



VITAMIN C

Summary

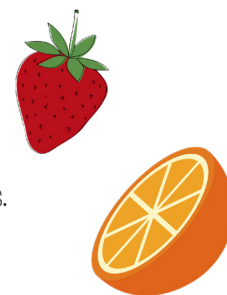
Vitamin C dissolves in water. We can't make or store it in our bodies, so we need some in our food every day. It's broken down by water, air, light and heat. This means it's found in the greatest amounts in very fresh foods, but frozen foods can also contain a lot.

Most fruits and vegetables contain Vitamin C, but fresh oranges and lemons (citrus), blackcurrants, capsicums (peppers), kiwifruit and broccoli are really great sources.

Vitamin C helps protect all our body's cells and repair damage to them. It also makes our skin healthy and even helps us take in iron from our food. Too little of it (a deficiency) can cause a disease (called scurvy) which can make someone's skin and gums bleed, and their teeth fall out.

What foods can we get Vitamin C from?

Vitamin C is found in most fruits and vegetables, but blackcurrants, strawberries, kiwifruit, citrus (oranges and lemons) - and drinks made from them are particularly good sources.



Why do we need it?

Vitamin C works to help protect our body's cells and repair damage to them caused by substances called "free radicals". Free radicals can be naturally produced by our bodies or get into them from the environment (from pollution or smoking). Vitamin C also plays a role in making collagen - the "glue" that is essential for the healthy growth and repair of bones and connective tissue (things like tendons, ligaments and skin). And it also helps us to absorb iron from our foods.

What happens if we have too much or too little?

It's very rare to have too little (a deficiency of) Vitamin C if you are eating a normal, balanced diet in New Zealand. A big deficiency may lead to the disease known as scurvy. Someone with scurvy could have bleeding gums, loose teeth, and cuts that don't heal quickly because their body isn't making enough collagen. Smokers need more Vitamin C to fight the free radicals in nicotine. If you eat more Vitamin C than your body can absorb in a day you'll just excrete it (pee it out) - but there is a slight risk of getting gout (painful joints), diarrhoea or kidney stones if someone has much too much over a long period.

Is it affected by processing or storage?

Vitamin C is sensitive. It's broken down by water, air, light and heat - so fresh, and that means very fresh, is best. Of all cooking methods, steaming causes the least loss of Vitamin C (about one-third) while boiling foods can cause their Vitamin C to leak out into the cooking water. Freezing doesn't reduce levels and often increases them.

How does the Vitamin C content of some common foods compare?

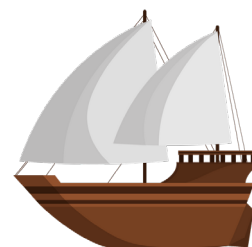
Food	Vit C (mg/100 g or 100 mL)	Food	Vit C (mg/100 g or 100 mL)
Raw red capsicum (a capsicum weighs 167 g)	144	Raw blackcurrants	160
Raw broccoli [boiled]	99 [57]	Golden kiwifruit (a large kiwifruit weighs 83 g)	109
Tomato juice (McCoy)	35	Orange/lemon flesh or juice	48 to 52
Raw red kumara [boiled]	32 [24]	Strawberry (one weighs 12 g)	46
Raw tomato (a med tomato weighs 123 g)	24	Orange/apple juice- fortified (Just Juice)	35
Raw spring onion (1 weighs 18 g)	11	Feijoa (1 feijoa weighs 40 g)	30
Raw bok choy	8	Canned pineapple in juice	10
Raw spinach [boiled]	3 [1]	Banana (a med banana weighs 110 g)	5.5

A milligram (mg) is one thousandth of a gram (g). [value] is for the boiled vegetable.
Source: The Concise New Zealand Food Tables, 12th edition 2016 (2017).

The NZ Nutrition Foundation's recommended daily dietary intake (RDI) of Vitamin C is about 40 mg (0.04 g) for children aged 9 to 18, and 45 mg (0.045 g) for adults (aged 19 to 70). Pregnant women, nursing mothers and smokers need more Vitamin C. Manufacturers use a 40 mg value when calculating % RDIs on packaging.

Funky fact(s)

When he sailed around the world in 1768-81, Captain James Cook tried out many native plants to see if they could prevent scurvy amongst his sailors. The common name of one of them from NZ commemorates this: it's known as Cook's Scurvy Grass (*Lepidium oleraceum*). Cook didn't lose a single sailor to scurvy on that trip.



REFERENCES

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- Miglio, Christina et al., 2008. "Effects of Different Cooking Methods on Nutritional and Physicochemical Characteristics of Selected Vegetables". *Journal of Agricultural and Food Chemistry* 56: 139-147. Retrieved from: <http://pubs.acs.org/doi/pdf/10.1021/jf072304b> 2 August 2017.
- New Zealand Nutrition Foundation, April 2013. "Vitamin C Retrieved from: <https://www.nutritionfoundation.org.nz/nutrition-facts/vitamins/Vitamin-C-2> 7 August 2017.

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