–40 IU), and the required amount for margarine is at least 13.25 mcg/100 g (530 IU). We find this very

inconsistent as Canada has pronounced milk in 2018 as “unfit for human consumption”.

(<https://www.bbc.com/news/world-us-canada-46964549>).

Summary:

Follow first principles not only in your consumption of Vitamin D and Omega 3, but also reason in all your diet and quest for food: Where do the animals get their food?

- Plants of the Sea
- Plants of the Earth and Ground
- Nuts and seeds
- Fruits
- Genesis 1:29: “See, I give you every seed-bearing plant that is upon all the earth, and every tree that has seed-bearing fruit; they shall be yours for food.”