

The Whys and Hows of Cooking Vegetables

Heat, pH (acidity), and cooking technique can all affect color, texture, and flavor of vegetables. Here's what you need to know to properly cook your vegetables and enhance all three properties.

Color Changes

Green Vegetables

Chlorophyll is the pigment present in all green vegetables such as asparagus, green beans, broccoli, peas, and spinach. Chlorophyll is destroyed by acids, such as lemon juice and vinegar.

Acids and prolonged heat turn chlorophyll to *pheophytin*, which is a drab olive green. Bases turn chlorophyll to *chlorophyllin*, which is a brighter green.

Red Vegetables

Anthocyanins are the red pigments found only in a few vegetables, such as red cabbage. They react very strongly to acids and bases. Acids make anthocyanins brighter red, and bases turn them blue or blue-green.

Anthocyanins dissolve easily in water. They can leach out into the cooking water and cause color fading. It is best to cook these vegetables quickly in as little water as needed. It can also be helpful to add some acid to the cooking water if you want to preserve red color. For example, red cabbage is often cooked with apple cider vinegar.

Yellow and Orange Vegetables

Carotenoids are the yellow and orange pigments found in carrots, corn, sweet potatoes, and winter squash. They do not change significantly in the presence of acid or base. They also do not dissolve in water and do not leach into cooking water. However, overcooking can fade the color and cause loss of flavor and nutrients.

White Vegetables

Anthoxanthins are the major white pigments found in potatoes, onions, cauliflower, and the white parts of celery, cucumbers, and zucchini. Overcooking and hard water (which is basic rather than acidic) turn white vegetables a dull yellow or gray.

Important to Know!

Acids:

- ❖ Lemon juice
- ❖ Tomatoes
- ❖ Fruit
- ❖ Cream of tartar
- ❖ Vinegar

Bases:

- ❖ Baking soda
- ❖ Baking powder
- ❖ Hard water



Texture and Cooking Time

Most vegetables are best when cooked very briefly or until they are crisp-tender. At this stage, vegetables have their maximum flavor, color, and nutrients.

Acids toughen vegetables, so they take longer to cook to the point of desired softness. Bases soften vegetables, which decreases cooking time. This increases the likelihood of vegetables turning mushy.

In recipes that call for lemon juice, tomatoes, or other acids, add only a small amount at the beginning of cooking and the rest after the vegetables have become tender.

Flavor and Nutrient Content

The longer certain vegetables are cooked, the more flavor is lost. This can happen either because flavor compounds dissolve into the cooking liquid or evaporate. Some nutrients (like vitamin C) may also be lost as they leach out into the cooking water.

To preserve desirable flavors and nutrients, cook vegetables as quickly as possible and in a small amount of liquid. Start with boiling water to reduce cooking time.

Strong-flavored vegetables such as cabbage, Brussels sprouts, cauliflower, broccoli, and turnips are much more appealing if some of their flavor is lost. Cooking strong-flavored vegetables uncovered and in larger amounts of water allows off-flavors to escape.

Cooking Methods

- ❖ Use as little water as possible, with the exception of strong-flavored vegetables.
- ❖ Cook yellow, orange, and red vegetables covered; green and white uncovered.
- ❖ Cook vegetables as quickly as possible to and retain nutrients, color, and flavor.
- ❖ **Steaming** is the most preferred method for cooking because steam cooks food rapidly, lessens the loss of nutrients and flavor, and does not break up delicate vegetables.

To microwave fresh vegetables:

-Place evenly cut vegetables in a ceramic dish. Add 2 Tbsp water.

-Cover and cook on high until fork tender, stirring halfway through cooking time.

To boil fresh vegetables:

-Bring water to a boil in saucepan.

-Add vegetables and add more water to cover if needed. Return water to a boil.

-Cover if appropriate.

-Reduce heat to a simmer and cook the vegetables until tender.