

## Cooking with Moist Heat

Moist-heat cooking includes steaming, poaching, simmering, boiling, stewing, wrapping, and braising. As the name implies, liquid or steam is used in the cooking process.

### For Your Information

Moist-heat cooking methods are used for a number of reasons. Long, slow moist-heat cooking can help tenderize meats, vegetables, and other foods. Some foods, such as rice and dry beans, are cooked in moist heat so that they can absorb water and soften. Another advantage of moist heat is that it helps flavors blend, as in a sauce or soup.

When adding food to hot liquids, use tongs or a long-handled spoon to hold the food just above the surface of the liquid. Then gently ease the food in. Dropping the food from high above the liquid can cause the liquid to splash, resulting in burns. Moist-heat cooking methods include:

- **Steaming:** Steaming helps preserve the nutrients in food. The most common method is to boil a small amount of water in a pan, then put the food into a steamer, a metal basket that holds the food above the water. After the pan is covered with a tight-fitting lid, the water continues to boil and the steam cooks the food in the basket. Steaming, like simmering, is an especially good way to cook vegetables.
- **Pressure Cooking:** Pressure cooking requires a special airtight pot in which the food cooks quickly by means of hot steam that is under pressure. This method can be used for less tender cuts of meat and poultry and for such vegetables as potatoes and carrots.
- **Boiling:** To boil means to heat liquid at a high temperature so that bubbles rise continuously to the surface and break. A recipe might tell you to bring sauce to a boil or to cook noodles in boiling water. Most foods, however, should not be cooked in boiling liquid. Boiling can rob food of nutrients and cause it to overcook or break apart.
- **Simmering:** To simmer means to heat liquid to a temperature just below the boiling point. Small bubbles should form, with some bubbles rising slowly to the surface. Vegetables are often cooked in simmering liquid. Fewer nutrients are lost than with boiling.
- **Poaching:** To poach means to cook whole foods in a small amount of simmering liquid so that they keep their original shape. Tender foods, such as fish, eggs, and fruit, are sometimes poached.
- **Stewing:** Stewing is similar to braising, but the food is cut into small pieces before it is stewed. Braising and stewing are usually used for less tender cuts of meat and for poultry, vegetables, and some fruits.
- **Braising:** To braise food, a pot roast, for example, you brown the food in a small amount of fat, and then cook it slowly in a small amount of simmering liquid until it is tender. Foods may be braised in the oven or on top of the range.
- **Wrap Cooking:** Foods may be wrapped with a variety of coverings, including edible and inedible wraps. Lettuce and cabbage leaves are examples of flavorful and edible wraps. Cornhusks, foil, and parchment paper provide an effortless way to steam food in an inedible wrap.

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## Ideas to Try

- Form small groups and write a one-day menu that includes as many moist-heat methods as possible. Remember, the cooking method should suit the food, enhancing its appeal and nutritional value.
- Decide the most appropriate way to cook the following foods: rice, carrots, pot roast, asparagus, pears, dry kidney beans, and eggs.
- Working in small groups or at home, experiment with preparing the same food using different moist-heat methods, for example, stewing and braising meat. Evaluate for taste, texture, and appearance.
- View a 30-minute cooking show on television and list the different moist-heat cooking methods used.
- Demonstrate the proper way to use tongs and a long-handled spoon to add foods, such as raw vegetables, to boiling water.

## Equipment for Moist-Heat Cooking

Try the following pieces of equipment for cooking with moist heat:

- Steamer inserts for traditional sauce pans
- Bamboo steamer insert for a wok
- A special steamer pan
- Rice cooker with an insert for optional vapor cooking
- Fish poacher or heavy Dutch oven
- Electric steamers
- Pan insert for egg poaching

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## Cooking with Dry Heat

Certain cooking methods rely on dry heat, which means cooking food uncovered without added liquid. The food is cooked by being applied to the heat source, such as with grilling, broiling, pan-broiling, or by exposure to indirect heat in an oven.

Methods of dry-heat cooking include roasting, baking, and broiling. Dry-heat cooking methods for meat and poultry offer health benefits, because they allow fat to drain away.

### Roasting and Baking

Both baking and roasting mean cooking food uncovered in the oven. Many foods can be baked, including breads, fruits, vegetables, cakes, cookies, pies, casseroles, and fish. The term roasting is used primarily to refer to large pieces of meat or poultry. Foods that are roasted or baked in the oven have a crisp brown crust and are tender and flavorful inside.

Preheating the oven is extremely important for making baked goods such as cakes, pies, cookies, and breads. To preheat the oven, turn the oven on about 10 minutes before using it so that it will be at the desired temperature when the food is placed inside. Often the oven will “beep” to signal when it reaches the preheated temperature.

When baking, the placement and spacing of the pans are very important to allow the hot air in the oven to circulate freely. When pans touch one another or the oven wall, hot spots develop. Hot spots are areas of concentrated heat in the oven, hotter than the preset temperature. When baking several pans of food at one time, try to place the pans diagonally opposite one another to facilitate better airflow.

Whole poultry and large, tender cuts of meat can be roasted on a rack in a shallow open pan. The rack allows fat to drip into the pan during cooking. Set the oven temperature to at least 325°F. Insert a meat thermometer deep into the center of the roast or the thigh of the bird, not touching the bone. Cook meat to at least 160°F and whole poultry to 180°F.

Eggs can also be cooked in dry heat. Remove them from the shell and bake them in individual dishes. Baked eggs need to be timed according to a recipe. They will toughen if overcooked.

Foods cooked by dry heat go through a browning process, called the Maillard reaction. As food browns, complex chemical changes alter the flavor, texture, and color of the food. Foods need to be cooked to a temperature greater than 300°F for this browning reaction to take place.

### Broiling

To broil means to cook food directly under or over a glowing heat source. For example, the heat source might be the broiler unit of an oven. The food is placed on a broiler pan, which has slots that allow fat to drain away during cooking. Avoid covering the broiler grid with foil, because this may prevent the dripping from falling through the holes and a grease fire can result. Grilling food on an outdoor grill is another method of broiling, except that the heat source is below the food.

Broiling is often used for tender meats, such as steaks, hamburgers, and poultry, as well as for some fruits and vegetables. Partially cooked foods or already-cooked foods may be broiled for a short time to brown them. Broiling also works well for melting cheese toppings.

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In most ranges, set the oven control to “broil.” You cannot control the broiling temperature. Therefore, it is necessary to vary the cooking time and the distance of the pan from the heat source, depending on what you are broiling.

When broiling, it is best to first pat the meat and poultry dry, because moisture can prevent the food from browning and crisping. Since salt draws moisture out of the food, it is best not to salt foods before broiling. Lightly brushing fish, fruits, and vegetables with oil or melted butter or margarine will help keep the foods from charring. To prevent foods from sticking, start with a cold broiler pan; spraying the cold pan with vegetable oil makes cleanup easier. When removing the cooked food from the pan, use tongs instead of a fork, because the fork will pierce the food, allowing the juices to drain away.

The broiler is very hot, so never put your hands in the broiler compartment to turn or remove food. Instead, use potholders or oven mitts to remove the pan from the broiler. Place the broiler pan on a heatproof surface or wire rack before checking the food.

### Pan-Broiling

This is a range-top method of dry-heat cooking in which the food is placed in a pan on the stove. Tender cuts of steak, hamburgers, and some cuts of pork may be pan-broiled. Foods cook quickly with this method, although a minimal amount of fat is retained.

To pan-broil, place the food in a heavy skillet over medium heat, without adding any additional fat. Remove fat from the pan as the food cooks by pouring it off or using a baster.

### Cooking Small Pieces of Meat, Fish, and Poultry

Smaller pieces, such as chops, hamburgers, poultry pieces, and fish, can be baked in the oven or broiled on a broiler pan. Follow these tips:

- Check steaks, chops, hamburgers, and poultry pieces for doneness by cutting into the center. Juices should run clear, and the meat should not show any pink color. Always use a meat thermometer to confirm that meat is cooked to the proper temperatures.
- Fish cooks quickly. It's done when you can easily separate the flesh with a fork. If overcooked, fish will dry out and toughen.

### Ideas to Try

- Prepare two hamburgers using two dry-heat methods; for example, broiling and grilling. Evaluate for taste, texture, and appearance.
- View a 30-minute cooking show on television and list the different dry-heat methods used.
- Find a recipe in a cookbook or on the Internet that uses dry-heat cooking methods. Compile a list of cookware and bakeware that would be used with this recipe.
- Working in small groups, select an assortment of favorite foods that can be cooked with dry heat. Describe the foods' taste, texture, and appearance when it is done just right. Then contrast these characteristics with the same foods when they are undercooked or overcooked.

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## Microwave Skills

The microwave oven performs many cooking tasks faster and more easily than the conventional oven. It is also easier to clean and more economical to operate.

Most microwave ovens are best suited for cooking relatively small amounts of food, because the larger the amount of food, the more time it takes to cook. Large amounts of food are usually cooked in a conventional oven.

Microwave ovens are ideal for reheating cooked foods and thawing frozen foods. Heating frozen entrees, baking potatoes, melting chocolate, and making popcorn are just some of the conveniences of a microwave oven. To use a microwave oven to its best advantage, it is essential to understand how it works.

### For Your Information

Even though microwave ovens vary in size, features, and available power, they all work in similar ways:

A microwave is a type of energy wave (similar to a radio wave) that operates at a very high frequency. When you turn on a microwave oven, you activate a magnetron tube that converts electrical energy into microwaves.

- A *stirrer blade*, or fan, in the top of the oven distributes the waves throughout the oven. Some waves hit the food directly, and others bounce off the metal wall, floor, and ceiling of the oven and then enter the food. (Microwaves can pass through most material, but not metal.)
- When microwaves penetrate the food, they cause the molecules in the food to vibrate or rub against one another. This produces heat, which cooks the food.
- Microwave ovens cook foods without changing their appearance very much. This is usually an advantage. For example, broccoli and carrots retain their bright colors.

Since microwave cooking does not involve direct heat from a heating element, foods do not brown and crisp as they would by using other cooking methods. To remedy this, some microwave ovens offer a special browning element or halogen heating element. Combination microwave/convection ovens are also available.

The care and maintenance of a microwave oven is minimal. If spills occur in the interior, clean with mild detergent, warm water, and a soft cloth or sponge. Wipe frequently around the door seals of the oven door to remove any food particles. To reduce strong smells in the microwave oven, sprinkle baking soda on a damp sponge and wipe down the interior.

Many factors influence how food cooks and cooking times when using a microwave oven. Understanding these variables will help you use your microwave oven more effectively:

- **Food moisture, fat, and sugar content:** Foods high in water, fat, or sugar content attract microwave energy and cook faster, creating “hot spots.” That is why you may burn your tongue on the filling inside a breakfast roll cooked in a microwave even though the surrounding dough is not hot.
- **Food density:** The denser the food, the longer it takes to cook. Rolls and cakes cook faster than similarly sized meats or potatoes.
- **Food volume:** The more food you are cooking, the longer it takes to cook, because microwaves of the same intensity are cooking more food. If you double a microwave recipe, plan on doubling the cooking time. For this reason, cooking a large amount of food often takes just as long in a microwave oven as in a conventional oven.
- **Food shape:** Shape also determines how foods cook. Unevenly shaped food will cook unevenly; corners or thinner pieces may overcook before other areas are done. When you

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are cooking foods that are uneven in thickness, place the thin pieces toward the center of the dish and the thick pieces toward the outside. Placing uneven food in a spoke arrangement will allow them to cook more evenly.

Safety precautions must be used when cooking in a microwave oven:

- Never turn on an empty microwave oven; this can damage the oven.
- Always remove the cover of a sealed container by lifting the side farthest away from you so that the escaping steam doesn't burn you. The tighter and less porous the cover, the greater the buildup of steam.
- Avoid using dishes that are not microwave safe.
- Do not use an extension cord with a microwave oven. The oven should be grounded with a three-prong plug and should not be on the same electrical circuit as other appliances.
- Keep your microwave oven clean and in good working order. Splattered food left on the inside walls will increase cooking time, because it will absorb waves. Call an authorized repair person if the door does not seal tightly or if the oven makes any unusual sounds when turned on.

The following are helpful cooking tips for the microwave oven.

- Avoid using metal and Styrofoam® containers, twist bag ties, and ceramic containers with metallic paint or glazes. Metal containers may cause *arcing*, sparks that can damage the oven. If your cooking container gets hot before the food does, assume that the container is not microwave safe.
- Foods cooked in a microwave continue to cook after the oven is turned off. Allow for standing time.
- Foods that have a natural skin or are sealed in plastic should be pierced before they are placed in a microwave oven to prevent them from *bursting*. Puncture foods such as potatoes, egg yolks, hot dogs, vegetables in plastic pouches, and apples.

### Ideas to try

- Bring a favorite conventional recipe from home and convert it for the microwave oven.
- Research and then compare the types and features of different microwave ovens.
- Discuss or demonstrate how a variety of foods should be arranged for proper cooking in the microwave oven.

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