

DEHYDRATING BASICS

BASIC FOOD SAFETY

Wash Hands Frequently

- Personal cleanliness is a must. Wash your hands thoroughly and frequently. E. coli resides in the human nose and intestines. Wash your hands if you rub your nose, or if you wipe your face or skin.
- Bandage any cuts or burns on hands before handling food, or use disposable gloves.

Avoid Cross Contamination

- Rinse all fresh fruits and vegetables well under running water before preparing or eating them. Dry them with a clean cloth or paper towel.
- **ALWAYS** wash your hands, knives, cutting boards, and food preparation surfaces well with soapy water before and after any contact with raw meat, fish, or poultry.
- Use a disinfecting solution of 1½ teaspoons of chlorine bleach to 1 pint of water. Dispense with a spray bottle to disinfect countertops, cutting surfaces, sinks, etc. Let sit one minute then wipe. Make a new solution daily.

When In Doubt, Throw It Out

- Never taste food that looks or smells strange to see if it can still be used.
- Most bacteria that cause foodborne illness are odorless, colorless, and tasteless.

DEHYDRATING FOODS

The overall objective in dehydrating foods is to remove moisture before the food spoils. To maintain safety and quality, several factors must be considered when drying fruits, vegetables, and herbs. Keep in mind that specific food products often have recommendations that are unique to them. Drying removes the



moisture from food so that microorganisms such as bacteria, yeasts, and molds are less likely to grow; however, drying does not effectively destroy them. Because there is not a heat treatment that effectively destroys disease-causing microorganisms, it is critical to use safe food-handling practices when growing and handling fruits, vegetables, and herbs for drying.

- The optimum drying temperature is 140°F. If higher temperatures are used, the food will develop “case hardening” and moisture will not be able to escape from the food; this, in turn, will lead to a moldy food product. Therefore, do not rush the drying process.
- Low humidity is also needed when drying foods. If the surrounding air is humid, the foods will not dry effectively. Increasing the air movement away from the food will assist in the drying process.
- Foods can be dried in the oven, under the sun, on the vine, or indoors using a dehydrator. There are several resources that provide tested methods for dehydrating vegetables, fruits, and herbs. Ask your County Extension office for information on specific drying methods.

Additional Food Safety

When dehydrating foods, using good sanitary practices is critical to reducing the risk of contaminating foods with pathogens and spoilage microorganisms.

1. After harvesting produce or herbs, place in containers and locations that are free from additional contamination (for example, pets and wild animals will not have access).
2. Begin the dehydration process soon after harvesting.
3. Clean and sanitize all utensils, containers, food-contact surfaces of dehydrating equipment and work surfaces.
4. Always wash hands before handling foods—that includes harvesting.
5. Consider using disposable gloves when preparing foods for dehydrating. Dispose of gloves after use.

DEHYDRATING FRUITS

Pretreating fruits is a personal preference; food safety is not affected. Pretreating some fruits before drying will reduce vitamin loss, flavor loss, browning, and deterioration during storage.

- Ascorbic acid is used by dissolving 1 tablespoon of the powder in 1 quart of cold water. Dip the fruit in the solution, drain, and dehydrate.
- **Crazing:** Some fruits have a protective wax coating, such as plums, figs, cranberries, blueberries, grapes, etc. It is necessary to pretreat these fruit by dipping them in boiling water for 1 to 2 minutes, according to the size and toughness of the skin.
- Sodium bisulfate is used by dissolving 2 teaspoons of the powder in 1 quart of water and adding the cut fruit. Dip the fruit in the solution, drain, and dehydrate.
- Citric acid is only one-eighth as effective as ascorbic acid. Dissolve 1 tablespoon in 1 quart of water. Dip the fruit in the solution, drain, and dehydrate.
- Citrus juice: pineapple, lemon, and lime juice may be used, but are only one-sixth as effective as ascorbic acid. Use 1 cup of

lemon or lime juice to 1 quart of water.

Dip the fruit in the solution, drain, and dehydrate.

- Sulfuring means exposing fruit to fumes of burning sulfur. Some people are allergic to sulfur, especially those who suffer from asthma. Sulfuring must be done outside.

Testing for Dryness

Fruit should be pliable and leather like, without any pockets of moisture.

DEHYDRATING VEGETABLES

Just as with freezing, you must blanch vegetables to deactivate enzymes that cause flavor and color deterioration during the dehydration process. Blanch with hot water or steam according to published guidelines. Do not blanch green peppers, onions, garlic, mushrooms and okra.

Testing for Dryness

Vegetables may dry unevenly and some pieces may need to be removed before others. Most vegetables will be hard and brittle when dried. If using a vertical fan and heat source, rotate trays to help dry food evenly.

FINISHING

Conditioning

All dried foods should be conditioned before packing. Too much moisture left in a few pieces may cause the whole batch to mold.

- Place dried foods in a tightly closed large container.
- Stir or shake each day for a week. This will equalize the moisture.
- If moisture forms on the inside of the container the food has not been dried sufficiently. Return the food to the dehydrator for a few more hours.
- Pasteurize any food products that could have been exposed to insect infestation or larva prior to handling or during the drying process by freezing it in airtight containers at 0° F for at least two days.

Storage

Moisture must be kept from dried foods when they are in storage. First, cool completely.

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. Store dried foods in clean, dry home canning jars, plastic freezer containers with tight-fitting lids or in plastic freezer bags. Vacuum packaging is also a good option. Pack foods in amounts that can be used in a recipe or all at once.

Dried foods maintain the best quality and nutritional value if they are used in less than 12 months. Dried foods may still be edible after many months or years in storage, but they may not be as tasty or nutritious. Some people prefer to store dried food in the freezer because it takes up little space and there are no problems with mold or insects.

Rehydrate

There are three basic methods used to rehydrate dried foods: soak in liquid, boil in water, cook in liquid.

- Do not add salt or sugar during the first 5 minutes of rehydration as they hinder the water absorption process.
- Various fruit juices, yogurt, cordials, and fruit liqueurs may be used instead of water to reconstitute fruits. Place fruit pieces in a shallow pan and cover with the liquid.
 - The general rule is to use 2 cups of fruit to 1 cup of liquid. Add more liquid as needed.
 - Fruit will usually reconstitute in a couple of hours. Refrigerate if it takes longer.
- Vegetables may be reconstituted in consommé, bouillon, vegetable juice, water, or milk.
 - Refrigerate during rehydration.
 - Allow plenty of time—from 1 to 2 hours up to 8 hours, depending upon the vegetable.

REFERENCES

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IMPORTANT SAFETY NOTE

Research on food preservation is ongoing, and recommendations may change. Make sure your information is current. Always follow up-to-date, tested guidelines and recipes from reliable sources.

LOCAL CONTACT

For more information, contact the University of California Cooperative Extension office in your county. See your telephone directory for addresses and phone numbers, or visit http://mfp.ucanr.edu/Contact/Find_a_Program/.

ACKNOWLEDGMENT

Dehydrating Basics was originally created by the UCCE Master Food Preserver Program of Amador/Calaveras County.

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