



Food Safety

NEWS

Food Safety RESEARCH

IFT Biotechnology Report

On the Web

MEATS EXTENSION WEB SITE

A K-State Meats Extension Web site is now on-line and can be accessed at www.oznet.ksu.edu/haccp. The site links to back issues of the Meat Processing News newsletter, meats related publications, meats topics for consumers, meat science courses, HACCP information, value-added assistance, and Internet links to meats resources and value-added resources. lboyle@oznet.ksu.edu

Ham Information

fns1.usda.gov:80/fdd/MENU/ADMINISTRATION/HHP_FACTS/hamwater.htm

www.fsis.usda.gov:80/OA/pubs/ham.htm

www.agen.ufl.edu/~foodsaf/i1079.html

www.fsis.usda.gov/OA/pubs/pork.htm

Mail Order Foods

www.agen.ufl.edu/~foodsaf/i1066.html

www.agen.ufl.edu/~foodsaf/sf185.html

www.fsis.usda.gov/OA/pubs/mailorder.htm

Ag Biotechnology

www.oznet.ksu.edu/biotech/warp.nal.usda.gov:80/bic/Education_res/

Food Safety

www.oznet.ksu.edu/foodsafety/

www.oznet.ksu.edu/extrapidresponse/foodsafety.htm

www.fsis.usda.gov/index.htm

www.foodsafety.gov/

The Institute of Food Technology has recently completed and published an extensive review of biotechnology. One issue explored is the safety of biotech-derived foods. Products developed through recombinant DNA technology are assessed for safety before their introduction into the food market channels. In 1992, the United States Food and Drug Administration provided a general guideline to the developers of genetically engineered foods. The policy uses the concept of “substantial equivalence” based on a risk assessment related to the characteristics of the product.

Substantial Equivalence.

When new plant varieties are developed they are compared to their traditional counterparts because the traditional food has a long history of safety. The concept of “substantial equivalence” is used and focuses the scientific assessment on possible differences between the old and new varieties that may present safety or nutritional concerns. Substantial equivalence provides a process to determine if the composition of the plant is changed in any way that may produce any new hazards, increase any inherent toxins that already exist in the food, or decrease the amount of nutrients. Key constituents that are measured are nutrients

— proteins, carbohydrates, fats, vitamins and minerals— inherent anti-nutritional factors, toxins and allergens. International organizations, such as the World Health Organization and the Food and Agricultural Organization of the United Nations, support this method of safety assessment for bioengineered products that have traditional counterparts.

Allergenicity

All food allergens are proteins, but only a few proteins are allergenic. Recombinant DNA technology involves the introduction of new genes into the recipient plant or organism. These genes produce new proteins in the new plant, and any potential allergenicity of the new variety is an important part of safety assessment. The source of the transferred gene is taken into account. In addition, the genetic sequence of the new protein is assessed against the sequence of known allergens, along with other factors, to determine the allergenicity of any new protein.

Products with no Traditional Counterpart.

This type of bioengineered product has not yet been developed, but is likely to occur in the future. In this case, each product would

have to be assessed on a case-by-case basis and would require various toxicity tests, depending on the type of modification, the source genes and other factors.

Unintended Effects.

There is always some possibility of unexpected effects of the transfer of genes. However, this possibility also occurs using traditional breeding practices. In traditional breeding, thousands of genes are transferred, whereas in genetic engineering only one or very few genes are transferred.

Genetic engineering is a much more precise and controlled methodology. Thus, unintended effects are much more likely to occur using traditional breeding practices. One example of this occurred when a new potato variety, the Lenape potato, was developed using conventional plant breeding techniques. It was discovered to have unusually high levels of toxic glycoalkaloids. As a result, this potato variety was not further developed and is not available.

Source: IFT Expert Report on Biotechnology and Foods, Food Technology, 54:nos.8,9,10, 2000.

Ham Glossary

BUTT END, HALF OR PORTION

— The upper, meatier part of the whole leg; a butt portion has had some center slices removed for separate sale as ham steaks or center cut ham slices. The half includes this meat.

CANNED HAM — Canned hams come in two forms:

Shelf stable - store on shelf up to 2 years at room temperature.

Generally not over 3 pounds in size.

Refrigerated - may be stored in refrigerator up to 6 to 9 months. Its weight can be up to 8 percent more than original uncured weight due to uptake of water during curing.

CAPACOLLA — Boneless pork shoulder butts that are dry cured; not necessarily cooked.

HAM CAPACOLLA — Made with ham leg instead of pork shoulder butts.

COTTAGE HAM — Ham made from the shoulder butt end.

COUNTRY HAM — Uncooked, cured, dried, smoked-or-uncooked meat products made from a single piece of meat from the hind leg of a hog or from a single piece of meat from a pork shoulder. They should be cooked before eating, according to manufacturer's instructions.

FRESH HAM — Uncured leg of pork. Since the meat is not cured or smoked, it has the flavor of a fresh pork loin roast or pork chops. Its raw color is pinkish red and after cooking, greyish white.

FULLY COOKED — Needs no further cooking, fully cooked in plant. Can be eaten directly as it comes from its packaging or reheated.

HAM STEAK — Another name for center cut ham slices.

HICKORY-SMOKED HAM — A cured ham that has been smoked by hanging over burning hickory wood chips in a smokehouse.

Buying the Holiday Ham

It's hard to believe the holiday season is almost here. In deciding the holiday menu, ham is a popular choice for the main entrée. There are many varieties of ham. This information may help distinguish the basic differences among ham and ham products.

The term "ham" means pork from the hind leg of a hog. Ham from the front leg will be labeled "pork shoulder picnic." Ham may be fresh, cured or cured and smoked. Cured ham is deep rose or pink in color. Fresh ham is pale pink or beige in color. Country ham or prosciutto will be pink to mahogany in color. Fresh hams must be cooked. Ready-to-eat hams include prosciutto and fully-cooked hams.

Cooked ham products are separated by the protein content in the meat portion of the ham dividing this class into four categories. The first is premium ham product. This ham must contain a minimum of 20.5 percent protein. These are labeled "ham" and sold in specialty stores. Some companies sell premium ham that is spiral cut and coated with sugar.

The second category is ham with natural juices. This

product must contain a minimum of 18.5 percent protein. It is slightly juicier due to the higher moisture content. This is considered a good, all-purpose ham and an excellent choice for a special meal.

The third category is "ham with water added." These hams must contain a minimum of 17 percent protein.

The final category is "ham and water product, X percent of weight is added ingredi-



ents." These hams contain water plus binders to help hold the water in the ham. Binders include soy or milk proteins. The more water added, the juicier the ham and lower the cost.

Hams are cured using a dry cure or wet cure method. Dry curing uses a mixture of salt and other ingredients such as sodium nitrate, nitrites, sugar, seasonings, phosphates and ascorbates. The dry cure is rubbed on the surface and then

aged for a few weeks to up to more than a year. Typically the aging process is six months.

Wet curing or brine curing involves injecting the meat with a curing solution before cooking. Smoke flavoring may also be added with the brine solution. This method is the most popular way of producing ham.

The organisms that have been associated with ham contamination include *Trichinella spiralis*, *Staphylococcus aureus*, and mold. The incidence of *T. spiralis* has been controlled by USDA processing guidelines to kill the worm. *S. aureus* is destroyed by cooking, but improper handling can recontaminate the meat. Mold can grow on hams that are dry cured. It is most often found on country cured ham. The mold can be eliminated by washing in hot water and scrubbing with a stiff brush.

Fully cooked and canned hams can be eaten cold. They can be reheated to an internal temperature of 140°F. Fresh ham should be cooked to an internal temperature of 160°F.

Sources: Focus On: Ham, www.fsis.usda.gov/OA/pubs/ham.htm; and, Ham and Ham Products, E. Boyle, KSU, Jan. 1994

Correction

In the October 2000 Food Safety News, FAQ's section, venison was specified as possibly containing the *Trichinella* parasite. Deer have never been known to carry or transmit this parasite, other than by the inclusion of infested pork, or other omnivorous, wild game meat such as bear, in deer sausages. Thorough cooking to an internal temperature of 142° F will kill the microscopic parasite. The general rule for safe meat is to cook it to 160° F internal temperature.

How Clean is Your Cutting Board?

Research conducted by Georgia-Pacific studied cutting board clean-up techniques in consumer and commercial settings. Because cross-contamination is a frequent source of foodborne illness, this study looked at different types of cutting boards, the type of soap used, board condition, the cleaning/scrubbing tool and rinse water temperature to determine cleaning efficiency.

Cutting boards tested included wood, acrylic, polyethylene, polypropylene and glass. New and used boards were tested. Cleaning devices included sponges, nylon scouring pads and brushes. The soaps used were antibacterial and non-antibacterial brands. The boards were inoculated using ground beef with microorganisms and with Tryptic

Soy Broth (TSB) with microorganisms. A specific cleaning pattern and pressure was used to clean the boards.

Results showed that water temperature, cutting board condition and type, and using antibacterial soap were insignificant compared to soil type, board cleanability, vigorousness of cleaning or bacterial die-off between uses. Thoroughly washing with regular soap, a clean kitchen scrubber and then rinsing with water significantly reduced bacteria counts.

Bacteria die-off was evaluated at 15 minutes and at 4 hours for all boards. This was done to show how letting the board dry for a period of time between washing and using again can reduce cross-contamination. The 4-hour die-off period was significant in reducing the bacterial load.

Wood boards gave the best results. This shows that immediate use of a board, even after cleaning, can still pose risks of contamination.

This study reinforced the fact that consumers and food service workers do not understand the dynamics of using and cleaning cutting boards. How well a board gets cleaned depends on the type of soil, how well it is scrubbed, and the time period for the board to dry between uses. Attention to detail is important to reduce the potential for cross-contamination. To further reduce this risk, use multiple cutting boards to maximize time between uses.

Source: Evaluation of Household Cutting Board Clean-up Techniques, V. Gangar, E. Meyers, H. Johnson, M. Curiale, T. Ayers and B. Michaels

HONEY-CURED – may be shown on the labeling of a cured product if honey is the only sweetening ingredient or is at least half the sweetening ingredients used, and if the honey is used in an amount sufficient to flavor and/or affect the appearance of the finished product.

PICNIC, PORK SHOULDER

PICNIC – A front shoulder cut of pork that has been cured in the same manner as ham.

PROSCIUTTO HAM – An Italian-style dry cured raw ham; not smoked; often coated with pepper. Prosciutto can be eaten raw because of the processing method.

PARMA HAM – Prosciutto from the Parma locale in Italy. These hams tend to be larger than the United States produced product, as Italian hogs are larger at slaughter.

SHANK END, HALF OR

PORTION – The lower, slightly pointed part of the leg. A "portion" has the center slices removed for separate sale as "ham steaks" or center cut ham slices. The half includes this meat.

SKINLESS, SHANKLESS – A ham with all of the skin and the shank removed. The leg bone and aitch (hip) bone remain.

SUGAR CURED – A term that may appear on ham labels if cane or beet sugar is at least half the sweetening ingredients used and if the sugar is used. Most hams contain sugar in the curing mixture.

WESTPHALIAN HAM – A German-style dry cured ham that is similar to Prosciutto; smoked, sometimes with juniper berries. Also called Westfälischer Schinken.

Source: Focus On: Ham, www.fsis.usda.gov/OA/pubs/ham.htm

FAQ's

• How do you season a wood butcher block?

Wood butcher blocks suffer hard wear and tear, and can be resurfaced or repaired to last many years. A new butcher block should be seasoned to prevent staining and absorption of food odors and bacteria.

Mineral oil is preferred to polyurethane or varnish because of easy maintenance if the wood surface is damaged. An oil finish helps to prevent cracking or pulling apart at the seams. Boiled linseed oil will work, but mineral oil is preferred because it will not turn rancid.

Warm the oil slightly. Apply with a soft cloth in the direction of the grain. Allow the oil to soak in between each of the four or five coats required for the initial seasoning. After each treatment, wait about four to six hours and wipe off any oil that did not soak into the wood. Re-oil the butcher block monthly or as often as needed.

Over time, butcher blocks will shrink or expand as the moisture content of the wood changes. Extreme dryness may cause cracks. Cracks should be filled with wood filler, sanded smooth, and the entire block re-oiled.

Oil-finished butcher block tops can be cleaned using a damp cloth with a detergent. Rinse with a clean, damp cloth. Excess water should be avoided. All water should be wiped up immediately. Cut raw meat and poultry on a smooth-surfaced plastic cutting board that can be scrubbed thoroughly with hot suds afterward.

Repeated use and cleaning will remove the oil finish. Periodically, warm mineral oil should be applied to the surface and edges with an absorbent cloth or very fine steel wool. Allow oil to soak in a few minutes, then remove all surface oil with a dry, clean cloth. Oxidation or hardening of the oil will take approximately 6 hours.

Source: Anne Field, Michigan State University Extension

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without discrimination on the basis of race, color,
religion, national origin, sex, age, or disability.

Upcoming Events

December 7-8, 2000

HACCP workshop by University of Nebraska
and Kansas State University
Lincoln, NE
Contact: Jason Mann
888-688-4346.

January 9 & 10, 2001

Serving Safe Food
Wichita, KS
Contact: Teresa Lang
316-722-7721

February 28 & March 1, 2001

Serving Safe Food
Oskaloosa, KS
Contact: Cindy Williams
785-863-2212

March 13 & 14, 2001

Serving Safe Food
Topeka, KS
Contact: Cindy Evans
785-232-0062

March 13 & 14, 2001

Serving Safe Food
Lawrence, KS
Contact: Susan Krumm
785-843-7058

March 27 & 28, 2001

Serving Safe Food
Pratt, KS
Contact: Jean Clarkson-Frisbie
316-672-6121

July 6-13, 2001

21st Annual Rapid Methods and
Automation in Microbiology
Workshop
Kansas State University
Contact: Dr. Daniel Y.C. Fung
785-532-5654