

Vitamin C: Natural Vs Synthetic

We have been trained to think that natural is always better, and generally speaking, this is a good rule of thumb to follow. Generally *true*, however, is not *absolutely* true. This fact becomes abundantly clear when looking at vitamins. In this report we'll take a look at vitamin C.

Believe it or not, all vitamins, whether they are delivered via a supplement or fortified in food—synthetic or natural— are made in a lab. A synthetic vitamin is one that has been completely made in a lab, and among them there are two types – those that are molecularly identical to their natural counterpart, and those that are not. Natural vitamins, meanwhile are sourced from plants, fruits, animals, and minerals, and then refined and processed in a lab. **To be worthy of the label “natural” a vitamin supplement need contain only 10% plant or fruit derived ingredients.** The other 90% could very well be synthetic.

The question remains: which is better?

To answer that, we'll need to look at 3 different ways to get vitamin C – via food, via a whole foods supplement, and via a completely synthetic vitamin.

Vitamin C from Food vs Supplements

It is not a surprise to hear that getting vitamins from our food – if possible – remains best. Yet the study published in *Nutrients* journal had some surprising results on the topic when it comes to Vitamin C: experts gave 36 men 50 mg of Vitamin C either in the form of kiwi, or in supplements containing vitamin C. The result? There were no significant differences in the amounts of vitamin C measured in body fluids and tissues, regardless of the form of vitamin C they took. Two other studies also found no significant difference in absorption rates of supported that natural food sources of vitamin C were not better than synthetic sources.

The Difficulty with Food

Vitamin C is found in many foods, mostly fruits and veggies.

If you eat your 5-9 servings of fruits and veggies, you're bound to get enough vitamin C, right? Maybe or think again. The problem is that vitamin C is subject to change when exposed to light, air and heat. So, when our vitamin C-packed foods are cooked, they lose some (and sometimes more than some) of their vitamin C power. Further, a landmark study published in 2004 in The Journal of American College of Nutrition studied U.S. Department of Agriculture nutritional data from both 1950 and 1999 for 43 different vegetables and fruits, finding “reliable declines” in the amount of protein, calcium, phosphorus, iron, riboflavin (vitamin B2), and vitamin C over the past half century. Today's fruits and veggies were found to contain 30% less vitamin C than your grandparents' fruits and vegetables.

This is not to suggest one forego the fruits and vegetables. Even though many may be less nutrient dense than those from a generation ago, a bite of broccoli still contains not only vitamin C but also vitamin A, calcium, vitamin K, iron, and several other nutrients. Each fruit and vegetable is, in its own way, a multivitamin.

Natural vs. Synthetic Vitamin C: Supplements

Ascorbic acid is the chemical name for vitamin C and gets that name from the disease it treats – scurvy (*a* signifies no, and *scorbutus* is the latin word for scurvy). Many animals can produce their own vitamin C and so do not need to get it from food, but humans require it as part of our nutrition. It primarily comes in two forms – L-ascorbic acid and D-ascorbic acid. The L variety, which can come in both natural (found in fruits and vegetables, and also whole food vitamins) and synthetic forms (found in most other supplements), is synonymous with vitamin C and carries all its benefits, while the D carries identical antioxidant properties but not the vitamin C content of L and is not used in any form of vitamin

supplement. Between the natural and synthetic varieties of L-ascorbic acid there are no known differences in how they affect our bodies. The L-ascorbic acid found in an orange is the same L-ascorbic acid found in a whole food vitamin C tablet is the same as the L-ascorbic acid found in a gummy multivitamin you bought at Walgreens. Their vitamin C content is all chemically and molecularly identical. D-ascorbic acid, meanwhile, does not exist in nature and, though chemically identical to its counterparts, is *molecularly* different. It is this molecular difference that makes D-ascorbic acid impossible to be synthesized by your body and unusable in a vitamin supplement.

Ascorbic acid supplements may cause an upset stomach in a few people. For these, “mineral ascorbate” forms of ascorbic acid may be recommended. These alternate forms are buffered, less acidic, and potentially easier on the stomach. Research, however, is inconclusive as to whether or not these alternate forms of vitamin C upset the stomach any less than ascorbic acid for those who are sensitive (if ascorbic acid is causing difficulty for you, your healthcare practitioner can help you find the right solution).

Vitamin C and Your Health

It is relatively rare to be outright deficient in vitamin C, and the problem seems to be getting better — according to the third National Health and Nutrition Examination Survey (NHANES), covering the period 1988 to 1994, 13% of the US population was found to be vitamin C deficient. According to the CDC’s analysis of the fourth NHANES report covering the period up to 2014, vitamin C status improved, and the prevalence of vitamin C deficiency was significantly lower. According to the authors, recent vitamin C supplement use and improved diet contributed to the better numbers. Vitamin C insufficiency, however, is more prevalent.

Vitamin C remains crucial to:

- growth and repair of tissues*
- making skin, tendons and blood vessels*
- helping wounds heal faster*
- keeping bones and teeth healthy*

Vitamin C is a water-soluble vitamin and does not carry the same risks of overdose toxicity that fat-soluble vitamins (like vitamin A) carry, so doubling down through a multivitamin and through diet may not be a bad idea. Also vital is the quality of whatever you ingest—in vitamin OR food form. When considering supplements, look for the Good Manufacturing Processes **GMP) certification.** NSF is a not-profit company who administers the GMP certification to those facilities that meet only the highest standards for supplement manufacturing. In addition, you may want to check with your healthcare practitioner to see if adding supplements to your diet is right for you.