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DRYING VEGETABLES

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Vegetables can be preserved by drying. The longer the drying time, the less flavorful and the less tender the product. The drying time can be hastened by drying small, uniformly cut pieces. Because they contain less acid than fruits, vegetables are dried until they are brittle. At this stage, only 10 percent moisture remains and no microorganisms can grow.

Preparing Vegetables

Only fresh vegetables in prime condition can produce a good-quality dried product. Wilted ones should not be used — deterioration has already begun. One moldy bean may give a bad flavor to an entire lot. If possible, gather the vegetables early in the morning, and start the drying process as soon as possible. Carefully sort, discarding any bruised or undesirable product. Wash carefully and thoroughly in cool water

Trim, peel, cut, slice or shred vegetables according to the directions for each vegetable (see Table 2. "Drying Vegetables at Home") Remove any fibrous or woody portions and core when necessary, removing all decayed and bruised areas. Keep pieces uniform in size so they will dry at the same rate. A food slicer or food processor can be used. Prepare only as many vegetables as can be dried at one time. Holding vegetables, even in the refrigerator, after washing and preparation for drying will result in loss of quality and nutrients.

Pretreating Vegetables

Blanching is a necessary step in preparing vegetables for drying. Blanching is the process of heating vegetables to a temperature high enough to destroy enzymes present in the tissue. It stops the enzyme action that causes loss of color and flavor during drying and storage. It also sets the color and shortens the drying and rehydration time by relaxing the tissue walls so moisture can escape or re-enter more rapidly. In water blanching, the vegetables are submerged in boiling water. In steam blanching, the vegetables are suspended above the boiling water and heated only by the steam. Water blanching usually results in a greater loss of nutrients, but it takes less time than steam blanching. (See Table 2. "Drying Vegetables at Home.") Not all vegetables require blanching. Onions, green peppers and mushrooms can be dried without blanching.

Water-Blanching: Fill a large pot two-thirds full of water, cover and bring to a rolling boil. Place the vegetables in a wire basket or a colander and submerge them in the water. Cover and blanch according to directions for each vegetable (see Table 2. "Drying Vegetables at Home.") If it takes longer than one minute for the water to come back to boiling, too many vegetables were added. Reduce the amount in the next batch.

Steam-Blanching: Use a deep pot with a close-fitting lid and a wire basket, colander or sieve placed so the steam will circulate freely around the vegetables. Add water to the pot and bring to a rolling boil. Loosely place the vegetables in the basket no more than 2 inches deep. Place the basket of vegetables in the pot. Make sure the water does not come in contact with the vegetables. Cover and steam according to the directions for each vegetable (see Table 2. "Drying Vegetables at Home.")

Cooling & Drying Prepared Vegetables

After blanching, dip the vegetables briefly in cold water, only long enough to stop the cooking action. Do not cool them to room temperature. When they feel only slightly hot to the touch, they will be cooled to about 120 °F. Drain the vegetables by pouring them directly onto the drying tray held over the sink. Wipe the excess water from underneath the tray and arrange the vegetables in a single layer. Then place the tray immediately in the dehydrator or oven. The heat left in the vegetables from blanching will cause the drying process to begin more quickly. Watch the vegetables closely at the end of the drying period. They dry much more quickly at the end and could scorch.

It is best not to dry strong-smelling foods like onions or garlic in the home. The odors may linger in the drapes, clothes and furniture. Place the dehydrator on a carport, covered porch or covered patio. Keep the dehydrator away from rain. Also, avoid drying strong-smelling food with other food because their flavors will blend.

There is an additional step to the process of drying green beans which produces a product more similar to canned green beans. After the green beans have been blanched, place them in a single layer in a freezer for 30 to 40 minutes. Then start the drying process.

Determining Dryness of Vegetables

Vegetables should be dried until they are brittle or “crisp.” Some vegetables would actually shatter if hit with a hammer. At this stage, they should contain about 10 percent moisture. Because they are so dry, they do not need conditioning like fruits.

Packaging & Storing Dried Foods

Dried foods are susceptible to insect contamination and moisture reabsorption and must be properly packaged and stored immediately. First, cool completely. Packaging warm food causes sweating, which could provide enough moisture for mold to grow. Pack foods into clean, dry, insect-proof containers as tightly as possible without crushing.

Glass jars, metal cans or boxes with tightly fitted lids or moisture- and vapor-resistant freezer cartons make good containers for storing dried foods. Heavy-duty plastic bags are acceptable but are not insect- and rodent-proof.

Pack food in amounts that will be used in a recipe. Every time a package is re-opened, the food is exposed to air and moisture that lower the quality of the food.

Dried foods should be stored in cool, dry, dark areas. Recommended storage times for dried foods range from four months to one year. Because food quality is affected by heat, the storage temperature helps determine the length of storage; the higher the temperature, the shorter the storage time. Vegetables have about half the shelf-life of fruits, and can generally be stored for six months at 60 °F or three months at 80 °F.

Foods that are packaged seemingly bone-dry can spoil if moisture is reabsorbed during storage. Check dried foods frequently during storage to see if they are still dry. Glass containers are excellent for storage because any moisture that collects on the inside can be seen easily. Foods affected by moisture, but not spoiled, should be used immediately or redried and repackaged. Moldy foods should be discarded.

Rehydrating Dried Vegetables

Most vegetables are soaked or rehydrated in cold water prior to use. However, there are two other acceptable rehydration methods: adding the dried product to boiling water or adding the dried vegetable to a product with lots of liquid, such as soup. Whichever rehydration method is chosen, the vegetables return to their original shape.

Vegetables can be soaked in either water or, for additional flavor, bouillon or vegetable juice. They usually rehydrate within one to two hours. If they are soaked for more than two hours, or overnight, they should be refrigerated. Using boiling liquid speeds up the soaking time. Save and use the soaking liquid in cooking.

Adding dried vegetables directly to soups and stews is the simplest way to rehydrate vegetables. Leafy vegetables, cabbage and tomatoes do not need to be soaked. Add sufficient water to keep them covered and simmer until tender.

Vegetables Chips

Dehydrated, thinly sliced vegetables or vegetable chips are a nutritious low-calorie snack. They can be served with a favorite dip. Vegetables to try include zucchini, tomato, squash, parsnip, turnip, cucumber, beet or carrot chips.

Note: Vegetables should be thinly sliced with a food processor, vegetable slicer or sharp knife before drying.

Vegetable Flakes & Powders

Vegetable flakes can be made by crushing dehydrated vegetables or vegetable leather using a wooden mallet, rolling pin or one's hand. Powders are finer than flakes and are made by using a food mill, food processor or blender. The most common powders are onion, celery and tomato.

Table 1. Dried Vegetable Equivalents

Fresh Produce	Dry Equivalents
1 onion	1½ tablespoon onion powder ¼ cup dried minced onions
1 green pepper	¼ cup green pepper flakes
1 cup carrots	4 tablespoons powdered carrots ½ cup (heaped) dried carrots
1 cup spinach	2 to 3 tablespoons powdered spinach
1 medium tomato	1 tablespoon powered tomato
½ cup tomato purée	1 tablespoon powered tomato
20 pounds tomatoes	18 ounces dried sliced tomatoes

Table 2. Drying Vegetables at Home

Vegetables	Preparation	Blanching Time (minutes)		Drying Time Dehydrator* (hours)
		Steam	Water	
Artichoke, globe	Cut hearts into $^{1}/_{8}$-inch strips. Heat in boiling solution of ¾ cups water and 1 tablespoon lemon juice.		6 to 8	4 to 6

Asparagus	Wash thoroughly. Cut large tips in half.	4 to 5	3½ to 4½	4 to 6
Beans, green	Wash thoroughly. Cut in short pieces or lengthwise. (May freeze for 30 to 40 minutes after blanching for better texture.)	2 to 2½	2	8 to 14
Beets	Cook as usual. Cool; peel. Cut into shoestring strips 1/8-inch thick.	No further blanching required.		10 to 12
Broccoli	Trim and cut as for serving. Wash thoroughly. Quarter stalks lengthwise.	3 to 3½	2	12 to 15
Brussels sprouts	Cut in half lengthwise through stem.	6 to 7	4½ to 5½	12 to 18
Cabbage	Remove outer leaves; quarter and core. Cut into strips 1/8 inch thick.	2½ to 3 until wilted	1½ to 2	10 to 12

Carrots	Use only crisp, tender carrots. Wash thoroughly. Cut off roots and tops; preferably peel, cut in slices or strips 1/8-inch thick.	3 to 3½	3½	10 to 12
Cauliflower	Prepare as for serving.	4 to 5	3 to 4	12 to 15
Celery	Trim stalks. Wash stalks and leaves thoroughly. Slice stalks.	2	2	10 to 16
Corn, cut	Select tender, mature sweet corn. Husk and trim. Cut the kernels from the cob after blanching	5 to 6	4 to 5	6 to 10
Eggplant	Use the directions for summer squash.	3½	3	12 to 14
Garlic	Peel and finely chop garlic bulbs. No other pretreatment is needed. Odor is pungent.	No blanching needed.		6 to 8
Greens (chard, kale, turnips, spinach)	Use only young tender leaves. Wash and trim very thoroughly.	2 to 2½	1½	8 to 10
Horseradish	Wash; remove small rootlets and stubs. Peel or scrape roots. Grate.	None		4 to 10
Mushrooms (WARNING, see footnote**)	Scrub thoroughly. Discard any tough, woody stalks. Cut tender stalks into short sections. Do not peel small mushrooms. Peel large mushrooms, slice.	None		8 to 10
Okra	Wash, trim, slice crosswise in 1/8– to ¼-inch disks.	None		8 to

				10
Onions	Wash, remove outer "paper shells." Remove tops and root ends, slice 1/8– to ¼-inch thick.	None		3 to 9
Parsley	Wash, thoroughly. Separate clusters. Discard long or tough stems.	None		1 to 2
Peas, green	Shell.	3	2	8 to 10
Peppers & pimientos	Wash, stem, core. Remove "partitions." Cut into disks about 3/8 by 3/8 inch.	None		8 to 12
Potatoes	Wash, peel. Cut into shoestring strips ¼-inch thick, or cut in slices 1/8-inch thick.	6 to 8	5 to 6	8 to 12
Pumpkin & hubbard squash	Cut or break into pieces. Remove seeds and cavity pulp. Cut into 1-inch strips. Peel rind. Cut strips crosswise into pieces about 1/8-inch thick.	2½ to 3	1	10 to 16
Squash, summer	Wash, trim, cut into ¼-inch slices.	2½ to 3	1½	10 to 12
Tomatoes, for stewing	Steam or dip in boiling water to loosen skins. Chill in cold water. Peel rind. Cut into sections about ¾-inch wide, or slice. Cut small pear or plum tomatoes in half.	3	1	10 to 18
*Drying times in a conventional oven could be up to twice as long, depending on air circulation. **WARNING: The toxins of poisonous varieties of mushrooms are not destroyed by drying or by cooking. Only an expert can differentiate between poisonous and edible varieties.				

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