



Eat lots of produce, raw and cooked

I have long heard about the benefits of eating raw produce, and I have experimented with a semi-raw diet in the last few weeks. Besides eating raw produce, I'm making smoothies with fruits and vegetables for breakfast. But I just heard a news report saying some vegetables are more nutritious if cooked. So what's better, cooked or raw?

Making smoothies from raw fruits and vegetables is a wonderful idea, and if it's something you enjoy, by all means keep doing it.

But most dietitians tend to shy away from any sort of "all or nothing" approach. And the raw vs. cooked debate is no exception. The best guidance is to find a happy medium.

For example, experts have known for decades that vitamin C can easily leach out of vegetables during cooking. It's sensitive to heat, and it's water-soluble, so you can lose a lot of it when you simmer vegetables for very long on the stove. But at the same time, cooking can increase the availability of other nutrients. For example, several studies over the last few years show that people get a lot more lycopene from tomatoes that have been cooked or canned (which essentially cooks tomatoes during processing) over raw tomatoes. In fact, Ohio State Univer-

sity researchers have found that lycopene molecules in tomatoes change their shape — which makes them more usable by the body — when combined with a small amount of fat and subjected to intense heat during processing. Lycopene is a pigment that makes tomatoes and other produce red, and is linked to the prevention of cancer and other chronic diseases.

One of the best examples is broccoli: Some studies indicate that raw is healthier, because raw broccoli contains an enzyme called myrosinase, which helps form the compound sulforaphane, which is thought to help prevent cancer and stomach ulcers. Cooking broccoli damages myrosinase. On the other hand, cooking broccoli (and other cruciferous vegetables) also forms the compound indole, which fights precancerous cells before they cause damage.

Studies of carrots tell a similar story. While cooking carrots increases levels of carotenoids, it also rids carrots of polyphenols, some of which reduce the risk of cardiovascular disease and cancer.

Cooking methods also make a difference. A recent study of 20 vegetables in the *Journal of Food Science* indicated that griddling, microwave cooking and baking led to the lowest losses of antioxidants, while pressure-cooking and boiling led to the greatest losses.

Chow Line is a service of Ohio State University Extension and the Ohio Agricultural Research and Development Center. Send questions to Chow Line, c/o Martha Filipic, 2021 Coffey Road, Columbus, OH, 43210-1044, or filipic.3@cfaes.osu.edu.



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