

TECHNIQUE OF THE QUARTER : THE SMOKING PROCESS

The smoking process allows cured meats, poultry, game and seafood to be subjected to smoke in a controlled environment. The smoke is produced by smoldering hardwood chips, vines, herbs, fruit skins, or spices. This smoke influences the flavor, aroma, texture, appearance and shelf life of foods. The process can be performed at temperatures that range generally from 65°F to 250°F. The food merely retains the flavor of the smoke at lower ranges (cold-smoke), while the food actually cooks at the higher end of the scale (hot-smoke).

SELECTING FOODS TO BE SMOKED

Virtually any meat, poultry, game or seafood can be smoked, as can hard cheeses, nuts, vegetables, and sausages.

1. Prepare items

- Trim excess fat
- Fish should be gutted and cleaned of gills and all blood; large fish are often filleted
- Poultry should be trussed
- Larger cuts of meat should be boned and cut into smaller pieces
- The rind should be removed from cheese

2. Cure items (optional)

- Dehydrates - low moisture prevents bacteria growth and allows smoke to penetrate the item
- Adds flavor
- Prevents botulism
- Enhances color
- Smaller, thinner pieces cured; larger pieces brined

3. Rinsing

- Stops the curing process
- Removes excess saltiness and excess surface fat

4. Dry Foods Well

- Removes excess surface moisture to form a skin (pellicle)
- A wet surface will not readily absorb smoke
- Removes excess surface fat
- Forms the Pellicle

5. Smoking Process

- Smoke is a seasoning - don't overdo it

Smoke is the complex production of very complicated compounds that occur during the thermal decomposition of wood (chips or sawdust). This process primarily occurs between a temperature range of 390°F and 750°F. Although at the point of generation smoke is a gas, it rapidly separates into a vapor and a particle state. It is the vapor phase that contains the components largely responsible for the flavor and aroma that smoke imparts to foods. More than 300 different compounds have been isolated from wood smoke, but not all of these compounds occur in smoked meat products. The components most commonly found are phenols, organic acids, alcohols, carbonyls, hydrocarbons, and some gaseous components such as carbon dioxide, carbon monoxide, oxygen, nitrogen, and nitrous oxide.

SMOKE IS APPLIED TO MEAT FOR THE FOLLOWING REASONS

- For preservation: Phenolic compounds and formaldehyde have antimicrobial action; this affects only the surface of the meat as smoke does not penetrate deeply into items.
- Acids: smoke emits a number of acids which cling to the meat and form an outside layer or skin. The acids help the coagulation of the surface meat, and also help preserve the meat by preventing the growth of surface mold and bacteria.
- Add aroma & flavor: Phenols, carbonyl compounds and organic acids contribute the smoky taste. Excessive smoke flavor can become bitter.
- Develop appealing color: Carbonyl compounds combine with free amino groups combined with meat protein to form furfural compounds that are dirty brown in color and translucent; when added with the reddish color of the cooked cured meat, you see a reddish brown color that is characteristic of smoked products.
- Creation of new food products: The addition of a smoky taste results in a product with a longer shelf life and pleasing color.
- Protection from oxidation: Smoke will protect the food from lipid oxidation and eliminate any stale fat tastes.
- Formation of a protective skin on meats and emulsion-type sausages: Acids in smoke help coagulate the protein on the surface of the meat.

COLD SMOKE

Preparation before smoking

- Trim item, truss, net or tie as necessary
- Cure item by desired method
- When cure is done, rinse item
- Form pellicle

Smokehouse preparation

- Place items on racks or hang from sticks

Smoke process

- Smoke foods until desired color/ avor is achieved
- Product can be air-dried further if drier product is desired
- Refrigerate

HOT SMOKING

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HOW A SMOKEHOUSE WORKS

Below is a simplified diagram of how a smokehouse works. Many of the larger smokehouses are computer programmed as to time and temperature.

SMOKE ROASTING FOIL PAN METHOD

Method

1. Use an aluminum foil disposable hotel pan for top and bottom
2. Place 1/4 inch of hickory chips on the bottom of the pan.
3. Make four 1-inch balls out of aluminum foil and place one in each corner of the pan.
4. Place a wire rack on top of the foil, arrange your product to be smoke

PROCESS SCHEDULE FOR HOT AND COLD SMOKED FISH

Fish (salmon)

Raw material must be fresh with no signs of detectable spoilage and must be maintained at 33°F or less.

Thawing

Thawing of frozen food must be done at a temperature no greater than 45°F.

Evisceration

Fish must be eviscerated in a separate area and washed thoroughly.

Brining

TYPES OF SMOKING

Cold Smoke

Do not overcook eggs or cook them in water that is boiling too rapidly.

Peel eggs as soon as possible once they are cooked.

Hot Smoke

160 - 225°F - imparts flavor and cooks the product

THREE SMOKING METHODS

Conventional

More smoke flavor, air does not circulate as much

Product must be dry

Convection

Less smoke flavor because the air is being circulated

Product does not have to be dry because of the air circulation

Pan smoking

Pan smoking gives a lot of flavor in short period of time

Can be done with no special equipment

IMPORTANT TEMPERATURES TO REMEMBER

103°F: Proteins begin to set or denature

137.5°F: Trichinosis bacteria is killed

SUGGESTIONS FOR USE OF WOOD CHIPS IN SMOKING

Alder

This has quite a mild taste, ideal to use with vegetables and sh.

Apple

This has a unique fruity avor, ideal to use with fresh ham, frog legs, pork chops, sweet sausages, Cornish hens and salmon.

Cherry

This is similar to the characteristics of apple, but with a slight tart aftertaste, ideal to use with lamb, pheasant, duck, venison and steak.

Maple

This has a universal subtle hint of sweet avor, ideal to use with turkey, ham Canadian bacon, tenderloin of beef and pork, poultry, most kinds of game and vegetables.

Hickory

This has a strong heavy bacon avor, ideal for use with ribs, barbecue items, steaks, chops, and spicy food, broiled chicken.

Oak

This is a mellow version of mesquite, ideal to use with steaks, duck, and hamburgers.

SMOKED PORK CHOPS

Yield: 6 Portions

Ingredients	Amounts
Pork chops, one-inch thick	6 ea.
Wood chips	2 cups
Cilantro, fresh chopped	½ cup
Salt and Pepper	
Olive Oil	1 oz

Method

1. Fabricate 1-inch thick pork chops and remove excess fat.
2. Moisten the wood chips in cold water.
3. Marinate pork chops with spices, herbs and pepper for 1 hour.
4. Pan-smoke the chops, for 3 to 5 minutes until they reach a light yellow color. Grill the chops, nishing on a rack in the oven at 375°F if needed.
5. Repeat twice, using di erent woods for smoking.

HOT SMOKED SWORDFISH

Yield: 6 Portions

Ingredients	Amounts
Sword or tuna sh, thick steaks	1½ lb.
<i>Marinade</i>	
Lemon juice	1 ea.
Salt	1½ tsp.
Worcestershire sauce	1 oz.

Method

1. Combine all ingredients for the marinade.
2. Rub marinade over half of the sh, refrigerate for 1 - 2 hours. Leave the other half of the sh plain.
3. Blot-dry with paper towels and hot-smoke until desired doneness.
4. Repeat twice, using different woods for smoking.

TEA AND SPICE SMOKED CHICKEN

Yield: 1 Chicken

Method

PAN SMOKED CHICKEN BREAST WITH ARTICHOKE AND MUSTARD SAUCE

Yield: 10 servings

Ingredients	Amounts
Chicken breast; boneless, skinless	2 ¼ lb.
Olive oil	2 tsp.
Shallots, diced	1 oz.
Chicken Stock	10 oz.
Fond de Veau Lié	10 oz.
Mustard, whole-grain	2 oz.
Mustard, Dijon	1 oz.
Balsamic vinegar	3 Tbsp.
Artichoke hearts, cooked, quartered	10 ea.
Kalamata olives, pitted, halved	3 oz.
Tarragon, chopped	2 Tbsp.

Method

1. Trim and cut the chicken into ten 3 ½ oz portions. Lightly pound the chicken to an even thickness.
2. Place the chicken on a rack in a roasting pan containing a thin layer of hardwood chips. Cover with a tight-fitting lid and place over low direct heat. Pan smoke for 6 to 8 minutes. Remove the breasts from the pan and cool. Refrigerate until needed.
3. To make the sauce, heat the oil in a small saucepan. Add the shallots and sauté until translucent. Add the stock and reduce by half. Stir in the fond de veau lié, mustards, and vinegar. Simmer until reduced to a sauce consistency. Add the remaining ingredients and heat thoroughly. Keep warm.
4. For each serving: Place 1 portion of smoked chicken on a rack in a roasting pan in a 375° F oven and bake until internal temperature of 165°F is reached, about 10 minutes. Slice the chicken on a bias and serve on a pool of 3 fluid oz of the sauce.

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SMOKE ROASTED STRIP LOIN OF BEEF

Yield: 10 Portions

Ingredients	Amounts
Sirloin	4 lbs.
<i>Marinade</i>	
Garlic powder	1 Tbsp.
Onion powder	1 Tbsp.
Salt, kosher	3 Tbsp.
Sugar	4 Tbsp.
Cumin, ground	2 Tbsp.
Black pepper, fresh cracked	2 Tbsp.
Cayenne	1 Tbsp.
Paprika	4 Tbsp.
Chili powder	2 Tbsp.

Method

1. Combine all and mix well to evenly distribute the spices.
2. Trim the sirloin of excess fat and connective tissue.
3. Rub the dry spice mixture all around the sirloin strip and allow to sit for 15 minutes before smoke roasting.
4. Smoke roast the sirloin strip over low heat as instructed by the manufacturer of the gas or charcoal grill.
5. Cook to an internal temperature of 120 – 125 degrees for medium rare.
6. Remove from the grill and allow to rest for 20 minutes to allow the juices to settle.
7. Slice and serve.

SMOKE ROASTED PORK LOIN WITH GRILLED APPLES

Yield: 6 Portions

Method for the Pork

1. Set-up a gas or charcoal grill to medium heat following the manufactures instructions. For a gas grill, follow manufactures instructions regarding the use of wood chips. For a charcoal grill, bank the charcoal to two sides. Clean and preheat the grill racks.
- 2.