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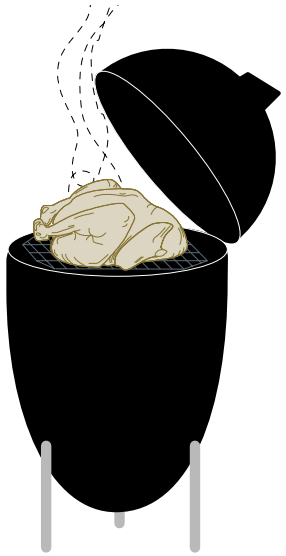
Curing and Smoking Poultry



Extension Poultry Scientists
The Texas A&M University System

Cured and smoked poultry is a taste-tempting treat. In addition to having a distinctive aroma and flavor, it also has eye appeal unmatched by any other meat product. Once cured and smoked, the meat is easily and quickly prepared for serving and can be stored in the home refrigerator for as long as 2 weeks. Meats that are only smoked and not cured can be stored no longer than other cooked meats.

The curing and smoking process produces meat that is distinctly different from meat that has only been smoked. Curing results from the combined actions of salt, sugar and nitrite (sodium nitrite or saltpeter) on the meat. The salt and sugar flavor the meat and help preserve it. Salting, a common method of meat preservation before refrigeration was available, reduces water activity of the muscle tissue and inhibits certain bacteria.

Nitrite is the ingredient that gives cured meat its characteristic flavor and reddish-pink color. Nitrite also extends the shelf life of cured meats by preventing the growth of both spoilage bacteria and anaerobic bacteria (bacteria that grow only in the absence of oxygen) such as *Clostridium botulinum*, which causes botulism poisoning. This property allows cured and smoked meats to be marketed in the vacuum packages commonly used in supermarket sandwich and deli meat sections.

Several procedures can be used for curing and smoking poultry. The following method was developed by poultry specialists at Texas A&M University.

Step 1. Selecting poultry

Poultry selected for smoking should be of good quality. Grade A poultry from the local market is acceptable. If home-grown poultry is used, it should be well fleshed, well finished, and properly processed. Freshly slaughtered birds must be chilled before they are cured. All poultry should be chilled to below 40 degrees F as soon as possible (within 30 minutes) after slaughter. Beginning with a high quality bird will result in a high quality product. (See B-1383, "Processing Poultry at Home," available from the Texas Agricultural Extension Service.)

Step 2. Preparing the brine

The curing brine can be prepared in either of two ways:

1) The water and each curing brine ingredient can be measured and added individually. This method allows you to modify the amount of salt and sugar to suit your preferences. However, you must use an accurate scale for weighing ingredients. Also, it may be inconvenient to purchase each ingredient separately and perhaps in larger quantities than you need. Nitrite (saltpeter) is usually available at drug stores. Formulations for preparing 10-, 5- and 1-gallon quantities are shown in the table below.

Part of the water should be added in the form of ice to chill the brine to 34 to 36 degrees F. For example, with a 10-gallon mixture use 9 gallons of water and 1 gallon of ice.

Brine Mixture for Curing

These mixtures will give a reading of 45 to 50 degrees when measured with a sodium chloride salometer. Mixtures must be stirred thoroughly so that all ingredients are completely dissolved.

Ingredients	10 gals.	5 gals.	1 gal.
Gallons of water	10	5	1
Ounces of saltpeter	16	8	1.6
Pounds of salt (non-iodized)	9	4.5	0.9
Ounces of sugar (brown or white)	24	12	2.4

2) Another method of preparing the brine is to purchase commercially prepared mixtures that contain the salt, sugar and nitrite in appropriate proportions. This makes brine preparation much faster. Prepared cures can be found in some grocery stores, but are more often found in co-ops, locker plants, specialty meat markets, and other establishments that cure and smoke their own meats. These prepared cures (or curing salts) may contain either white or brown sugar. The brown sugar cure gives meat a distinctive flavor that many people prefer. To prepare curing brine from commercial cures, dissolve 1 pound of cure in each gallon of water required to make the quantity of brine you need.

Brine prepared by either method can be used for both the injection and soaking phases of the curing process.

Step 3. Injecting the curing brine

Except for small broilers and quail, poultry is cured by pumping or injecting the birds with brine mixture in an amount equivalent to 10 percent of the bird's weight (for example, a 10-pound turkey should receive 1 pound of brine). This uniformly distributes the brine solution through all muscles. Those who routinely cure a large number of birds (as in a commercial operation) use a pressure pump with small or medium-sized needles. For a small number of birds, a 50-cc syringe (or larger) works well. Syringes can be obtained from a producer's co-op, veterinary supply store or veterinarian. The needle should be 14 gauge or larger to make injection easier.

For each pound of poultry, inject 45 cc of brine. Inject at three sites in each breast half, two in each thigh, and one in each drumstick for broilers, capons, pheasants and other birds weighing 3 to 9 pounds. Turkeys and other birds weighing 10 pounds or more should also be injected once in each wing and once in each half of the back. Quail and small broilers less than 3 pounds can be cured without injection by soaking them in the brine solution. Injected brine should be distributed throughout the bird in the same percentage as the meat is distributed on the bird. The following guide will help in the injection process:

Birds 3 to 9 pounds:

60 percent of the brine injected into the breast

30 percent of the brine injected into the thighs

10 percent of the brine injected into the drumsticks

Birds 10 pounds or more:

50 percent of the brine injected into the breast

25 percent of the brine injected into the thighs

10 percent of the brine injected into the drumsticks

10 percent of the bring injected into the wings

5 percent of the brine injected into the back

After all the brine has been injected, the muscles should be worked lightly with the fingers to distribute the brine uniformly.

Step 4. Soaking the poultry

After the poultry has been injected, place it in a stainless steel or plastic container manufactured for use with food. Cover it with the remaining brine. The 1-gallon brine mixture is sufficient for one turkey or as many as three chickens. This amount can be put in containers that fit in the household refrigerator, so that it is unnecessary to add ice to maintain the required 34- to 36- degree F temperature. To cure two or more turkeys or more than three chickens you will need the 5- or 10-gallon brine mixture. This amount of poultry usually must be placed in an insulated ice chest with ice added in sufficient quantity to maintain the proper temperature. It is important to remember that adding ice decreases

the amount of water necessary in the brine solution. The proper concentrations of salt, sugar and nitrite in the brine must be maintained.

Be sure the poultry is completely covered with the brine solution throughout the soaking phase. If the outside temperature is high you should check the temperature of the brine once or twice during the soaking time. If the temperature of the brine goes above 40 degrees F, add a small amount of ice to the chest. Adding small amounts of ice will not alter the concentration of the ingredients enough to affect the curing process.

Leave the poultry in the chilled brine for the length of time specified below.

Recommended Curing Times	
Broilers, pheasants, capons	24 to 36 hours
Turkeys (more than 10 pounds)	48 to 72 hours
Small broilers (no injection)	48 hours
Quail (no injection)	4 to 6 hours

Step 5. Draining and netting the carcass

After the required curing time, remove the birds from the solution and thoroughly drain them for at least 15 minutes. It is important that none of the brine is left in the pockets of the body cavities. If a conventional smokehouse is to be used, place the birds in stockinettes and hang them breast down. Stockinette usually is available where commercial curing salt is sold. If you will be using a backyard barbecue cooker, the stockinette is not necessary, although you should tie the legs together with string and tuck the wings to the breast so the final product will be neat and attractive. Poultry will retain the shape in which it is cooked.

Step 6. Smoking the poultry

When the birds are almost dry, place them in the smokehouse or backyard barbecue cooker at a temperature of approximately 170 degrees F. When the birds are completely dry, smoke can be applied. (Drying before smoking prevents a streaked appearance.) If you are smoking only a few birds, a closed backyard barbecue pit will work well. It is important to cook the carcasses very slowly and generate plenty of smoke. Use a small fire and place the meat as far from the fire as possible. Green hickory is the best wood for the smoke source, although other types such as pecan, fruit woods, mesquite, oak, etc., work well also.

Step 7. Completing the cooking

When the meat is the desired color, increase the temperature in the smokehouse or cooker to 200 to 225 degrees F in order to finish cooking. Cook birds until the inside temperature at the thickest breast muscle area is 162 to 165 degrees F (determined with a meat thermometer). If a meat thermometer is not available, the doneness can be estimated by twisting the leg quarter slightly. If it moves freely, cooking should be complete. Expect birds to shrink about 20 percent during cooking.

Step 8. Storing cured and smoked poultry

Cured and smoked poultry does not need any further cooking, and will keep in the refrigerator as long as other cured meats. If the birds are to be stored longer than 2 weeks, they should be packaged and kept in a freezer at 0 degrees F. Safely stored in a freezer, cured and smoked poultry will retain its quality for as long as a year.

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