



The Food Safety NETWORK

3rd Quarter
2006

A quarterly newsletter from Food Safety Net Services

CAUGHT 'N THE NET

Pre-Drying Treatments For Jerky

By Dr. Gary C. Smith

For centuries, jerky was produced by Native Americans who smoked and/or sun-dried strips of meat from bison and game animals. **Because jerky is a low-moisture food, it was thought to be an unlikely source of foodborne illness.** Eight outbreaks (250 illnesses) of gastroenteritis caused by *Salmonella* or *Staphylococcus aureus* in New Mexico (between 1966 and 1995) were attributed to meat jerky. Then, in 1997, an outbreak of *Escherichia coli* O157:H7 infections was traced to venison jerky. In 2001, cumulative prevalences of *Salmonella* and *Listeria monocytogenes* in jerky produced in federally inspected plants were reported to be 0.31% and 0.52%, respectively. FSIS-USDA applies a “zero tolerance” policy for *L. monocytogenes* in ready-to-eat meat products (including jerky); products out of compliance with this policy are “adulterated.”

A series of research studies on beef jerky was conducted at Colorado State University in the past five years.

The first of those studies (1) documented that some *E. coli* O157:H7—inoculated onto strips of beef that were then marinated—survived 10 hr of drying at 155°F. The second study (2) demonstrated that: (a) dipping of beef slices into a 5% acetic acid solution (pH of 2.5) for 10 min at ambient temperature (treatment AA), followed by marination at 39°F for 24 hr and drying, or (b) dipping of beef slices into a 1% Tween 20 solution (pH of 6.6) for 15 min and then into a 5% acetic acid solution (pH of 2.5) for 10 min at ambient temperature (treatment TWAA), followed by marination at 39°F for 24 hr and drying, improved the effectiveness of the drying process in inactivating *E. coli* O157:H7 compared with the traditional jerky-making process.

Subsequent studies demonstrated comparable effects of use of treatments AA or TWAA for destruction of *L. monocytogenes* (3) and *Salmonella* (4,5) during drying and storage of beef jerky. Since then, it has been demonstrated that inclusion of an acetic acid treatment (using the same concentration of acetic acid that is in table vinegar) before marination and drying of beef jerky: (a) not only enhanced *E. coli* O157:H7 destruction but it may also be valuable in inactivating a high level of contamination when present (6), and (b) resulted in higher inactivation of *L. monocytogenes* during drying than other treatments, regardless of drying temperature (7). ■



References:

- (1) Albright *et al.* 2002. *J. Food Safety* 22:155-167.
- (2) Calicioglu *et al.* 2002a. *J. Food Prot.* 65:1394-1405.
- (3) Calicioglu *et al.* 2002b. *Food Micro.* 19:545-559.
- (4) Calicioglu *et al.* 2003a. *Intl. J. Food Micro.* 89:51-65.
- (5) Calicioglu *et al.* 2003b. *J. Food Prot.* 66:396-402.
- (6) Yoon *et al.* 2005. *Food Micro.* 22:423-431.
- (7) Yoon *et al.* 2006. *J. Food Prot.* 69:62-70.

In This Issue

- Determining Shelf-Life
- Sign Up for Our HACCP Course
- Meet Kimberly Smith
- FSNS Opens New Lab in DFW

Determining Shelf-Life

By Dr. Wendy Warren-Serna, Director of Laboratory Technical Services



Determination of a shelf-life is a critical step in the road of product development. Assignment of an accurate shelf-life period is essential to ensuring that the product is distributed, marketed and consumed prior to becoming undesirable and/or potentially hazardous to the consumer.

Product shelf-life is determined by examining a combination of organoleptic properties and overall microbial integrity. For some products, chemical qualities may also be considered based on the corresponding impact on organoleptic properties. Several factors must be considered in designing an effective shelf-life study to provide meaningful data for the evaluated product. The nature of the product, processing procedures, packaging, distribution procedures and retail display conditions are a few examples of what must be considered in developing the most appropriate approach for shelf-life determination.

An accurate shelf-life period is essential to ensuring that the product is distributed, marketed and consumed prior to becoming undesirable and/or potentially hazardous to the consumer.



Food Safety Net Services has extensive experience evaluating a variety of product types for shelf stability and can provide the type of guidance and customized service needed for implementation of effective shelf-life testing programs. Each study approach is individually developed in collaboration with our clients to ensure that all applicable product and processing variables are considered. Each study can be customized to accommodate any unique handling procedures that may be critical to the accurate determination of shelf-life.

During the evaluation period, Food Safety Net Services can provide up to date information on the overall performance of the product with regard to organoleptic properties, microbial integrity, and chemical quality as applicable. Based on real-time data, guidance from our technical staff on whether a study should be prematurely ended will also be provided. Critical to the assignment of an accurate shelf-life period, is the consideration of all data generated such that complex interplay between microbial integrity, organoleptic quality, and in some cases, chemical quality, is carefully interpreted. Upon completion of the study, a summary report containing the raw data and corresponding recommendations and conclusions will be provided based on the data interpretation. ■

To further discuss your shelf-life testing needs, please contact Wendy Warren-Serna, Director of Laboratory Technical Services at 210-340-8870 or at wwarren@food-safetynet.com.

Welcome Kimberly Smith

Food Safety Net Services is pleased to welcome Kimberly Smith as the Technical Sales Representative for the Dallas/Fort Worth area.

Kimberly joins FSNS after numerous years in the industry as a Microbiologist and a Chemist. While working in the laboratory, Kimberly gained knowledge and experience by working with different accredited methodologies, many types of laboratory equipment, and by conducting daily and monthly quality control procedures. She also has experience implementing customer service protocols in order to better meet the needs of her customers.

Kimberly graduated with a Bachelor of Science degree in Microbiology and a minor in Chemistry from the University of Texas at Arlington.

Contact Kimberly at 972-761-9707 or by e-mail at ksmith@food-safetynet.com. Please join us in welcoming Kimberly to the Food Safety Net Services family! ■

Stop By and Visit Our Booth at These Upcoming Trade Shows!

July 9-12

NTF Technical Seminar
Washington, DC

July 12-13

Safe Food Conference
Phoenix, AZ

July 19-22

Southwest Meat Association Annual Meeting
San Antonio, TX

August 13-16

IAFP Annual Meeting & Convention | Booth #901 & 902
Calgary, Alberta, Canada



It's HACCP Time!

Food Safety Net Services is offering a 2-day HACCP Course! The HACCP course is designed to educate individuals in HACCP systems development, implementation, and management. The course is ideal for Plant HACCP Team members, Plant Management Teams, Corporate Executives, and anyone whose job function will impact the facility HACCP Plan. The course is taught by a professional staff, including Dr. Gary C. Smith of Colorado State University, and is accredited by the International HACCP Alliance.

Class Details:

- When:** August 10 and 11, 2006 | 8:00 AM to 5:00 PM
- Where:** FSNS Grand Prairie Training Room
2545 114th Street | Grand Prairie, TX 75050
- Cost:** \$399 per person (Includes all course materials)



Contact Terri Pease at tpease@food-safetynet.com or 210.477.3626 for more information or to register. ■



For comments on this newsletter, please contact Terri Pease at (210) 477-3626 or newsletter@food-safetynet.com.
(888) 525-9788 www.food-safetynet.com

Our New, State-of-the-Art Lab in DFW Is Now Open!

Food Safety Net Services is proud to announce its newest, full service laboratory centrally located in the Dallas-Fort Worth Metroplex, specifically in Grand Prairie, Texas.

This state-of-the-art facility opened on June 5, 2006 and is the relocation of our Richardson, Texas laboratory. The facility boasts a large commercial test kitchen and a technologically advanced training and conference room. The centrally located media preparation area is surrounded by spacious Main, Chemistry, Pathogen, and Special Projects labs. Finally, the buildings have been wired to accept an emergency power generator that will provide confidence to our clients that their stability studies and sample analysis will not be compromised in the event of a long-term power interruption. As is the case with all of our laboratories, the Grand Prairie facility is open 7 days a week, 365 days a year in order to serve our clients with accuracy, efficiency, and unparalleled customer service.



Gina Bellinger, President of Food Safety Net Services states, "We are excited to present this outstanding facility to our valued clients as we continue to provide unequivocal technical standards and unsurpassed, individualized customer service in support of important industry issues."

We hope that you can join us in Grand Prairie on August 9, 2006 as we celebrate the opening of our new lab with a technical seminar (featuring guest speakers Dr. Elsa Murano, Dr. Gary C. Smith, Lamont Rumbergs and Dr. Linda Detwiler) followed by a cocktail reception. For the more information, see the box below in bottom left hand corner of this page. ■

For more information or to RSVP, please contact Terri Pease at tpease@food-safetynet.com or call 210.477.3626.

You're Invited!

DFW Grand Opening and Technical Seminar

* August 9, 2006 *

11:30 AM Buffet Luncheon | "Changes Needed at USDA & FDA"
Dr. Elsa Murano, Vice Chancellor and Dean of Agriculture & Life Sciences,
Texas A&M University

**1:00 PM | "Conventional, Natural, and Organic Food Products:
Do They Really Differ in Microbial/Chemical Safety and/or
Nutritional Composition"**

Dr. Gary C. Smith, Partner FSNS, University Distinguished Professor and
Holder of the Ken and Myra Montfort Endowed Chair in Meat Science,
Colorado State University

1:45 PM | "Choosing a Supplier and Business Partner"
Lamont Rumbergs, Director of US Quality Systems, McDonald's Corporation

2:30 PM | "Avian Influenza: What Are The Risks?"
Dr. Linda Detwiler

3:15 PM | Break

3:45 PM | Speaker Pending

**Laboratory Tour and Cocktail
Reception to Immediately Follow
Technical Seminar**

**Please RSVP to Terri Pease at
tpease@food-safetynet.com or
call 210.477.3626 for information.**

FOOD SAFETY NET SERVICES

Gina Bellinger
President

Dr. Gary C. Smith
Partner, Board of Directors

Dr. Shanna Boleman
Vice President, Technical Sales & Marketing

Terri Pease
Marketing Manager

Dr. Wendy Warren-Serna
Director, Laboratory Technical Services

Jim Bell
Director, Laboratory Operations

Ray Collins
Laboratory Manager, San Antonio

David Bosco
Laboratory Manager, Phoenix

Greg Schultz
Laboratory Manager, Green Bay

San Antonio Laboratory.....210-308-0675
Grand Prairie Laboratory.....972-761-9707
Phoenix Laboratory.....602-385-4030
Green Bay Laboratory.....920-465-4165

Bringing the world of food safety to you.