

CURING MEAT

Probably the least-understood subject in the world today is the curing of processed meats and sausage. I think it would be safe to say that not one person in 50,000 really knows what is happening when a piece of meat is being cured.

In a national magazine, I actually read some do-it-yourselfer calling a dried-out piece of meat a cured product. Nothing could be further from the truth.

References to the use of nitrate as a cure can be traced back several hundred years. When using nitrite to cure meat, it combines with the pigment of the meat to form a pink color and flavor the meat as well.

Flavor in what way? To give you an example about flavoring the meat, let us consider the leg of a hog, better known as ham to most people. The leg of pork when cooked or roasted is, pure and simple, roast pork. However, when this very same pork is injected or pickled in brine, it now becomes "ham" after being boiled or cooked in a smokehouse.

What a difference in flavor we have between roast pork and boiled or smoked ham! It is the nitrite that has the ability to impart these special flavors. Without its use, there would be no hams, bacons, picnics, or Canadian bacon, and all we would have is pieces of cooked or roast pork. Additionally, nitrites also help to prevent rancidity in the storage of meats.

Most important of all, nitrite protects the meat products from the deadly toxin known as botulism. The botulism poisoning we are talking about is the most deadly form of food poisoning known to man.

Very simply diagnosed, your vision is blurred in less than a day. You have trouble holding up your head, as your neck muscles are not working very well. A little while later, you have difficulty in speaking. All the neck and throat muscles do not function, and you see everything double. This is then followed by the failure of chest and diaphragm muscles, cardiac arrest, and then pulmonary failure.

It's all over in about three days if not detected. This is botulism, or food poisoning: insidious, painful and deadly. Worst of all, botulism can produce its deadly toxin even without a foul odor or other sign

of contamination. Botulism is the most deadly form of life known to man.

Cures are critical in the curing of meat to prevent food poisoning. The curing of meat or vegetable. The curing of meat or vegetable. The curing of meat or vegetable. Lack of oxygen, low acidity and low moisture are where the problems begin.

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For home use, however, curing of meat in your oven with smoke is critical. The curing of meat in your oven with smoke is critical. The curing of meat in your oven with smoke is critical. The curing of meat in your oven with smoke is critical. The curing of meat in your oven with smoke is critical. The curing of meat in your oven with smoke is critical.

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Cures are critical in the manufacture of smoked and cooked meat to prevent food poisoning. Botulism spores are found in every type of meat or vegetable. They are harmless and cause no problems. Lack of oxygen, low acidity, proper nutrients, moisture, and temperatures in the range of 40 degrees F. to 140 degrees F., however, are where the problems begin.

It becomes obvious that sausage and meat are consistently smoked in these temperature ranges. The sausages are moist, and the smoke or heat eliminates the oxygen creating perfect conditions for food poisoning if you do not use cures.

For home use, however, you should not confuse the cooking of meat in your oven with smoking meat in a smoker. Most ovens will build up a 200 degree F. temperature on the "low" setting, and most people start baking well over that temperature. This high starting temperature prevents botulism spores from surviving. This information is only meant to impress you with the fact that when you smoke meat at a low temperature, the real possibility of food poisoning is present.

Often I've had people tell me that their grandparents didn't use cures when smoking meats, since some people feel cures are not necessary. Would a person so young really know what his grandparents were doing? Probably not.

Or better still, back in the good ol' days, how many people died of natural causes? An excuse a physician would give you when he couldn't diagnose why the person died, no matter how old or young the patient was, was that the cause was "natural." Fortunately for us the physician today can easily diagnose food poisoning problems, and this book was written to help avoid them.

In much simpler terms, how many times have you read about food poisoning around Thanksgiving and other holidays? The well-intentioned cook decides to make the dressing for the turkey the night before. This gives her more time to do many other important things the next day. She stuffs the turkey the night before, and places it in the refrigerator to be cooked the next day.

Unfortunately, she doesn't know she is creating ideal conditions for food poisoning. Obviously, the stuffing that she put into the

turkey is somewhere between 40 and 140 degrees F. Because the various parts of dressing have some sort of liquid in them, the moisture is also there. Lastly, she sews up the turkey to create a lack of oxygen in its cavity.

It is that simple to create food poisoning: proper temperatures of 40-140 degrees F., moisture, and lack of oxygen. To be sure, whenever you smoke any kind of product in the low range of 40-140 degrees F., it should be cured. If you can't cure it, don't smoke it. It doesn't matter if it's meat, fish, poultry, cheese, or vegetable; don't take the chance. It's a pretty good bet that anything you will smoke has some moisture in it. You are removing oxygen when smoking the product and the temperatures are ideal.

Do not forget this one cardinal rule: **IF IT CAN'T BE CURED, DON'T SMOKE IT.**

Most nitrite used in curing meat disappears from the product after it has accomplished its curing effects. Within two weeks after curing, the amount of nitrite remaining in a product may be as little as one-fourth the amount initially added to it. Cured meat products typically contain 10-40 parts per million (PPM) at the time of purchase.

Your mouth and your intestines manufacture nitrite, and there is some evidence that our intestines' nitrite prevents us from poisoning ourselves with the very food we eat every day, since there is moisture in the stomach, lack of oxygen, and correct temperatures for food poisoning.

Furthermore, there has been some evidence of crib deaths when the infant was not able to manufacture enough nitrite in its system and, consequently, died of food poisoning.

Even more interesting, just to name a few nitrite-containing vegetables, plain old ordinary beets have been found to contain 2,760 PPM of nitrite; celery, 1,600 to 2,600 PPM; lettuce, 100 to 1,400 PPM; radishes, 2,400 to 3,000 PPM; potatoes, 120 PPM; and zucchini squash, 600 PPM. The source for these nitrites in the vegetables comes from nitrogen fertilizers. It is nitrogen that helps to produce the green color in vegetables and to make them grow faster.

It makes little difference whether you fertilize your vegetable garden out of a bag of chemicals or cow manure. The chemical end

result will be the same —

In recent years, a number of subjects of meat curing with no background or actual experience that these people have purchased at your local deli is no documented scientific study by using ascorbic acid to curing if you are using ascorbic acid.

The use of these nitrites has been attacked by various groups of people. Unfortunately, there is no one who can do the job. The next time you actually do without these nitrites, their use.

At this time, I cannot think of any on paper than the most recent report and Plant Health Inspection give you a better insight into the effect and have been found in the past 20 years. The Food and Drug Administration, U.S. Department of Agriculture, Plant Health Inspection Service, Nitrites and Salt, U.S. Department of Agriculture, Washington

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In recent years, a number of books have been written on the subjects of meat curing and sausage making by people with no background or actual experience in this field. It is frightening to read that these people have recommended the use of ascorbic acid purchased at your local drugstore to cure sausage or meat. There is no documented scientific proof that botulism can be prevented by using ascorbic acid to cure meat. **You are risking food poisoning if you are using ascorbic acid to cure meat.**

The use of these nitrites for curing meats has recently come under attack by various groups of people and some government agencies. Unfortunately, there is no other substitute in the world today that can do the job. The next best thing to do is to find out if we can actually do without these chemicals, or simply lower the levels of their use.

At this time, I cannot think of anything more timely to put down on paper than the most recent rule changes proposed by the "Animal and Plant Health Inspection Service." The following paragraphs will give you a better insight on curing meats. These rules are already in effect and have been followed by the large meat processors for the past 20 years. The following was taken from the "Animal and Plant Health Inspection Service (9 CFR parts 318, 381) Nitrates, Nitrites and Salt," U.S. Dept. of Agriculture, Animal and Plant Inspections Service, Washington, D.C.

DIET SAUSAGE

For home use, a diet sausage is made quite easily, and you'll know the exact contents of the sausage. The formulas and recipes in this book are very clear and products one uses are fully explained.

Probably the easiest sausage of all is a salt-free sausage. You would simply add spices and meat and you have sausage; just omit the salt. The casings are another story. Salted casings should be avoided, as they have an excessive amount of salt even after flushing and soaking. Unsalted casings packed in solution, or collagen casings, would be preferable.

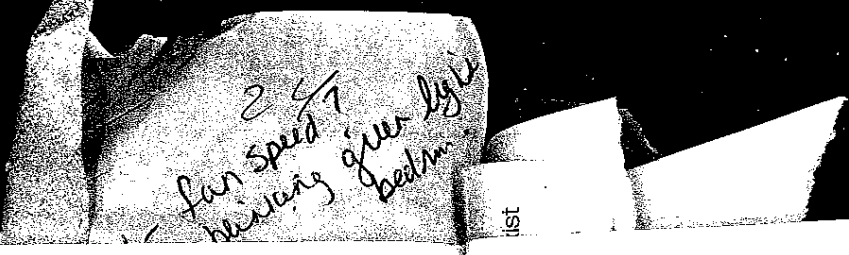
If you like the flavor of smoked sausage, you must use cures to cure the meat. It requires two level teaspoons of Prague Powder No. 1 to cure 10 lbs. of meat. This small amount can be acceptable in some diets. If it is not, you can simply omit the Prague Powder No. 1 and add liquid smoke. You would have a smoke flavor but a fresh sausage, not cured. It could be frozen and cooked as needed.

For people on fat-free diets, all is not lost. As we all know, a certain amount of fat in the sausage does help to bind it and keep it moist as well. You can pretty much create this same condition by using soy protein concentrate and water, thus eliminating the fat. For 10 lbs. of lean meat you would add around 1 pint of water (1 lb.) and 5 ounces of soy protein concentrate. This may be done with either a fresh or smoked sausage.

At one time, the Hickory Shop of Las Vegas, Nevada, of which I was the owner, did supply the Southern Nevada Memorial Hospital and the Sunrise Hospital with salt-free sausage.

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Sausage



**FRESH PORK SAUSAGE
(BREAKFAST)**

INGREDIENTS FOR 25 LBS.

- 7 ozs. salt
- 2 ozs. ground white pepper
- 1/2 oz. rubbed sage
- 1/4 oz. ginger
- 1/4 oz. nutmeg
- 1/4 oz. thyme
- 1/4 oz. ground hot red pepper (optional)
- 1 1/2 lbs. ice water

INGREDIENTS FOR 10 LBS.

- 5 tbsp. salt
- 1 tbsp. ground white pepper
- 2 tbsp. rubbed sage
- 1 tsp. ginger
- 1 tbsp. nutmeg
- 1 tbsp. thyme
- 1 tbsp. ground hot red pepper (optional)
- 1 pint ice water

You can make an excellent breakfast sausage using 100% pork butts. This product is of such high quality that it is never seen in a meat market and can only be had by making it yourself. You can also make a breakfast sausage of 50% pork butts and 50% pork trimming and you would still have a sausage of high quality.

All the pork used to manufacture sausage must be chilled from 32-35 degrees F. without fail. Be sure that all the meat is free of blood clots, sinews, bone, skin, glands, etc.

GRINDING & MIXING

Grind all the meat through a 3/16" grinder plate and place in mixer. Add all the ingredients and mix well until all the spices are evenly distributed.

STUFFING

Pork sausage may be stuffed into 28-30mm hog casings or 22-24mm lamb casings. Pork sausage also may be stuffed into a cloth bag or a 3 1/2" by 24" fibrous casing.

It is very important that pork sausage not be allowed to remain at room temperature any longer than necessary. Place in cooler as soon as possible. Pork sausage should be allowed to chill and dry in 28-32 degree cooler.

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FRESH ITALIAN SAUSAGE - SWEET

INGREDIENTS FOR 25 LBS.

7 ozs. salt
 1½ lbs. ice water
 1 oz. cracked fennel seed
 1 oz. coarse black pepper
 1 oz. sugar
 25 lbs. boned pork butts

INGREDIENTS FOR 10 LBS.

5 tbsp. salt
 1 lb. ice water (1 pint)
 3 tsp. fennel seed
 2 tsp. coarse black pepper
 1 tbsp. sugar
 10 lbs. boned pork butts

GRINDING & MIXING

Grind all the pork butts through a ¼" or ⅜" plate and place into the mixer. Add all the ingredients and mix well until evenly distributed. Stuff into 32-35mm hog casing.

NOTE:

Be sure that the meat has been chilled between 32-34 degrees F. before starting. All blood clots, cords, bones, etc. must be removed and thrown out. Do not keep sausage at room temperature any longer than necessary.

SMOKING

The smoking of Italian sausage has become more and more popular in recent years. Simply place sausage in preheated smokehouse at 130 degrees F. with dampers wide open until the casings are dry. Gradually increase temperature to 160-165 degrees F.

Applying medium smoke with dampers ¼ open, hold in smokehouse until you obtain internal temperature of 152 degrees F. Remove and shower with cool water quickly so internal temperature is reduced to 110 degrees F. Allow to hang at room temperature until desired bloom is obtained, remove to cooler and hold overnight.

When smoking Italian sausage, add 1 oz. of cure (Prague Powder No. 1) to 25 lb. formula or 2 level teaspoons to a 10 lb. formula. Soy protein concentrate should also be added as called for in any smoked sausage recipe of this book.

FRESH ITALIAN S

INGREDIENTS FOR 25 LBS.

7 ozs. salt
 1½ lbs. ice water
 ½ oz. cracked fennel seed
 1 oz. coarse black pepper
 1 oz. sugar
 ½ oz. crushed hot peppers
 ¼ oz. caraway seeds
 ¼ oz. coriander
 25 lbs. boneless pork butts

GRINDII

Grind all the pork butts through the mixer and add all the ingredients evenly distributed. Stuff in

NOTE:

Be sure that the meat has been chilled between 32-34 degrees F. before starting. All blood clots and thrown out. Do not keep sausage at room temperature any longer than necessary.

SWEET

RECIPE FOR 10 LBS.

1 lb. salt
1 pint ice water
1 tsp. cracked fennel seed
2 tsp. coarse black pepper
1 tsp. sugar
3 tsp. crushed hot peppers
1 tsp. caraway seeds
1 tsp. coriander
10 lbs. boneless pork butts

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FRESH ITALIAN SAUSAGE - MILD-HOT

INGREDIENTS FOR 25 LBS.

7 ozs. salt
1 1/2 lbs. ice water
1/2 oz. cracked fennel seed
1 oz. coarse black pepper
1 oz. sugar
1/2 oz. crushed hot peppers
1/4 oz. caraway seeds
1/4 oz. coriander
25 lbs. boneless pork butts

INGREDIENTS FOR 10 LBS.

5 tbsp. salt
1 pint ice water
1 tbsp. cracked fennel seed
2 tsp. coarse black pepper
1 tbsp. sugar
3 tsp. crushed hot peppers
1 tsp. caraway seeds
1 tbsp. coriander
10 lbs. boneless port butts

GRINDING & MIXING

Grind all the pork butts through 1/4" or 3/8" grinder plate. Place into the mixer and add all the ingredients. Mix well until all the spices are evenly distributed. Stuff into a 32-35mm hog casing.

NOTE:

Be sure that the meat has been chilled between 32-34 degrees F. before starting. All blood clots, bones, cords, etc. must be removed and thrown out. Do not keep sausage at room temperature any longer than necessary.

Shred fine 20.
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**SMOKED POLISH SAUSAGE
 (KIELBASA)**

Too sweet

INGREDIENTS FOR 25 LBS.

- 2½ lbs. ice water
- 12 ozs. soy protein concentrate or non-fat dry milk
- 7 ozs. salt
- 1 oz. sugar
- 1 oz. prague powder #1
- 1 oz. black pepper
- 1 oz. fresh garlic
- ¼ oz. marjoram
- 25 lbs. boneless pork butts

INGREDIENTS FOR 10 LBS.

- 1 lb. ice water (1 pint)
- 2 cups soy protein concentrate or non-fat dry milk
- ~~5~~ 5 *2 1/2* tbsp. salt
- 1 tbsp. sugar
- 2 level tsp. prague powder #1
- 1 tbsp. black pepper
- 2 large cloves fresh garlic
- 1 heaping tsp. marjoram
- 10 lbs. boneless pork butts

GRINDING & TRIMMING

Trim off excess fat, remove all blood clots, bone, sinews, cords, etc. and throw out. Grind all the lean meat through a 3/8" grinder plate and all the fat meat through 1/8" plate. Place in mixer, adding all the ingredients and mixing until evenly distributed.

STUFFING

Polish sausage should be stuffed into a larger-size hog casing, preferably 38-42mm. Sausage then is placed on smokehouse sticks and spaced properly. Sausage is permitted to dry. You may dry the sausage as follows:

- (1) When stuffing the sausage, it normally is hung on the sausage sticks in the room where you are working. By the time you are finished stuffing the sausage, much of it already is dry. You may put it in a preheated smokehouse at 130 degrees F. with dampers wide open for about 1 hour or until casings are dry and starting to take on a brown color.
- (2) Or, you may place sausage in the cooler and leave until the casings are dry.

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SMOKING

Sausage is placed in a preheated smokehouse at 130 degrees F. with dampers wide open. Keep this temperature until the casings are dry. Gradually increase temperature of smokehouse to 160-165 degrees F. with dampers $\frac{1}{4}$ open. Apply heavy smoke and keep in smoker until the internal temperature reaches 152 degrees F.

If you are using a steam cabinet for cooking, remove the sausage from the smoker when it has an internal temperature of 135 degrees F. and cook in the steam cabinet to reach 152 degrees F. internally. Remove from smokehouse and shower with cold tap water until the internal temperature is reduced to 110 degrees F. Allow the sausage to hang at room temperature for about 30 minutes or until the desired bloom is obtained. Place in cooler at 38-40 degrees F. overnight.

BEER SAUSAGE

During the mid-1960's, when I was owner of the Hickory Shop in Las Vegas, the beer sausage made its mark. Probably 80% of the bar owners in Las Vegas were selling this sausage we made. When they placed their initial orders, they were sold a 4-quart electric cooker. To prepare this sausage they would pour in a $\frac{1}{2}$ can of beer and simply let the sausage steam cook in the beer. Hence, the name "beer sausage."

After being cooked, the sausage simply was served on a napkin or a paper plate. Some of the owners provided mustard or crackers and others just the sausage, steam-cooked in beer. This sausage was so popular that it quickly became our number one sausage, and we were producing up to 4000 lbs. a week. Beer sausage literally took Las Vegas by storm; that is, the bar business.

Beer sausage was made simply by using the smoked Polish sausage recipe, but adding hot cayenne pepper. The degree of hotness varied from bar to bar and it was made from mildly hot to very hot. Four ounces of hot cayenne pepper to 100 lbs. of meat will make a hot sausage, and $\frac{1}{2}$ this amount or 2 ounces makes a mild-hot sausage. For a 10 lb. recipe, 1 teaspoon will make a mild-hot sausage. Add two teaspoons and you'll have a pretty hot sausage.

INGREDIENTS FOR 25

15 lbs. lean pork butts
7 lbs. lean beef
3 lbs. fresh bacon
8 ozs. salt
1 oz. prague powder #1
2 ozs. powdered dextros
1 oz. ground black pepper
 $\frac{1}{2}$ oz. ground nutmeg
 $\frac{1}{4}$ oz. cardamon
 $\frac{1}{4}$ oz. fresh garlic
1 oz. whole mustard see

Grind the lean pork to cut into 1" cubes. Add fat until evenly distributed. Cut into than 6" high, making sausage mixture in a cooler overnight, regrind this mixture with bacon through a $\frac{1}{4}$ " grinder.

Combine the mixture with beef bladder. Allow to dry. Then place the sausage in a smoker at 130 degrees F. with the dampers and or until the sausage steam move the draft to $\frac{1}{4}$ open degrees F. and begin smoking at temperature of 152 degrees before using.

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VENISON OR BEEF JERKY

Beef jerky is one of the most sought after—and probably the easiest to use—of all the recipes in this book. A dried meat closely associated with the early American pioneers, this recipe has been handed down to us in a very simple formula.

It is well-known that this product was usually dry-salted and hung out in some manner to dry. The process reduced the weight of the meat by as much as 80-85%. Obviously, it was lighter to transport, took up less room on these long journeys and required no refrigeration.

During the course of these journeys, many stops were made for a number of reasons, preferably near a stream. The meat could then be placed in a running stream to remove most of the salt. At the same time, this meat was being reconstituted by absorbing water from the stream. The meat now was more palatable and could be used to make stew or other dishes. The smaller pieces of this salted and dried meat, however, became a sort of snack, eaten at random without removing the salt.

Beef jerky is closely associated with the early American cowboys or miners. In either case, beef jerky still is made the old-fashioned way by either dry salting or brining in a very hard salted water. Then it is simply hung up or laid out to dry; however, a jerky using this type of formula is not very palatable, and there now are a variety of recipes that make this a very tasty snack.

I think the following recipe will be extremely pleasing to your taste buds.

3 lbs. of lean beef or venison
1 tbsp. salt
1 level tsp. Prague Powder No. 1
1 tsp. onion powder
1 tsp. garlic powder
1 tsp. ground black pepper
¼ cup soy sauce
⅓ cup Worcestershire sauce