

FCS3-106

VEGETABLE PREPARATION FOR THE FAMILY

Your mother told you to eat your vegetables. Research confirms that she was right, as usual. Eating five servings of fruits and vegetables per day rather than two servings lowers your risk of death by 13%. The Dietary Guidelines for Americans also suggests choosing foods rich in nutrients first. Forget foods with empty calories. Visit your local farmers' market or walk the produce aisle of your favorite grocery store, and you will find rows and rows of brightly colored vegetables. A wide variety of these nutrient-dense and phytochemical-rich foods are available year-round thanks to modern science and reliable transportation. In our health-conscious times, vegetables aren't just a side dish. They also serve as low-cost main dishes, such as Vegetable Stir-fry, Eggplant Parmesan, and Vegetable-Stuffed Portabella Mushrooms. There are so many vegetables to try. Knowing how to prepare vegetables to keep their nutritional value, color, and flavor can make your meals more appealing for your family and friends.



FRESH IS BEST

Great-tasting produce is easy to find when it's at its peak or in season. Look at a vegetable's appearance and texture when you select fresh produce. High-quality, fresh vegetables are young, crisp, and brightly colored. As vegetables ripen, they lose flavor and nutrients. They become limp, losing their crispness. Since vegetables grow close to the ground, you may need to wash them before eating or preparing. Use clean, running water only, and rub vegetables with your hands. You may also need to scrape, pare, chop, or slice some vegetables before cooking.

STORAGE

Proper storage of fresh vegetables can affect both quality and safety. Fresh vegetables should be stored for as short a time as possible to prevent loss of moisture, nutrients, and flavor, as well as a change in texture. Peas and corn begin to lose their sweetness as soon as they are picked. Store unwashed potatoes, onions, and winter squash in a cool, dry, dark place. Refrigerate other vegetables, such as lettuce, herbs, and mushrooms, in a covered container to prevent drying. Tightly cover peeled and cut vegetables to prevent drying and discoloration. Refrigerate them within two hours of peeling or cutting.



NUTRITIONAL VALUE OF VEGETABLES

We should try to eat three to five servings of vegetables every day. A serving size usually is $\frac{1}{2}$ cup of cooked vegetable or 1 cup of raw vegetable. Vegetables provide important vitamins and minerals, such as vitamin A, vitamin C, riboflavin, folic acid, iron, and magnesium. Most vegetables are also good sources of fiber. They are naturally cholesterol-free and low in fat. But don't turn your naturally low-fat vegetables into high-calorie selections by adding butter or high-fat sauces.

CONTROLLING TEXTURE CHANGES

Most vegetables are best when cooked very briefly or until they are crisp-tender. At this stage, vegetables maintain their maximum flavor, color, and nutrients. Cellulose and pectin are the fibers that give vegetables their shape and firmness. Cooking softens these fibers. The amount of fiber varies with different vegetables, with the age of vegetables, and even within the same vegetable. A longer cooking time means softer vegetables. Do not add alkali, such as baking soda, to vegetables because it destroys vitamins and softens vegetables to the point of mush. Acids such as lemon juice, vinegar, tomato products, and sugar make vegetable fibers firmer. If you add any of these, you will

need to allow more cooking time. Starch found in vegetables also affects texture. Dry starchy foods like dried beans, peas and lentils, rice, and macaroni products must be cooked in enough water to allow the starch granules to absorb moisture and soften. Moist starchy vegetables like potatoes and yams must simply be cooked to soften the starch granules.

CONTROLLING FLAVOR CHANGES

Many flavors are lost during cooking. They either dissolve into the cooking liquid or evaporate. Cooking vegetables as quickly as possible can prevent this. Use as little water as possible to minimize leaching of vitamins and minerals. Steam vegetables when possible because steaming is a fast process. Less flavor and fewer nutrients are lost during the reduced cooking time. Strong-flavored vegetables, such as onions, 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. Adding herbs and spices to vegetables can be tricky. They must cook long enough to extract and diffuse their flavor but not so long that flavoring will be lost.



CONTROLLING COLOR CHANGES

It is important to preserve as much of a vegetable's natural color as you can during cooking. Different pigments react differently during cooking. Color can also indicate whether a vegetable is done.

- 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, and by baking soda. Prolonged cooking or overcooking causes bright green vegetables to turn a drab olive green. Steaming is the preferred method for cooking because steam cooks food rapidly, lessens the loss of nutrients and flavor, and does not break up delicate vegetables.
- Carotenoids are the yellow and orange pigments found in carrots, corn, sweet potatoes, tomatoes, and winter squash. These pigments are very stable to acids and heat, but lose color, nutrients, and flavor with overcooking.
- Anthocyanins are the red pigments found only in a few vegetables, such as beets and red cabbage. These red pigments react very strongly to acids and alkalis. Acids make anthocyanins brighter red, and alkalis turn

them a blue or blue-green color. Often, red cabbage is cooked with tart apples, because the small amount of acid in the apples turns the red cabbage a bright red color. Acids toughen vegetables and prolong cooking time; in recipes that call for lemon juice, tomatoes, or other acids, add only a small amount of the ingredient at the beginning of cooking and after the vegetables become tender, add the rest. Because anthocyanins dissolve easily in water, cook these vegetables quickly in as little water as needed. Or reserve the cooking water for other uses, such as stocks or soups.

- Flavones are the white pigments found in potatoes, onions, cauliflower, and the white parts of celery, cucumbers, and zucchini. Cook these vegetables for a short time to avoid loss of nutrients, flavor, and color. Overcooking and hard water turn white vegetables a dull yellow or gray.

As a rule of thumb, use as little water as possible, with the exception of strong-flavored vegetables; cover yellow, orange, and red vegetables; do not cover green and white vegetables.

BASIC COOKING METHODS

Understanding basic cooking methods will help you maintain the nutritional value, flavor, and quality of your food. There are many ways to cook vegetables. Vegetable dishes should be delicious and nutritious, motivating us to eat more vegetables. Some of the healthier cooking options are grilling, roasting, steaming, and microwaving. You can also sauté or stir-fry, fry, and boil vegetables.

- You can grill on an outdoor or indoor grill, over an open flame or indirectly by placing the food on a grill surface away from the heat source. Follow the manufacturer's instructions to get the best quality from marinated or seasoned vegetables. Grilling caramelizes the vegetables, so they are sweet and crisp. Try grilling zucchini, beets, or artichokes as a great addition to your salads. Try a skewer of summer squash, red onion, bell pepper, and mushrooms that have been marinated in a mesquite marinade. With a little practice you can become adept at grilling a wide variety of foods.
- Roasting is a dry-heat cooking method that uses hot air to conduct heat. A baking sheet or roasting pan enhances the heat transfer to the roasting foods. If you add a marinade or sauce, place a rack inside the roasting pan to allow the melting fat to drip away from the food. Roasted vegetables are easy to prepare. Drizzle olive oil and sprinkle on your favorite herbs, give a stir, and bake at 350 degrees F for about 30 minutes. Potatoes, sweet potatoes, and winter squash, as well as tomatoes, can be roasted successfully. You can bake vegetable casseroles, such as Eggplant Parmesan, in the oven. But the vegetables are usually precooked by simmering or steaming before they are mixed with other ingredients and baked.
- Steaming is a simple cooking method that uses a flavorful liquid or water to cook the food. Boiling liquid becomes steam and heats the food. It is a healthy method with no added fat. More nutrients are retained



than in boiling. On your range-top, steam vegetables over a pot of boiling water that contains a perforated basket. You can also easily and quickly use a microwave with only a few tablespoons of water. Microwaving preserves the nutrients, color, and texture of most vegetables. Try steaming 2 cups of cauliflower florets, 1 cup of sliced carrots, and 1 sliced red onion for about 10 minutes; add 1 cup sliced mushrooms, $\frac{1}{4}$ teaspoon each of dried basil and marjoram, and steam 5 minutes more or until tender. Before serving, sprinkle with 1 tablespoon lemon juice.

- Sautéing, or stir-frying, is a dry-heat cooking method that quickly cooks small pieces of food. A skillet or sauté pan, with small amounts of fat or oil, browns the surface and cooks the vegetables. Toss, turn, or stir frequently to brown and cook the food evenly. Sauté mushrooms in a small amount of olive oil, and when almost done, add several handfuls of spinach. Sauté until wilted.

- Boiling (212 degrees F) is the most frequent method of cooking vegetables because it is easy and economical. But instead of using boiling water, use simmering water (180 degrees F). The agitation and high temperature of boiling break up delicate vegetables and destroys nutrients. Simmering can be used for fresh, frozen, dried, or dehydrated vegetables.
- Frying uses large amounts of fat, usually 3 inches or more in the pan, for a longer time at a lower heat to cook the vegetables. Most vegetables are fried from 325 to 350 degrees F after being coated with a batter or breading. Without a coating, vegetables tend to dry out. Always have your oil up to temperature before adding the vegetables, and drain well to prevent consuming additional fat.
- Choosing the correct cooking method will determine the quality of the finished dish. In addition to quality, the cooking method also affects the color, flavor, texture, and nutrient content.

SEASONING LIST FOR VEGETABLES

Many vegetables are delicious raw or cooked simply with a little salt and pepper or sprinkled with olive oil or lemon. Herbs and spices are also a great way to enhance their natural flavors. Experiment with small amounts of seasonings to find what your family likes. Start with 1 teaspoon of mild herbs or spices, such as basil, cinnamon, cumin, lemon pepper, or oregano, per six servings. With strong herbs or spices, such as allspice, cloves, ginger, nutmeg, rosemary, and tarragon, start with only ¼ teaspoon per six servings. Ground herbs are stronger than dried, and dried are stronger than fresh. If a recipe calls for ¼ teaspoon of ground herbs, use almost 1 teaspoon of dried or 2 teaspoons of fresh herbs.

Asparagus: Garlic, fresh lemon juice, onion, vinegar

Beans: Caraway, cloves, cumin, mint, onion, green bell pepper, savory, tarragon, thyme



Beets: Anise, caraway, fennel, ginger, savory

Brussels Sprouts: Turmeric, curry powder, garlic, nutmeg, thyme, Italian seasoning, celery salt, Dijon mustard

Carrots: Anise, cinnamon, cloves, mint, sage, tarragon

Corn: Allspice, chili powder, green bell pepper, pimiento, fresh tomato

Cucumbers: Chives, dill, garlic, vinegar

Green Beans: Dill, fresh lemon juice, marjoram, nutmeg, pimiento

Greens: Garlic, fresh lemon juice, onion, vinegar

Peas: Allspice, green bell pepper, mint, fresh mushrooms, onion, fresh parsley, sage, savory

Potatoes: Chives, dill, green bell pepper, onion, pimiento, saffron, sage

Squash: Allspice, brown sugar, cinnamon, cloves, fennel, ginger, mace, nutmeg, onion, savory

Tomatoes: Allspice, basil, garlic, marjoram, onion, oregano, sage, savory, tarragon, thyme

Vegetables in general: Basil, cayenne, chervil, dill, marjoram, mint, fresh mushrooms, nutmeg, oregano, parsley, freshly ground pepper, poppy seeds, rosemary, sage, sesame seeds, tarragon, thyme, turmeric, and watercress

RECIPES

There are many vegetable and vegetarian recipes available from your local library or from websites and food blogs. Not all will be healthy. But exploring how to prepare vegetables so they are delicious and nutritious will benefit your health and add color to your family meals. Check out University of Kentucky Plate It Up! Recipes to get started.

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