



Cold, hard facts

Which vegetables are better for you, frozen or fresh?

Question: I read with interest your column about whether to cook fresh fruit and vegetables (November 8). Can you please explain the nutritional differences between frozen and fresh vegetables? I've heard frozen veges are almost as good as fresh.

Answer:

Although frozen vegetables are easy to prepare, quick to cook and usually cheaper than fresh ones, we're left with a nagging suspicion that they aren't a good choice. Fruit and vegetables are normally an excellent source of vitamins, essential minerals, fibre and antioxidants. But how could vegetables processed and frozen in factories, then trucked around the country be nutritionally equal to fresh produce from the local greengrocer?

Folic acid, thiamin and vitamin C are particularly susceptible to heat damage and leach out into cooking water during food preparation, potentially resulting in substantial nutrient losses. These three vitamins are often used as "markers" for the overall nutrient content of fruit and vegetables. If these nutrients are retained after freezing, scientists can assume other nutrients will also have been retained.

Processing involves two basic stages: blanching and freezing. Contrary to popular belief, the blanching stage causes the greatest nutrient losses. Prompt blanching of vegetables is necessary soon after harvest, though, as this deactivates enzymes that would otherwise slowly degrade the vegetables by causing changes in flavour, colour, texture and nutritional content. Instead of using water for blanching, a number of manufacturers use "steam blanching", as this reduces vitamin loss. After blanching, the vegetables are rapidly frozen.

Storing frozen vegetables at -18°C or lower for up to a year results in minimal nutrient losses, so our bags of veges in the freezer are good to use over weeks or months.

A study commissioned by Heinz Wattie's, and conducted by the New Zealand Institute for Crop & Food Research, found that Wattie's freshlock frozen peas stored in a freezer for a year and then microwave-heated contained more vitamin C than fresh peas stored at room temperature for three days and then microwaved. The three-day storage of fresh veges at ambient temperature was intended to imitate the typical storage of fresh vegetables in transit to stores.

Frozen vegetables are a nutritious way to increase our vegetable intake. They are not a "poor cousin" to fresh vegetables.

These findings are supported by a number of other studies into the effects of freezing on spinach, green beans, brussels sprouts, carrots, broccoli, broad beans, cabbage and even potatoes. They also found that the nutrient quality of frozen cooked vegetables was comparable or better than that of fresh cooked vegetables following transport and storage.

The key here is "following transport and storage". So, if you have your own

vegetable patch, this is an ideal source of nutrient-rich produce.

The research confirms that frozen vegetables are a nutritious, convenient way to increase our vegetable intake. They are not a "poor cousin" to fresh vegetables. That's why New Zealand and Australian health authorities specifically include frozen and canned vegetables in their recommendations for vegetable consumption.

The convenience of frozen vegetables is a real bonus. And any vegetables that are eaten are better than vegetables sitting in the fridge or thrown in the rubbish. A study of vegetable-juice intake, presented at the American Dietetic Association conference last month, found drinking juiced vegetables is another effective way to increase nutrient intakes.

So, whether you plump for frozen, fresh or juiced vegetables, choose products that fit your lifestyle. Use frozen vegetables on busy weeknights, but eat fresh produce when you can. Summer is salad season, so enjoy cheap lettuces, tomatoes, asparagus, avocados and other in-season goodies. And up to one glass of vegetable or fruit juice can count towards your 5+ a day target. The message is simple: just eat *more* vegetables. ■

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