

Small Plant NEWS

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Editor: Keith Payne

Managing Editor: Jane Johnson, DVM

Production: Joan Lindenberger,
Sally Fernandez

Design: Gordon Wilson, Duane Robinson

Contact: *Small Plant News*, USDA/FSIS,
Patriots Plaza III, Rm. 9-267A, Mailstop 3778,
1400 Independence Ave., SW,
Washington, DC 20250. (800) 336-3747
E-mail: SmallPlantNews@fsis.usda.gov

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Preventing *Salmonella* Contamination in Ready-to-Eat Pork Barbecue

By Kazuhiro Okumura, LTJG, USPHS



The U.S. Department of Agriculture's (USDA) Food Safety and Inspection Service (FSIS) monitors *Salmonella* contamination in ready-to-eat (RTE) meat and poultry products through a random sampling program (ALLRTE) and a risk-based sampling program (RTE001). Pork barbecue is among those RTE products subject to sampling.

Between 2005 and 2008, there were four *Salmonella*-positive samples of RTE pork barbecue, which accounted for 18 percent of the total number of *Salmonella* positives for RTE products during those calendar years. In 2009, there was one more positive sample, and in 2010, two samples of pork barbecue tested

positive for *Salmonella*. The seven positive samples were from six separate plants, all located in the same State. In addition, a follow-up sample from Intensified Verification Testing (IVT) at one of the six plants also tested positive for *Salmonella*.

Because all of the positive samples came from the same State, a more detailed investigation into the causes of *Salmonella* contamination of RTE pork barbecue was conducted.

The investigation revealed that the preparation methods for pork barbecue vary by the different regions of the country. In the region that had the *Salmonella*-positive samples, the

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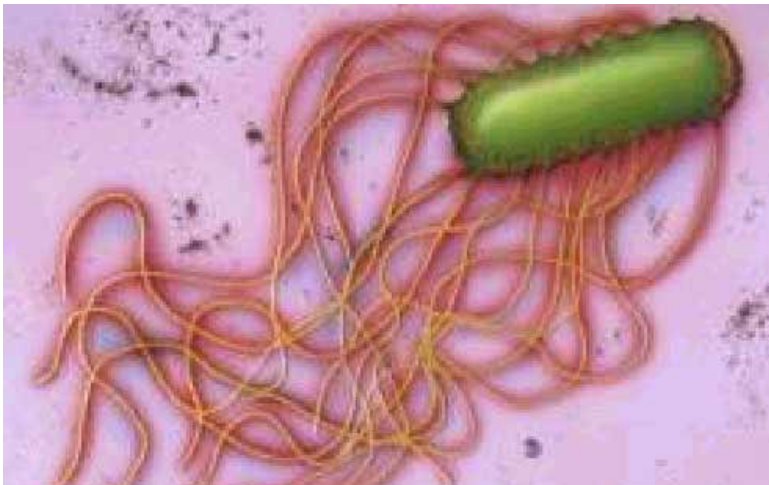
pork is thoroughly cooked. The barbecue sauce is added after cooking and hot deboning.

One type of barbecue sauce contains vinegar and peppers as the primary ingredients. Recipes show that the sauce is not heated and may even be used to help cool the pork.

Another type of pork barbecue sauce is tomato-based. The common ingredients for this sauce are vinegar, ketchup, tomatoes, sugar, spices, etc., that are heated to a simmer or boil to dissolve the ingredients.

All of the *Salmonella*-positive pork barbecue samples came from plants where the barbecue sauce was vinegar- and pepper-based, as opposed to the tomato-based barbecue sauce. There are several possible reasons for this finding:

- The ingredients in the vinegar- and pepper-based barbecue sauce, such as the peppers (red, black, fresh, and dried), molasses, etc., may be a source of the *Salmonella* contamination, and the acidity of the vinegar may not be enough to kill or prevent multiplication of any *Salmonella* that may be present in the sauce.
- Since the sauce is not heated, *Salmonella* may not be eliminated if the sauce is contaminated before it is added to the pork. Refrigerating the finished sauce may actually contribute to the survival of the *Salmonella* in the sauce.
- The pork and the barbecue sauce are handled extensively during the post-lethality phase (i.e., after cooking), and contamination from plant employees is possible. Cross-contamination from other products and equipment within the plant is also a possibility.
- Under-processing is probably the most unlikely reason because the pork is thoroughly cooked. However, contamination from slaughtered animals in proximity to ready-to-eat foods may be a possibility in some of the plants.
- Finally, animal vectors, such as birds, rodents, and insects, have been shown to contaminate foods with *Salmonella*. However, since positive samples were obtained from several different establishments, this is an unlikely reason.

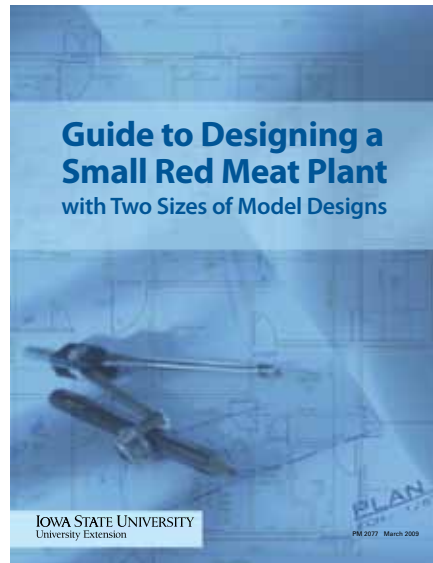


So, now that you know that *Salmonella* contamination of RTE barbecue pork is an issue of concern, what can you do about it if you're making this product?

Steve Mamber of FSIS' Office of Data Integration and Food Protection has proposed the following steps you can take to prevent *Salmonella* contamination if you're producing RTE barbecue pork:

1. Review your Hazard Analysis and Critical Control Point (HACCP) plan and all supporting documentation when addressing possible sources of *Salmonella* contamination.
2. Verify the lethality of the meat component of your product to eliminate the possibility of under-processing.
3. Verify that all Sanitation Standard Operating Procedures (SSOPs) associated with the preparation and handling of the barbecue sauce or its ingredients are implemented.
4. Verify the effectiveness of sanitation procedures to prevent cross-contamination from raw materials, from contact with other products in the production environment, or from other environmental sources or unusual traffic patterns (e.g., animal vectors, contaminated equipment, clothing, or footwear).
5. Verify the effectiveness of employee hygiene practices to prevent post-lethality contamination of the product by food handlers.
6. Test your product and ingredients, such as pepper, as appropriate for *Salmonella*.
7. For the pepper and other ingredients, determine if there are Certificates of Analysis or Letters of Guarantee that certify that these ingredients are pathogen-free.
8. Determine what (if any) antimicrobial treatments (e.g., irradiation, steam, or ethylene oxide) might have been applied to the ingredients of the sauce.

Guide to Designing a Small Red Meat Plant Now Available Through FSIS



If you have ever thought about building a small red meat plant or expanding/upgrading your existing small red meat plant, then the University of Iowa, University Extension's *Guide to Designing a Small Red Meat Plant With Two Sizes of Model Designs* might be just the resource for you.

The guide is intended to assist you in anticipating and avoiding some of the common problems associated with building, expanding, or upgrading a small scale "locker-type" meat processing plant that slaughters red meat animals, fully fabricates carcasses, and produces both raw and fully cooked processed meat products. The guide is not intended to be the sole source of information for constructing or renovating a plant, nor should the included designs be used as blueprints for construction or renovation.

The *Guide to Designing a Small Red Meat Plant With Two Sizes of Model Designs* has been reprinted with updates and is being made available by the Iowa State University, University Extension. FSIS has arranged with Iowa State University to make this helpful guide available for free to small plants and other interested persons. Copies of this publication may be ordered online at www.fsis.usda.gov/Science/HACCP_Resources_Brochure/index.asp.

Or you can fax a copy of the order form, located in the *Food Safety Resources for Small and Very Small Plants* brochure to (202) 690-6519. For further assistance, contact the Small Plant Help Desk at (877) 374-7435 or email InfoSource@fsis.usda.gov.

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9. Consider changes in the preparation of the barbecue sauce, such as heating the sauce after adding all ingredients in order to kill contaminants such as *Salmonella*.
10. Try to identify any other potential sources of process failure that could result in *Salmonella* contamination of your product.

"We encourage all establishments preparing ready-to-eat pork barbecue to review their preparation methods in order

to reduce the risk of *Salmonella* contamination," concluded Mamber.

If you do get a *Salmonella*-positive sample finding for a product at your plant, you will be required to identify the source of the *Salmonella* contamination and reassess your HACCP program accordingly.

FSIS offers a variety of helpful resources on RTE products and the prevention of *Salmonella*. If you have any questions or need additional resources or materials, contact the Small Plant Help Desk at (877) 374-7435 from 8:00 a.m. to 4:00 p.m. ET, Monday through Friday.

Commonly Asked Questions & Answers

Q. How should the lot number or production code number be applied to egg products?

A. The lot number or production code number shall be applied to each primary container and each shipping container when egg products are packaged. It must be legible and may be placed either on the label or the principal display panel of the container.

The lot number shall be shown as the consecutive day of the calendar year (i.e., the Julian date) on which the product was packaged, followed by the last digit of the year. The lot number must always contain four digits. For example, product produced on January 7, 2011, would be identified with lot number "0071" or "007-1." For product produced on July 30, 2011, the lot number would be "2121" or "212-1."

Plant management is responsible for defining the operational and cleaning procedures used to establish physically separate individual production lots for purposes of testing programs and in the event of a recall.

Requests to use alternate coding systems must be approved by the local in-plant FSIS Inspector-in-Charge (IIC) through correlation with the Frontline Supervisor. The Policy Development Division and the Labeling and Program Delivery Division (LPDD) can assist with this review, if needed. Once approved, changes to an alternate coding system cannot be made without additional review by the IIC.

Product must always be coded with the date of packaging, unless an alternate coding system approved by the IIC specifies otherwise. Record the applicable production lot number the plant uses on Form PY-203 or Form PY-159 as a permanent record of the alternate coding system. Extended shelf life claims displayed on labels are label claims and must be supported by an in-plant program that supports the claim being made. The in-plant program to support the label claim is reviewed by inspection program personnel. All egg products labels are reviewed by LPDD.

Q. Under what conditions can "wyngz" be used as a fanciful term on poultry product labeling?

A. FSIS has a standard of identity in Title 9 of the *Code of Federal Regulations* (CFR), Section 381.170(b)(7), that defines a poultry "wing." The use of the term "wing" cannot be used on any poultry product unless it complies with this standard of identity. In comparison, FSIS allows the use of the term "wyngz" to denote a product that is in the shape of a wing or a bite-size appetizer type product under the following conditions in which the agency considers its use fanciful and not misleading:

1. The statement may only reference the term "wyngz" (no other misspellings are permitted). All labels bearing the term "wyngz" need to be submitted to LPDD for sketch approval because it is considered a special statement that cannot be generically approved;
2. The poultry used is white chicken (with or without skin);
3. "Wyngz" is placed contiguous to a prominent, conspicuous, and legible descriptive name (e.g., "white chicken fritters") in the same color font;
4. The smallest letter in the descriptive name is no smaller than 1/3 the size of the largest letter used in "wyngz"; and
5. A statement that further clarifies that the product does not contain any wing meat or is not derived only from wing meat (e.g., "contains no wing meat," "with no wing meat," "contains breast meat and wing meat") is placed in close proximity to the descriptive name and linked to "wyngz" by use of an asterisk. "Wyngz" referenced elsewhere on the package (e.g., on the front riser panel) would also need to be displayed with an asterisk linking it to this statement on the principal display panel.