

## Herbs: Preserving and Using

Fact Sheet No. 9.335

Food and Nutrition Series|Health

by M. Bunning, D. Woo, & P. Kendall\*

Herbs and spices play an important role

Herbs and spices play an important role in the cuisine of many cultures and consumer demand in the U.S. for spicy and flavorful foods continues to increase. The leaves and seeds of herbaceous plants used to season foods have become known as herbs while spices are berries, seeds, flower buds, roots, or bark of tropical plants. These savory ingredients can be used as healthier alternatives to replace or reduce the amount of salt and sugar in foods. Herbs are often grown in home gardens or purchased fresh and used to enhance food dishes and flavor beverages, vinegars, and oils. Fresh herbs can also be dried or frozen for later use. Their flavor comes from specialized aromatic oils in the cells of the plants. Chopping or grinding breaks the cell walls and releases the flavor; heat increases the rate at which some herbs release their flavors.

### Using Herbs

Fresh basil, cilantro, parsley, chives, rosemary, and many herb seedlings are often available at Colorado markets. Whether fresh herbs are grown in the garden or purchased, damaged leaves should be removed and the herbs should be thoroughly washed before using. Sturdy herbs, such as rosemary and thyme, can be rinsed well under cool running water but delicate or fine-leaved herbs, such as basil, dill, or tarragon, should be submerged in a bowl of cool water and swished back and forth. Shake gently or use a salad spinner to remove excess water and dry with paper towels.

Herbs are used to complement, not disguise, the flavor of food. Generally, when preparing soup, sauce or meat dishes, 1/4 teaspoon of dried herbs per four servings is adequate. The flavor of dried herbs is about three to four times stronger than fresh herbs. To substitute dried herbs for fresh in a recipe, use 1/4 to 1/3 as much. These amounts can be used as guidelines:

1/4 teaspoon dried powdered herbs =  
1 tsp. dried whole/crumbled =  
1 tablespoon fresh chopped herbs

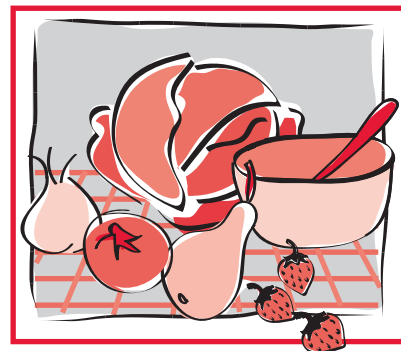
Chopping leaves finely will create more cut surface and allow additional flavor components to be released.

Herbal infusions, which involve steeping fresh herbs with desired flavors or characteristics in water or oil, are used to flavor drinks, such as teas and cocktails, and foods, such as salad dressing, butter, yogurt, vinegar, and oil. To become familiar with the flavor of an herb, mix it with butter or cream cheese, let stand for half an hour, then taste this mixture on a cracker.

The way herbs are prepared and used can vary widely and this influences their culinary use.

- For best flavor results, add *dried* herbs near the beginning of the cooking process to provide sufficient time for the herbs to rehydrate.
- *Fresh* herbs are usually added during the last part of cooking.

See Table 1  
on Page 4  
for Seasoning  
Suggestions



### Quick Facts

- Herbs are used to add flavor, aroma, and color to foods and beverages.
- Herbs and spices can sometimes replace or reduce salt and sugar in foods.
- A food dehydrator, oven, microwave oven, or air drying can be used for drying herbs.
- Dried herbs store well for up to one year.

\*M Bunning, Colorado State University Extension specialist, food safety, and associate professor; D. Woo, graduate student; P. Kendall, Ph.D., R.D., specialist, food safety, and professor emeritus. 10/2014



- Wrapping whole herbs in a cheesecloth bag before adding them to cooked dishes makes removal easy before serving.
- Herbs in uncooked foods, such as salad dressings, dips and fruit mixes, need time to blend flavors, so add them as far in advance of serving as possible.
- Basil, cilantro, dill, mint, oregano, parsley, rosemary, sage, savory, tarragon, and thyme add interest to salads; rosemary, thyme or basil may be added as a secondary flavor to sorbet or summer beverages. Some herbs are best used fresh—such as burnet, chervil, and parsley—because they have little flavor once dried or frozen.

#### ***Herb Flavored Vinegars and Oils.***

Herbs may be added to vinegar or oil and used in the seasoning of salads and sauces. It is important to store homemade herb infused oils in the refrigerator and use within four days because they have the potential to support the growth of *Clostridium botulinum* bacteria. Commercially

For more information on preparing and using flavored vinegars and oils, see CSU Extension fact sheet 9.340, [Flavored Vinegars and Oils](#)

made herb/oil mixtures are often stored at room temperature but this is because of special processing or acidification steps. Always check the label before storing.

#### ***Herbal Teas and Beverages.***

Traditionally, a true tea is made from the leaves of the tea plant, *Camellia sinensis*. Beverages made from the leaves, flowers, bark or roots of other plants have become widely known as herbal teas. Herbal teas do not go through the same curing process as black or green tea so it is important to brew herbal teas using water that has been heated to a temperature high enough to destroy harmful microorganisms. It is recommended to brew herbal teas at 180-200°F for

5-15 minutes. Brewed herbal tea can be chilled for use as iced tea. Herbs or herbal teas should not be used in making tea which is not brewed, such as sun tea; however, after cooling, brewed herbal tea can be added to sun tea that has been made with black tea labeled for cold brewing use.

#### **Drying and Storing Herbs**

Drying is the traditional method for preserving herbs. To minimize wilting and maximize flavor, gather herbs in the morning of a dry day, just after dew has evaporated. Rinse thoroughly and dry with paper towels. Because many herbs look alike when dry, label them before you dry them. Herbs are dry when they are crispy, crumble easily,

For more information on using herbs for health, see CSU Extension fact sheet 9.370, [Herbals for Health?](#)

and stems break. When collecting the seeds of herbs, try drying inside a paper bag with holes cut in the side of the bag. Sun drying is not recommended because of the potential for insect infestation and loss of flavor and color.

***Food Dehydrator.*** Drying herbs with a commercial food dehydrator typically allows for better control of temperature within the recommended temperature range. Arrange herbs on drying trays in single layers; good air circulation between trays is important. The National Center for Home Food Preservation recommends pre-heating the dehydrator with the thermostat set to 95 ° F to 115 ° F. In areas with higher humidity, temperatures of 125° F may be required. Check your dehydrator instruction booklet for specific details.

See Table 2 on Page 4 for Herb Flavor Characteristics

#### **Can homemade pesto be canned?**

Pesto, a spicy green paste well known for flavoring pasta dishes, is an uncooked seasoning mixture of herbs, often including fresh basil, garlic, olive oil, pine nuts and cheese. There are no home canning recommendations but it may be stored frozen. Prepared pesto may be frozen in small freezer containers or in ice cube trays (2 tablespoons per cube). Another option is to freeze in a square pan, covered with plastic wrap. When completely frozen, cut into cubes and transfer to a resealable plastic freezer bag. Frozen pesto will store for up to 6 months. Thaw pesto cubes for 15 minutes at room temperature or at 30-second intervals in a microwave oven until soft. Mash with a fork before using in recipes.

***Gas or Electric Oven.*** The oven light of an electric range or the pilot light of a gas range may furnish enough heat for overnight drying of herbs. Place single layer of herbs on oven-safe trays.

***Microwave Oven.*** Drying in a microwave oven can be a good option for small amounts of herbs and appears to be the best drying method for reducing microbial contamination of herb leaves. Check the microwave oven owner's manual for specific herb drying directions. Make sure herbs are thoroughly dry before placing in the microwave oven so that residual water does not cause the herbs to cook instead of dry. To dry, place a single layer of herbs between two paper towels on a microwave-safe plate. Avoid using paper towels made from recycled materials as they may contain metal particles which could cause sparking in the microwave oven. Place a ½ cup of water in 1 cup measure next to plate of herbs.

Some herbs, such as basil, should be dried on the microwave ovens 'low' setting. It is important to stop every

15 seconds to check the herbs and periodically turn them over. Although some microwave drying instructions suggest a longer time, in Colorado's dry climate it is necessary to check every 15 seconds to reduce the risk of fire and/or charring of the herbs.

**Air Drying.** Air drying is the least expensive method but offers the least amount of consistency in drying and the greatest opportunity for contamination with bacteria or dust. Tie two to three sprigs of fresh herbs at the base of stems with twine and hang away from direct sunlight at room temperature or lay on cheesecloth stretched on frames or netting screens. This method may be used for sturdier herbs. More tender leaf herbs—such as basil, tarragon, lemon balm, and mint—are higher in moisture and should be dried quickly, using one of the previous methods, to prevent mold growth.

**Storing Dried Herbs.** Dried herbs should be stored in a cool, dry place and most will keep well for up to a year. Their strength can be judged by their aroma. Dried herbs can be stored whole or crushed, but whole herbs retain their flavor longer. To ensure optimum quality, store in rigid, opaque containers with airtight seals. Choose ceramic jars or darkened glass containers to help protect the herbs

For more information on dehydration methods, see CSU Extension fact sheet 9.308, [Drying Vegetables](#) and 9.309, [Drying Fruits](#)

against light deterioration. Make sure herb leaves are completely dry to prevent mold growth during storage. Label all storage containers with the herb's name and date

### Freezing Herbs

Quick-frozen herbs will keep up to one year in the freezer if well packaged. To tray-freeze herbs, wash them, then drain and pat dry. Strip leaves off stems,

spread leaves in a single layer on a cookie sheet; place in freezer for at least 30 minutes. Place the frozen leaves in a freezer bag. Label with herb's name, date, and return to freezer for use as needed. Cut leaves like basil can also be frozen in ice cube trays half filled with water. Add 1 tablespoon chopped leaves to each section of the ice cube tray. Press herbs under water as much as possible. Freeze overnight. The next day, top off the ice cube trays so the herbs are completely submerged in water and re-freeze. When frozen, pop out the cubes and stored in a labeled and dated freezer bag. Frozen herbs are best used in cooked dishes as they will become limp when thawed.

Table 3 summarizes the flavor profile, harvesting, preservation methods and culinary uses for several herbs that can be grown or purchased fresh in Colorado. Many popular herb are members of the mint (*Lamiaceae*) and carrot (*Apiaceae*) families.

For more information on growing herbs in Colorado, see CSU Extension Planttalk script 1003, [Planning & Plants for an Herb Garden](#)

## General Guide for Microwave Drying

Microwave Oven Wattage	500-600 watts	650-700 watts	750-1200 watts
Approximate Drying Time	3-6 minutes	2-4 minutes	1-2 minutes

### References

- Anderson, J. and J. Roach. 2009. Herbs for Health? CSU Extension Fact Sheet no. 9.370. [www.ext.colostate.edu/pubs/foodnut/09370.html](http://www.ext.colostate.edu/pubs/foodnut/09370.html).
- Kendall, P. and J. Rausch. 2006. Flavored Vinegars and Oils. CSU Extension Fact Sheet no. 9.304. [www.ext.colostate.edu/pubs/foodnut/09340.html](http://www.ext.colostate.edu/pubs/foodnut/09340.html).
- Kendall, P., P. DiPersio and J. Sofos. 2008. Drying Vegetables. CSU Extension Fact Sheet no. 9.308. [www.ext.colostate.edu/pubs/foodnut/09308.html](http://www.ext.colostate.edu/pubs/foodnut/09308.html)
- National Center for Home Food Preservation. Drying Herbs. [www.uga.edu/nchfp/how/dry/herbs.html](http://www.uga.edu/nchfp/how/dry/herbs.html).
- National Heart Lung and Blood Institute, National Institutes of Health (NHLBI/NIH), Flavor That Food, [www.nhlbi.nih.gov/hbp/prevent/sodium/flavor.htm](http://www.nhlbi.nih.gov/hbp/prevent/sodium/flavor.htm).
- Nummer, B.A., Schaffner, D., Frazer, A. and E.L. Andress. 2011. Current Food Safety Issues of Home-prepared Vegetables and Herbs Stored in Oil. *Food Protection Trends*, 31 (6): 336-342.
- Snider, S. 2007. Using Herbs and Spices. University of Delaware Cooperative Extension. <http://ag.udel.edu/extension/fnutri/pdf/CookingGuide/fnf-03.pdf>.
- Woo, D. 2010. Microbial Quality of Mixed Salad Greens and Selected Fresh and Dried Herbs. M.S. Thesis. Dept. of Food Science & Human Nutrition, Colorado State University.
- Youger-Comaty, J. 2010. Growing, Selecting and Using Basil, Ohio State University Extension Fact Sheet. <http://ohioline.osu.edu/hyg-fact/1000/1644.html>





Figure 1. Herbs: parsley, rosemary, mint, and sage, Gardens on Spring Creek, Fort Collins,

**Table 1. Seasoning suggestions. These herbs, spices and other seasoning may serve as alternatives to salt (modified from NHLBI, 2011). Suggested seasonings are not intended to all be used together; experiment with mixing different herbs to suit your preferences.**

Food	Herbs and other seasonings to enhance flavor
Meat	
Beef	Bay leaf, marjoram, nutmeg, onion, pepper, sage, thyme
Lamb	Basil, curry powder, garlic, mint, rosemary
Pork	Garlic, onion, oregano, pepper, sage
Chicken	Marjoram, oregano, parsley, rosemary, saffron, sage, tarragon, thyme
Fish	Basil, chervil, chives, dill, marjoram, dry mustard, paprika, pepper
Vegetables	
Carrots	Cinnamon, cloves, marjoram, nutmeg, rosemary, sage
Corn	Cilantro, cumin, curry powder, paprika, parsley, onion
Green Beans	Curry powder, dill, lemon juice, marjoram, oregano, tarragon, thyme
Greens	Onion, red pepper
Peas	Ginger, marjoram, mint, onion, parsley, sage, ginger
Potatoes	Bay leaves, chives, dill, paprika, parsley, sage, garlic, onion
Summer Squash	Marjoram, rosemary, sage, cloves, curry powder, nutmeg
Winter Squash	Cinnamon, ginger, nutmeg, onion
Tomatoes	Basil, bay leaf, chives, dill, marjoram, oregano, parsley, pepper
Eggs	Basil, chives, chervil, dill, marjoram, parsley, paprika (hard cooked eggs) tarragon
Yogurt	Basil, chives, lemon thyme, marjoram, mint, sage
Butter	Chives, dill, garlic, mint, parsley

**Table 2. Flavor characteristics of common culinary herbs (Modified from Snider, 2007).**

Flavor	Herbs	Characteristics
Delicate	Burnet, chervil, chives, parsley	May be used in fairly large quantities; combines well with most other herbs
Medium	Basil, celery leaves, tarragon, marjoram, mint, oregano, savory, thyme	Use in moderate amounts (1-2 teaspoons dried herbs for 6 servings)
Strong	Bay leaf, rosemary, sage	Will impart a dominant flavor
Sweet	Mint	Gives a cool burst of flavor to meat, seafood, and sweet dishes
Savory	Oregano, tarragon, chives, dill	Often used to flavor meat, egg and cheese dishes

**Table 3. Herb Characteristics and Preservation Information.**

Characteristics/Culinary Uses	Preserving
<b>Anise (seeds), <i>Pimpinella anisum</i>; Carrot Family</b>	
Used to flavor cookies, candies, pickles, beverages, breads, and fig dishes.	Cut stems of seed heads after seeds have developed but while they are still green. Tie the stalks in small bunches and suspend inside a paper bag with holes punched in the sides. Suspend the bag in a dark area with food air circulation. When dry, shake the bag well and collect the seeds; store in light-proof airtight containers.
<b>Basil, sweet (leaves), <i>Ocimum species</i>; Mint Family</b>	
Tender green leaves have sweet flavor with wild pungency. Used in pesto and Italian and Thai dishes. Excellent with tomatoes, cheese, green salads, eggs, yogurt, soups, stews, lamb, and fish.	When the plant starts to flower, cut stems 6 to 8 inches above ground, about ¼ inch above a stem node. Wash leaves well before drying or freezing. Basil dries well in microwave oven at a low setting. When dry, leaves will crumble easily. Store whole or crushed in airtight containers. To freeze, pack washed leaves in ice cube trays half-filled water, pressing leaves under water as much as possible. Freeze overnight. Top off the trays so the leaves are completely submerged in water and re-freeze. When frozen, remove cubes and store in label and dated plastic bags. Defrost in a strainer and use as fresh.
<b>Bay (leaves), <i>Laurus nobilis</i>; Laurel Family</b>	
Leaves are aromatic with a sweetish odor and pungent flavor. A classic ingredient in French bouquet. Used in sauces, pickling, stews, and with meats and potatoes. Bay leaves are tough and should be removed before serving. Complements tomatoes, beans, potatoes and beef.	Pick individual leaves to use fresh or preserve. When dry, pack in airtight containers. Freeze as for basil.
<b>Burnet, <i>Sanguisorba minor</i>; Rose Family</b>	
Perennial herb with a light cucumber flavor; used in flavoring butter, cottage cheese, cream cheese, potato salads and salad dressings.	Select young leaves, older leaves may be bitter. May be used in place of mint leaves but does not keep flavor well when dried or frozen.
<b>Caraway (seeds), <i>Carum carvi</i>; Carrot Family</b>	
Mostly used whole in rye breads, sauerkraut, cheeses, potato salads, meats and stews.	Cut plants to ground level when flowers and stalks turn grayish-brown, about a month after flowering. For air drying, see anise; seeds shake out easily when fully ripe. Store in airtight containers.
<b>Chervil (leaves), <i>Anthriscus cerefolium</i>; Carrot Family</b>	
Has a light, licorice flavor with a wild taste of pepper. Gives pleasant flavor to salads and salad dressings, meats, fish, soups, omelets and stews.	Pick only young, tender leaves just before the buds break, fresh chervil has a short storage life. Dry or freeze as for basil.
<b>Chives (leaves), <i>Allium schoenoprasum</i>; Onion Family</b>	
Flavor is similar to green onion, but milder and finer leaves. Used for light, oniony flavor in salads, dips, sauces, vegetables, soups, fish, etc.	Use leaves fresh by snipping off the tops with scissors. Chives lose their color and flavor when dried. To freeze, wash and chop finely, then continue as for basil.
<b>Cilantro, <i>Coriandrum sativum</i>; Carrot Family</b>	
Used in Asian and Latin American dishes. Goes well with corn, cucumbers, avocado, rice, fish, and chili peppers.	High heat reduces flavor. Freezes well in ice cube trays. Dry or freeze as for basil.  Note: Cilantro leaves contain chemicals called aldehydes which impart a flavor characteristic which is disagreeable to some people.
<b>Coriander (seeds), <i>Coriandrum sativum</i>; Carrot Family</b>	
Small, orange-flavored seeds used in cold cuts, curry powder, cakes, cookies, poultry dressings, French dressing and Scandinavian cooking. Same plant is source of cilantro.	For air drying, see anise. When seeds are dry, shake out of heads and store in airtight containers. Flavor improves if stored a month before using.
<b>Dill (seeds, leaves), <i>Anethum graveolens</i>, Carrot Family</b>	
Seeds have slightly bitter taste. Used in soups, pickles, cheese dishes, breads, sauces, meats and fish. Dill weed has delicate bouquet. Used to flavor fish sauces, salads, dips, potatoes and meats.	Pick young leaves just as flowers open. Cut leaves and spread in a thin layer to dry until brittle. Crumble leaves and store in an airtight container. To collect seeds, cut flower umbel stalks or pull entire plant from ground. See instructions for anise seeds; store in airtight containers.
<b>Fennel (stems, leaves, seeds), <i>Foeniculum vulgare</i>; Carrot Family</b>	
Yellowish-brown seeds with sharp, sweet, licorice-like flavor; used to flavor sausages, breads, salads, salad dressings, pickles, cheese spreads, soups and sauces. Leaves garnish or flavor sauces and salads.	Young stems can be used like celery. Pick young leaves to dry, as for basil. Cut off flower stems before seeds fall. Store in airtight containers.

**Table 3 continued. Herb Characteristics and Preservation Information.**

<b>Horseradish (root, leaves), <i>Armoracia rusticana</i>; Mustard Family</b>	
Home prepared horseradish is about twice as strong as store-bought and lasts 3 to 4 weeks in the refrigerator. Excellent with roasted and smoked meats. Young leaves may be added to salads.	Rinse the horseradish roots well. Horseradish has potent volatile compounds so work in a well-ventilated room, or outdoors, and protect your eyes. Peeling under water will help contain the volatile oils. Chop in a food processor with a small amount of water. A basic horseradish recipe is: 1 root + 4 Tbsp water, add 2 Tbsp vinegar, ½ tsp salt. Transfer to a jar and refrigerate. Excess shredded root may be sealed in freezer bags and frozen up to 6 months.
<b>Marjoram, sweet (leaves), <i>Origanum majorana</i>; Mint Family</b>	
Gray-green leaves with slightly bitter undertone. May be used fresh or dried to season vegetables, lamb, sausage, eggs, poultry, cheese dishes, potato salad, stuffings and soups.	Cut stems just before buds begin to flower, leaving a few leaves to send up another crop. Dry as for basil. When dry, crumble and store in airtight containers. To freeze, follow tray freezing directions above or pack small bunches in plastic bags and place in freezer. Blanch before freezing if storing more than 2-3 months.
<b>Mint, spearmint, peppermint, apple mint, orange mint (leaves); Mint Family</b>	
Refreshing odor and flavor. Often used as garnish. Flavor combines well with lamb, peas, fish sauces, yogurt, candies, chocolate and vegetables. Crush leaves just before adding to a dish.	Pick young, fresh leaves to dry. Dry or freeze as for basil.
<b>Oregano (leaves), <i>Origanum species</i>; Mint Family</b>	
Flavor similar to sweet marjoram, but stronger and more sage-like. Liberally used in Spanish and Italian dishes, pizza; component of chili powder.	See sweet marjoram for preserving instructions.
<b>Parsley (leaves), <i>Petroselinum crispum</i>; Carrot Family</b>	
Finely curled, aromatic leaves are rich in vitamins A and C. Used as flavoring or garnish for soups, salads, eggs, meat and poultry dishes, creamed vegetables and hot breads.	Parsley can be dried or frozen as for basil, but the flavor is better if frozen.
<b>Rosemary (leaves), <i>Rosmarinus officinalis</i>; Mint Family</b>	
Leaves have a spicy odor and warm, piney taste. Used as a garnish and to flavor vegetable and meat dishes, cream soups, sauces and jellies. Makes a good tea.	Air or microwave drying works well for rosemary and other sturdy herbs; when dry, rub leaves from stem and store in airtight containers.
<b>Saffron, <i>Crocus sativus</i>; Iris Family</b>	
Yellow stigmas are pleasantly bitter, give a yellow hue to foods. Used sparingly in sauces, cookies, cakes, chicken, gravies and Spanish rice.	Remove stigma in late fall and dry on a cloth in a warm room. Store stigma in airtight containers.
<b>Sage (leaves), <i>Salvia officinalis</i>; Mint Family</b>	
Strong bitter flavor. Used sparingly in stuffings, soups, stews, sausage and herb breads.	Pick leaves in spring before flower buds form, or flavor becomes musty. Dry or freeze as for basil. To store more than three months, blanch before freezing.
<b>Summer savory (leaves), <i>Satureja hortensis</i>; Mint Family</b>	
Used in poultry, soups, gravies, stuffings, salads, bean dishes; sauces for fish or veal.	Cut leafy tops and use only young, tender leaves. Remove woody stems. Dry as for basil.
<b>Tarragon (leaves), <i>Artemisia dracunculoides</i>; Sunflower Family</b>	
Considered essential in many French dishes; goes well with eggs, poultry, fish, shellfish and many vegetables. Used as flavoring in pickles and vinegar.	Use fresh young leaves and stem tips. Dry or freeze as for basil.
<b>Thyme (leaves), <i>Thymus vulgaris</i>; Mint Family</b>	
The leaves have unexcelled aroma and flavor. Good with roast meats, fish chowders, sauces, soups, gumbos, stews, stuffings and salads. Makes a flavorful tea.	Cut sprigs before the plant flowers. After drying, rub leaves from stems and store in airtight containers. Freeze as for sage.