



Processed Meats: Convenience, Nutrition, Taste

American traditions and iconic foods

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Processed meat and poultry products like bacon, hot dogs, sausage, ham and other deli meats are great American traditions and iconic foods. In fact, bacon is often called the ultimate “conversion food” because it tempts even the strictest vegetarian. Processed meat and poultry products are commonly called “convenience meats” because they have already been prepared for easy and safe consumption by consumers. These products are offered in a variety of choices so the consumer can make the best food decision for their lifestyle.

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Ninety six percent of Americans make meat and poultry products part of their diets. But recently, questions have arisen about processed meat and poultry products. What are they? How are they different from fresh meat and poultry products? Are they safe and nutritious? This consumer guide aims to provide the facts about processed meat and poultry products. It also offers a guide to the many choices available in the meat and poultry case today. In this way, armed with information, you can make the best choice for you and your family.





Processed Meat's Ancient History

Meat processing has its roots in the salting and smoking of meats that began centuries ago before refrigeration was available. Salting and smoking preserved meats and kept them safe to eat for longer periods of time. Many of these products are culturally important in other parts of the world like Europe and as people have immigrated to the U.S. in the last two centuries those traditions have developed into the U.S. culture.

While refrigeration is widely available today, over time, many people have come to appreciate the taste, variety and convenience that processed meats can offer.

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So What Exactly IS a Processed Meat?

Processing can take many forms. Processed meat and poultry products are a very broad category of many different types of products all defined by having undergone at least one further processing or preparation step such as grinding, adding an ingredient or cooking, which changes the appearance, texture or taste.

Some processed meat and poultry are **ready-to-cook**, like fresh breakfast sausages that contain meat ground with spices or other flavorful ingredients, or a turkey breast that is marinated and ready-to-cook.

The **ready-to-cook** category also includes uncooked smoked sausages that are mildly cured through the addition of sodium nitrite, an ingredient that imparts a characteristic pink color and distinct taste. Uncooked, smoked sausages require cooking before eating. Examples include kielbasa, mettwurst and Italian pork sausage.

The common thread is this: processed meats are fresh products that have been changed from their original state. Some have added ingredients like spices. Some are cooked and some are cured.

Other processed meat and poultry are **ready-to-eat**. Some are smoked sausages that are cured and cooked. They include frankfurters, ham, knockwurst, bologna, mortadella and other luncheon meats. Other processed products such as sliced roast beef and turkey are not cured, but cooked with other ingredients to enhance flavor and more recently to improve food safety.

Linked, cooked smoked sausage like hot dogs and knockwursts are typically consumed steaming hot. Lunch meats or

deli meats include products such as pimento loaf, olive loaf, sliced turkey, corned beef and cooked roast beef that are typically consumed without further preparation. Some traditional lunch meats are jellied, like souse and head cheese.

Other **ready-to-eat** processed products are cured and fermented using seasonings, sodium nitrite and lactic acid, which provides a tangy taste. These products include salami, pepperoni, summer sausage, thuringer and cervelat. Some are called dry and some are called semi-dry depending upon the moisture level in the final product.



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Processed Meats Offer Good Nutrition

Processed meats are commonly made from beef, pork, chicken and turkey and each of these offer high quality protein, vitamins and minerals. They can fit into the U.S. Dietary Guidelines eating plans.

Meat and poultry are uniquely rich in protein and absorbable essential vitamins and minerals including iron, zinc, and vitamin B₁₂. These foods are also rich in selenium, choline, vitamin B₆, thiamine, niacin, and riboflavin.

Protein from animal sources, such as eggs, milk, beef, pork, poultry, or fish, is of the highest quality because it provides all of the essential amino acids. Vegetarian diets must contain a wide variety of plant protein sources in order to provide the complete array of amino acids needed for health that are naturally present in meat and poultry.

When it comes to iron and zinc, the type found in meat and poultry is more “bioavailable,” meaning they are more easily absorbed and utilized by the body, than these same nutrients from grains or vegetables.

Processed meat and poultry products – and all meat and poultry products – also are nutrient dense foods, meaning they provide a high amount of nutrition benefit per calorie.

While meat and poultry processing often uses salt for flavoring and to enhance food safety, meat and poultry processors have been actively engaged in efforts to reduce sodium and offer a wide array of choices with different sodium content, including reduced sodium, in which a product features 75 percent reduction from the original formulation, and low sodium, which contains 140 milligrams or less per serving.

Similarly, for those watching their fat intake, meat and poultry processors offer options that contain less fat.

- Low fat choices contain three grams or less per serving.
- Reduced fat choices contain at least 25 percent less fat than a serving of a regular product.
- Fat free is defined as less than 0.5 grams of fat per labeled serving size.
- Meat and poultry processors are committed to offering convenient, delicious and nutritious processed meat products in nutrition formulations that suit all nutrition needs and personal preferences.

Do We Eat Too Much Meat, and Particularly Processed Meat?

The *Dietary Guidelines for Americans, 2010* recommend that Americans consume between five and seven ounces from the meat and beans group (now called the protein group) per day. Federal data show that women consume, on average, 4.4 ounces per day from the protein group while men consume 6.9 ounces depending upon age, gender and level of activity¹. Just a small fraction of total meat and poultry consumption is processed meat and poultry.

While there will always be people who over-consume or under-consume, the data suggest that on average, consumers are consuming meat and poultry at recommended levels.

Common Sodium and Fat Claims on Processed Meat and Poultry Products

CLAIM	DEFINITION
Low in sodium	140 mg or less per serving
Reduced sodium	At least 25% less sodium than the original item
Light in sodium	At least 50% less sodium than the original item
Very low sodium	35 mg or less per serving
Fat-free	Less than 0.5 grams of fat per serving or less
Low-fat	Less than 3 grams of fat per serving or less
Reduced fat	At least 25% less fat than the original food item
Gluten free	20 parts per million of gluten or less (fresh meat and poultry products and most processed meat and poultry products are naturally gluten free)
No added nitrates or nitrites (sometimes called uncured)	Nitrate or nitrite not added directly, but may be contained in other ingredients like celery powder
Good source of protein	5 grams per serving
Excellent source of protein	10 grams per serving

¹ Pyramid Servings In the United States, 1999-2002, Community Nutrition Research Institute, Beltsville Human Nutrition Research Center, Agricultural Research Center

Sodium Content of Various Foods and Lower Sodium Meat and Poultry Products Available in the Market Place

FOOD	SODIUM CONTENT
Cottage cheese, 4 ounces	457 milligrams
Corn flakes, 1 cup	256 milligrams
Whole egg	59 milligrams
Low fat milk, 1 cup	122 milligrams
Frozen waffle	275 milligrams
Whole Wheat Bread, 1 slice	132 milligrams
Bacon, 2 slices	274 milligrams
<i>Makeover: Lower sodium bacon</i>	<i>105-140 milligrams</i>
Hot dogs, one	420-600 milligrams
<i>Makeover: Lower sodium hot dogs</i>	<i>190-250 milligrams</i>
Ham, 1 slice/100 grams	365 milligrams
<i>Makeover: Lower sodium ham</i>	<i>80-140 milligrams</i>
Deli turkey	360 milligrams
<i>Makeover: no salt added turkey</i>	<i>55 milligrams</i>

Source: Marketplace research

Recommended Daily Intake of Protein, Fat and Sodium

RECOMMENDED DAILY INTAKE	ADULT FEMALES, 19-70	ADULT MALES, 14-70
Protein	46 grams	56 grams
Fat	10-35 percent of calories	10-35 percent of calories
Saturated Fat	10 percent of calories	10 percent of calories
Sodium	2,300 milligrams	2,300 milligrams

Source: Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein and Amino Acids, 2002/2005, National Academies Press

Ingredients in a Popular Brand of Prepared Meatloaf Commonly Found at Retail:

- Eggs
- Ketchup
- Bread crumbs
- Corn syrup
- Water
- Partially hydrogenated soy bean oil
- Non-fat milk
- Soup mix
- Beef

Beef, eggs, ketchup (water, tomato paste, high fructose corn syrup, vinegar, salt, dehydrated onion, spices, dextrose), bread crumbs [enriched flour (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), corn syrup, water, partially hydrogenated soybean oil, nonfat milk, salt, yeast], soup mix (dehydrated onions, salt, corn starch, onion powder, sugar, caramel color, corn syrup solids, yeast extract, natural flavorings, partially hydrogenated soybean oil, citric acid), water.

Ingredients in a Popular Meatloaf Recipe from Southernfood.com

- 2 eggs, beaten
- 1/3 cup ketchup
- 3/4 cup water
- 1 packet dry onion soup mix
- 1 1/2 cups bread crumbs
- 2 pounds lean ground beef



What's the difference?

The USDA-inspected product that meets USDA label requirements must detail all the ingredients in the product. Each component in ketchup, onion soup and bread crumbs is detailed on the pre-made meatloaf, making it look more complex than the homemade one, when they are actually strikingly similar.

Home Cooking = Meat Processing

All meat and poultry needs to be processed in some way before it is consumed. At home, a food preparer may marinate a chicken breast in lemon juice or teriyaki sauce and then grill it. She or he might make meatloaf by combining raw ground beef with spices like salt, pepper, ketchup and onion powder and then egg and bread crumbs to “bind” the meat together into a loaf and then bake it at 350 degrees F° for an hour. This is very similar to the process used in meat processing plants, where it’s done on a much larger scale.



Consumers sometimes wonder why an ingredient label on a processed product appears to contain more ingredients than a recipe used at home. That’s because a recipe may say “1 cup bread crumbs.” At home, the consumer typically reaches for a container of bread crumbs and thinks nothing more. At a processing plant, the food must be labeled as containing bread crumbs, but then must also declare any ingredients used to make those bread crumbs, like salt, parsley, preservatives and more. (See Box Opposite Page). The finished product is the same, but the commercially prepared label looks more complex.



Inspection and Labeling

Meat and poultry products are inspected by U.S. Department of Agriculture's Food Safety and Inspection Service (FSIS) every day. Inspectors monitor plant sanitation, proper processing and cooking, when applicable.

As part of their duties, inspectors also check to be sure that labels accurately reflect product ingredients. Any ingredient used in a processed meat or poultry product must be declared on the product label.



Safety and Preparation

Processed meat and poultry products have an excellent safety record. Some processed meats, like a marinated chicken breast, require additional cooking. Consumers should follow instructions on packages carefully and use an instant read thermometer to ensure that the product has reached the proper internal temperature.



Ready-to-eat meat and poultry products, like hot dogs, cooked ham, deli meats and salami, are pre-cooked. When processed in plants, scrupulous sanitation is used to ensure that they are safe and free of bacteria when packaged. However, on very rare occasions, a product may not be 100% free of bacteria like *Listeria monocytogenes*, which can pose a risk to certain higher risk populations. Pregnant women, the elderly and other immune-compromised people should follow the Centers of Disease Control and Prevention (CDC) recommendations² to reheat lunch meats and other ready-to-eat meats to steaming hot before consuming them.³

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² *Listeria*, Centers for Disease Control Prevention, downloaded April 28, 2013, at <http://www.cdc.gov/listeria/prevention.html>

³ Centers for Disease Control and Prevention, Listeriosis, downloaded August 22, 2013, at <http://www.cdc.gov/listeria/prevention.html>

Why Is Sodium Nitrite Used?

Sodium nitrite is a compound that is used to “cure” meats. Cured meats have a characteristic color, unique taste and a longer shelf life. Centuries ago, nitrate was used in the form of saltpeter to cure meats before refrigeration was available. This was especially important in preventing the growth of the bacteria *Clostridium botulinum*, which causes the very deadly disease botulism.

In the 20th century, meat processors shifted to the closely related sodium nitrite because it was more reliable in its effects. Since sodium nitrite has been commonly used in commercially prepared meats, no cases of botulism have been linked to these products in the U.S.

Cured meats contribute very little nitrite to the total diet – less than five percent. The major source of human nitrite exposure is vegetables, especially root vegetables like beets and leafy greens. These foods contain nitrate and when nitrate reacts with your saliva in the mouth, it becomes nitrite.

FOOD	AVERAGE NITRATE AND NITRITE PARTS PER MILLION
Broccoli	394 nitrate, 0.59 nitrite
Cabbage	418 nitrate, 0.13 nitrite
Celery	1,495 nitrate, 0.12 nitrite
Lettuce	850 nitrate, 0.59 nitrite
Spinach	2,797 nitrate, 7.98 nitrite
Chorizo, Italian dry sausage	78.81 nitrate, 0.74 nitrite
Bologna, hot dogs	27.68 nitrate, 6.86 nitrite
Bacon	25.57 nitrate, 7.31 nitrite
Cooked ham, pastrami, corned beef	14.81 nitrate, 7.16 nitrite

Source: A National Survey of Nitrite/Nitrate Concentrations in Cured Meat Products and Non-Meat Foods Available at Retail, Keeton, J.T., et. al., Texas A & M University, 2009

In the 1970s, a single study that was later discounted cast a dark cloud over nitrite, alleging that its use in cured meats could cause cancer. In response, the U.S. National Toxicology Program (NTP) began a multi-year rat and mouse feeding study to determine if nitrite posed a health risk. In May 2000, a panel of experts reviewed NTP's findings and concluded that nitrite was safe at the levels used and did not belong on the national list of carcinogens.

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'Alternatively Cured' Meat Products

Despite nitrite's safety, meat and poultry processors recognize that some consumers prefer meats that are cured using natural nitrate and nitrite sources like celery powder. These products are increasingly available in your grocery stores.

While meat processors believe these products should be called "cured" because they *are* cured by the presence of ingredients like celery powder, USDA regulates the label and requires that the products say "Uncured." In a smaller font, the package declares "No nitrates or nitrites added except for that which naturally occurs in celery powder." This labeling approach is required by USDA.





What's Really in a Hot Dog?

What You See on the Label Is What You Will Find in the Product

Urban legends have led some consumers to wonder – what's really in a hot dog? While there is much mystery and mystique surrounding hot dog making, the actual process is fairly simple. Small pieces of meat called trimmings, which result when large carcasses are cut into steaks and roasts, are ground in a large chopping bowl and blended with ice, salt, seasonings like garlic and paprika and sodium nitrite. The ingredients form a batter that is inserted into long strands of cellulose casings that are pinched at regular intervals. They are cooked thoroughly, showered in cool water and the casings are removed. The products are then packaged.

Some consumers think that variety meats like hearts or livers are included, but this is rarely the case. While variety meats are safe and wholesome, they are not commonly consumed by Americans and so they are not commonly added to hot dogs. If they are, the product must be called 'Hot Dogs With Variety Meats' or "Hot Dogs With Meat Byproducts." The ingredient statement must declare which variety meat was used. A look at the popular brands of hot dogs in the marketplace today will show that it is very unusual to find hot dogs with variety meats in the retail meat case.

Bottom line: what you see on the label is what you will find in the product.



Nutrition Benefits and Options

Research continues to document the benefits of protein in the diet, particularly in controlling hunger and in managing weight.⁴ Processed meat and poultry products are convenient sources of protein that are packed with key vitamins and minerals including iron, B-vitamins, thiamin and zinc. In fact, meat and poultry products are among the most nutrient dense foods – meaning they offer high nutrition benefits per calorie.

Meat and poultry processors pride themselves in providing a range of products from classic products, reduced fat, reduced sodium to beef, pork and poultry options with different flavors.

Meat and poultry processors understand that people have different health and wellness goals and needs and pride themselves in providing a range of products from classic products, reduced fat, reduced sodium to beef, pork and poultry options with different flavors.

Today's meat and poultry case offers choices for everyone.

⁴ Protein, weight management, and satiety 1,2,3,4, American Journal of Clinical Nutrition, 2008, <http://ajcn.nutrition.org/content/87/5/1558S.full>



Final Thoughts: Balanced Diet

The meat and poultry industry offers many processed meat and poultry choices that are convenient, tasty and nutritious and that meet a range of taste preferences and nutrition needs. Consumers should feel confident in including processed meat and poultry products – from a convenient, marinated pork loin, to a deli turkey sandwich to a juicy bratwurst – as part of their healthy, balanced diets.



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