AMI Foundation News
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Meat And Poultry Industry's First-Ever Allergen Control Conference: *Key Points in Validating Effectiveness of Allergen Control Programs Revealed*

Recalls for undeclared allergens, concern about the potential impact of a new food allergen labeling law, and increasing customer and consumer interest in allergen-control activities drew more than 100 meat industry representatives from around the country to attend AMIF's first-ever Allergen Control Conference. The event, held in Chicago on Dec. 6 and 7, offered attendees the opportunity to learn how various meat and poultry processors have tackled this important food safety challenge. As Sara Lee's Tracie

Sheehan, Ph.D., said, "The industry benchmark for allergen control is constantly changing and we need to continually improve our programs."

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Animal Handling Conference 2006: *A Focus on Humane Practices, New Research*

Threats posed by animal rights extremists, ensuring the security of packing plants in today's world, an in-depth look at CO_2 stunning and an informative discussion of kosher and halal processing are some of the key topics discussed at the 2006 Animal Care and Handling Conference. This conference, which will take place in Kansas City on February 23 and 24, 2006, has nearly tripled in size since its launching in 1999, a testament to the growing importance of the animal handling issue in the U.S.

The conference, highly rated by past attendees, offers a mix of professional development devised by nearly a dozen trade

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Inside this issue...

Science Soundbites

Panel Creates Guidelines for Conducting *Listeria* Challenge Testing

A group of industry microbiologists and food safety professionals organized by the Food Products Association have recently developed guidelines for organizing challenge testing of foods using *Listeria monocytogenes*. Published in the November 2005 issue of *Food Protection Trends*, the article discusses considerations that should be taken into account when designing and conducting *L. monocytogenes* challenge tests, including the type and number of strains that should be used, the inoculum level, inoculum preparation and method, formulation of the product, delivery of a lethal treatment, incubation of samples, length of study, frequency of sampling and sample analyses.

Researchers believe that challenge testing using *L. monocytogenes* is useful to determine the ability of the organism to grow in a food, validate the effectiveness of growth inhibitors and to measure the degree of lethality delivered by a process intended to inactivate the organism. The guidelines provide a useful tool for food industry personnel to utilize for validating the effectiveness of various *Listeria* control programs.

Free-Range and Organic Chickens No Less Likely to Contain Salmonella

While many consumers may assume that free-range or organic chickens have a lower infection rate of *Salmonella*, recent research suggests otherwise. A study published in the November 2005 issue of the *Journal of Food Protection* and performed by USDA's Agricultural Research Service found that out of 135 processed free-range chickens, sampled from 14 different lots, from four different commercial producers, 31 percent of the chickens and 64 percent of the lots tested positive for *Salmonella*. There was no *Salmonella* detected in 5 of the 14 lots; however, in one lot, 100 percent of the chickens tested positive.

Other parts of the study included the testing of an additional 53 all-natural (no meat poultry meal or antibiotics in the feed) processed chickens from eight different lots. Of those, 25 percent of the chickens and 37 percent of the lots tested positive. Three other lots of chickens from a single organic free-range producer were tested, of which 60 percent of the individual chickens and all three lots tested positive. FSIS reports that from 2000 to 2003, commercially processed chickens had a *Salmonella* prevalence rate of 9.1 to 12.8 percent.

"Consumers should not assume that free-range or organic conditions will have anything to do with the *Salmonella* status of the chicken," the report said.

Study Compares Pig Production Systems; Finds Equal Levels of Resistant *C. coli*

A study by the College of Veterinary Medicine at North Carolina State University found that there is a high prevalence of antimicrobial-resistant *Campylobacter coli* in both conventional and antimicrobial-free (ABF) pig production systems. The study, which compared the two types of swine production and was published in the November 2005 issue of the *Journal of Food Protection*, discovered significantly higher levels of *C. coli* on ABF farms (77.3 percent) than on conventional farms (27.6 percent) among pigs at the nursery stage.

The *C. coli* isolates were tested for susceptibility to six antimicrobials and resistance was most prevalent against tetracycline (56.2 percent) and erythromycin (34.5 percent). Resistance was significantly

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Ongoing AMIF Research - *E. coli* O157:H7

Investigator	Institution	Project Title	Timeline
Mohammed Koohmaraie[a]	USDA-ARS – Meat Animal Research Center	Beef Carcass Surface Irradiation	Two years
John Scanga, J.N. Sofos, K.E. Belk, G.C. Smith	Colorado State University	Use of Warm (55°C) 2.5% or 5.0% Lactic Acid for: (A) Reducing Microbial Counts on Beef Subprimal Cuts and Beef Trimmings Following Fabrication, and (B) Reducing Incidence of *E. coli* O157:H7 in Combo-Bins of Beef Trimmings and Inside (in the interior) Beef Cuts Subjected to Blade/ Needle or Moisture-Enhancement Tenderization	One year
Rowland Cobbold[1], Tom Besser[1], Dale Hancock[1], Janice Berg[2, b]	[1]Washington State University, [2]Lakeside Research	Role of Super-shedders in Determining Feedlot Pen Prevalence of *E. coli* O157:H7	One year
Randall Phebus, James Marsden, Carlos Arturo Tanus	Kansas State University	Elimination of *Escherichia coli* O157:H7 and *Salmonella* spp. on Beef Trimmings Prior to Grinding Using a Controlled Phase Carbon Dioxide System: Process Validation and Quality	One year

Ongoing AMIF Research - *E. coli* O157:H7

Investigator	Institution	Project Title	Timeline
Kumar Venkitanarayanan, Cameron Faustman, David Dzurec	University of Connecticut	Inactivation of *Listeria monocytogenes* on Ready-to-Eat Meat Products (Deli Turkey Breast and Frankfurter) by Monocaprylin	Two years
Peter Muriana, J. Roy Escoubas	Oklahoma State University	Pre- and Post-package Pasteurization of RTE Meats for Reduction of *Listeria monocytogenes*	18 months
Charles Carpenter, Jeff Broadbent	Utah State University	Anti-*Listeria* Action of Levulinate	Two years
Kathleen Glass, James Claus	University of Wisconsin	Controlling *Listeria monocytogenes* on Ready-to-Eat Meat and Poultry Products using Food-Approved Antimicrobials	15 months

To view status reports for these projects, visit www.amif.org.

First-Ever Allergen Control Conference

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Speakers shared their first-hand experience in developing and implementing allergen control programs, emphasizing the role of GMPs, operational strategies like scheduling, label control, change-over sanitation and allergen-savvy approaches to new product development and reformulation. Validating change-over sanitation procedures is an especially critical activity in controlling allergens.

Sue Hefle, Ph.D., co-director of the Food Allergy Research and Resource Program (FARRP) at the University of Nebraska, kicked off the conference with up-to-date scientific information on food allergens, the nature of food allergies, and the public-health impact of food allergies. She also addressed ingredients such as tartrazine and MSG that are linked to food idiosyncrasies.

Robert Post, Ph.D., of the FSIS Labeling and Consumer Protection Staff told participants how FSIS approaches labeling of meat and poultry products containing allergens or other "ingredients of public health concern." He clarified that processing aid declarations can be made only by FSIS. An establishment that applies a soy lecithin-based belt release agent, for example, must submit that information to FSIS with the label submittal. FSIS will then determine whether soy lecithin is used as an ingredient or a processing aid. Dr. Post also reminded participants that FSIS Notice 72-05 identifies conditions under which an establishment can utilize existing label inventory for products made using soy lecithin or wheat starch as an undeclared release agent without applying for temporary approval.

The greatest immediate impact of the new Food Allergen Labeling and Consumer Protection Act (FALCPA) on meat and poultry processors will probably be seen on incoming ingredient labels, cautioned Jennifer Johnson, Ph.D., of Bodendorfer-Johnson LLC. The law, which applies directly to FDA inspected facilities and becomes effective on January 1, 2006, will require that the sources of major food allergens be listed using commonly understood terms. For example, sodium caseinate labels will have to identify that ingredient as being derived from milk. Johnson urged participants to "carefully check incoming ingredient labels against finished product labels because many ingredient suppliers are changing their labels to comply with the new law, and manufacturers need to carry those ingredient changes over to their product labels."

Extensive question and answer sessions were one highlight of the conference. Regarding the value of the conference, one attendee noted, "Who better to learn from than industry colleagues who have faced many of the same challenges we do?!" Another attendee noted, "Regardless of company size or your place on the allergen-control continuum, this was a well spent day and a half. The meeting pulled together the right mix of subject matter experts from industry, academia and government who provided hands-on, 'this is how we did it,' presentations and case studies from [the] trenches."

The conference was sponsored by the AMI Foundation, in cooperation with FARRP and Bodendorfer-Johnson LLC. The FARRP (www.farrp.org) is a partnership between academia and the food industry formed to provide research and resource tools to the food industry. It is the worldwide leader in training and educating the food industry on allergen awareness. Bodendorfer-Johnson LLC is a food safety consulting firm in Glendale, Wisconsin. The company assists food manufacturers, distributors, and chain accounts in developing and implementing allergen control programs and other food safety programs. For more information, visit their website at www.foodintegrity.net.

IMAWRC

Bringing a special focus on research at this year's conference will be the International Meat Animal Welfare Research Conference (IMAWRC). The IMAWRC is co-sponsored by the AMI Foundation and the Federation of Animal Science Societies and is held on Wednesday, February 22. The conference precedes the Animal Care and Handling Conference and will explore the most recent research covering production, transport, handling and processing of both cattle and pigs.

The keynote address at this year's event will be given by Paul Hemsworth, Ph.D., Professor at the University of Melbourne. He will address the knowledge, attitudes and the impact of human behavior in livestock settings. Other sessions will include, but are not limited to:

- Genetics: Breeding for Desirable Behavior
- Housing and Environmental Conditions for Cattle
- Transportation, Loading and Unloading Pigs
- Cattle Stunning – Alternative Methods – Review of the Literature
- Animal Handling and Meat Quality

Other issues covered at the conference include housing and environmental conditions for cattle and pigs, stunning, and the relationship between animal handling and meat quality.

For a full copy of the agenda, visit www.meatami.com and navigate to the Events/Education tab.

Researchers Have Unexpected Find Looking for Pre-Harvest *E. coli* 0157:H7 Treatments

Escherichia coli O157:H7 is a major foodborne illness in the United States. In an attempt to reduce the number of human illnesses resulting from *E. coli* O157:H7, researchers at the University of Wisconsin-Madison, in a study funded by AMIF, looked to egg yolk anti-O157:H7 immunoglobulin to clear *E. coli* O157:H7 from the intestinal tracts of cattle.

The original hypothesis of the study was to control *E. coli* O157:H7 in fresh beef products by intervening at the pre-harvest level. Currently, most control practices are applied at the processing level with the most common treatments to remove visible fecal contamination from the carcass with hot water or acid washes and steam treatment. While there has been widespread implementation of these practices that have helped meet government goals to reduce foodborne illnesses earlier than expected, there continues to be a number of recalls and beef-associated illnesses deriving from *E. coli* O157:H7. The principle investigator, Charles W. Kaspar, Ph.D., believes that further reduction in the prevalence of *E. coli* O157:H7 will likely require intervention at a different point along the farm-to-consumer continuum.

The study, which originally used the binding of immunoglobulin to *E. coli* O157:H7 to inhibit the bacterium's ability to survive and compete with native microbial flora, produced minimal results. However, researchers had an unexpected finding that chitosan, used as a carrier to protect the immunoglobulin through the digestive process and into the lower intestinal tract, where the immunoglobulin was expected to have an effect, resulted in a reduction of *E. coli* O157:H7 during the period of antibody administration. Shedding, the process of excreting *E. coli* O157:H7 in feces, in control

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AMIF/AMSA 2005 Meat Industry Research Conference Well Attended Attendees Rate Allergens, Food Defense and Organic Seminars Highest

Food Defense, Allergens, and Natural and Organic opportunities were among the most highly rated sessions by the nearly 170 attendees at the 2005 Meat Industry Research Conference (MIRC). The conference, jointly sponsored by the American Meat Science Association and the AMI Foundation (AMIF) was held on October 25 and 26 in Chicago, in conjunction with the 2005 Worldwide Food Expo.

Food allergen ingredient labeling continues to be an important issue at many industry and government meetings as regulatory agencies move to increase inspection. The three speakers gave their analysis of the issues from the perspective of the consumer, regulatory agency and process control viewpoints.

As the fastest growing segment of retail stores, experts unveiled the government standards for natural organic foods and analyzed possible changes on the horizon. Attendees were also educated on the production and processing differences between natural organic and conventional products, and how organic foods are verified.

Dave Carter, Executive Director of the National Bison Association and Principal at Crystal Springs Consulting discussed the "emerging organic marketplace," and noted that the top motivators behind consumers choice to purchase organic was "health/ nutrition (66 percent), taste (38 percent), food safety (30 percent) and the environment (26 percent)." Carter noted that sales in organic meat and poultry have skyrocketed in 2002-2003, growing nearly 75 percent. As a result, natural and organic product stores have average sales increases of nearly 9 percent, with the global organic market growing by nearly 15 percent.

On the heels of September 11, 2001, government food security efforts have focused on three areas: food supply and agricultural production, USDA facilities, and government emergency preparedness. Key meat industry executives described how regulatory requirements impact meat operations. Tips were also provided on protecting against threats ranging from food contamination to the physical security of plants and personnel.

With a mission to "prevent, prepare for and coordinate a response to an intentional attack on the food supply and large scale emergencies," Dan Vitiello, Director of USDA's Animal and Plant Health Inspection Service's (APHIS) Scientific and Technical Support Staff's Office of Food Defense and Emergency Response unveiled the various strategies the federal government was taking towards food security. Vitiello explained that FSIS's strategy involved promoting "model food security plans" to companies as a "starting point" for development of facility-specific plans. FSIS is currently analyzing model security plans for meat and poultry processing facilities and slaughter operations.

Spearheading the discussion on the USDA's newly unveiled 2005 "MyPyramid" was Eric Hentges, Ph.D., Executive Director of USDA's Center for Nutrition Policy and Promotion. Hentges explained that "MyPyramid" promotes the idea of consuming "a variety of nutrient-dense foods and beverages within and among the basic food groups" while limiting the intake of saturated and trans fats, cholesterol, added sugars, salt and alcohol. The other side of the equation introduced by the new icon as part of an overall healthy lifestyle was "behavior change," which Hentges called the "real issue." This entails constructing food patterns that meet personal goals by first

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Data Suggests Antimycotic Agents Can Prevent *Listeria* Growth in Cured Processed Meats

In an attempt to find ways to control *Listeria monocytogenes* in processed poultry and meat products, researchers at the Food Research Institute at the University of Wisconsin-Madison found that combinations of food-approved antimicrobials can prevent growth of *L. monocytogenes* in cured processed meats.

In a two phase study funded by AMIF, researchers Kathleen Glass, Ph.D. and co-workers, used both traditional and natural antimicrobials, including diacetate, lactate, sorbate, benzoate, propionate, polyphosphates, organic acid blends, nisin, monolaurin, ascorbic acid, lysozyme and several plant extracts to determine those, if any, that would be effective in controlling the growth of *L. monocytogenes* in processed poultry and meat products.

In phase one of the project, over 60 treatments with food-approved antimicrobials (alone or up to three combined) were screened for antilisterial properties in slurries prepared with 25 percent uncured turkey or cured wiener batter. Adjustments of the slurries' pH were made and then the mixture was pasteurized by heating to 65 C for ten minutes, cooled to 4 C and inoculated with a five-strain mixture of *L. monocytogenes*.

The results of phase one demonstrated that *L. monocytogenes* did not grow in the wiener or turkey slurries supplemented with 0.25 percent potassium sorbate, propionic acid or benzoic acid when stored at either 4 or 10 C. Nisin alone reduced the bacteria within ten minutes of inoculation, but resistant populations increased during the four week storage period. Combining nisin and diacetate prevented recovery of *L. monocytogenes* at 4 and 10 C in both meat types. Some treatments, including those with sorbate, propionate, benzoate, commercial organic acid blend, natural extract blend, commercial lactate diacetate blend with polyphosphates and diacetate nisin blend prevented growth in wiener slurries, but not in the uncured turkey slurries.

Phase two of the study evaluated uncured turkey and cured beef/pork bologna manufactured with low levels of sorbate, propionate and benzoate. Three treatments of both products were formulated. The first was a control with no antimycotics. The second was a combination of sodium benzoate and sodium propionate and the third was a combination of sodium benzoate plus potassium sorbate. The ingredients were mixed, stuffed into moisture-impermeable casings, cooked to an internal temperature of 73.9 C, chilled, sliced and inoculated with *L. monocytogenes* and stored at 4 C.

Data from phase two revealed that *L. monocytogenes* growth was prevented with a combination of benzoate/propionate or benzoate/sorbate on the bologna stored at 4 C for 91 days compared with the increase in the control bologna without antimycotics. The uncured turkey with 0.1 percent antimycotics supported an increase in listerial populations at two weeks storage; however, the control product without antimycotics supported twice as large an increase during the same time period.

While the data does suggest that antimycotic agents can prevent listerial growth in cured processed meats, the researchers believe that combined levels may be required to prevent growth of the pathogen on uncured poultry and additional research is needed in that area.

AMI Supports Efforts of FDA to Protect Industry from BSE

The American Meat Institute (AMI) filed comments in December to support the Food and Drug Administration's (FDA) efforts to strengthen existing safeguards by removing certain risk materials from animal feed while minimizing the economic and environmental concerns associated with the disposal of all specified risk materials (SRM). AMI stated that, "we support the FDA's decision to abandon its earlier efforts to prohibit all known SRMs from animal feed and pursue a more rational course of action to remove the potentially most infectious materials." Almost 90 percent of the infectivity in an infected animal is contained in the brain and spinal cord.

The FDA proposal would prohibit in animal feed the brains and spinal cords from cattle 30 months of age and older, the brains of spinal cords from cattle of any age not inspected and passed for human consumption and the entire carcass of cattle not inspected and passed for human consumption if the brain and spinal cord has not been removed.

AMI also discussed the following points.

- The FDA has a legal obligation to enforce their regulation and should not, by any means, reduce their effort to achieve full and complete compliance with the regulations as they provide much protection against the spread of BSE.

- A combination of risk mitigation measures will be effective and less costly than banning all SRM from animal feed. The absolute elimination of all risk is neither a rational public policy position nor is it feasible. The FDA must clearly define what will constitute an acceptable level of brain and spinal cord removal.

- Affected government agencies and the industry should cooperate to develop a comprehensive plan to safely dispose of SRM and dead stock before the subject proposal is implemented.

- Any new regulations must be cost effective.

- Definition of cattle not inspected and passed must be clarified to include only cattle that do not pass ante mortem inspection. Currently, a literal interpretation would require all rendered products be diverted from the animal feed supply because parts of cattle not inspected and passed would be commingled with parts of inspected and passed cattle.

AMI also urged FDA to maintain uniform, harmonized feed regulations in North America. AMI said full harmonization of feed regulations in the U.S. and Canada is by far the best approach to maintain the viability and strengthen the North American beef industry.

To read the comments filed visit www.meatami.com/FDAfeedbancomments1220.pdf.

Improvement of Lethality Spreadsheet May Help Processors

With the goal of solving current problems with calculating and validating process lethality, three researchers at Michigan State University, in a study funded by AMIF, analyzed ways to improve the American Meat Institute's Process Lethality Spreadsheet (AMI-PLS). The investigators, Bradley P. Marks, Ph.D., Alden M. Booren, Ph.D., and Elliot T. Ryser, Ph.D., looked at creating a more user-friendly product that would also improve the accuracy and validity of results, especially with ready-to-eat products. While the existing tools have been helpful, the investigators of this project believe that existing tools can be improved to satisfy federal regulations requiring producers of ready-to eat meat and poultry products to validate safety.

The study found three key points to improve the current modeling program. The first, the user must provide values for *Salmonella* at a reference temperature. Users would need to have the ability to generate their own thermal inactivation parameters specific to their product, but the researchers do not believe most would be able to. Second, the spreadsheet does not generate confidence intervals for predicted lethality, thus giving a false impression of accuracy for the results. Third, the spreadsheet fails to directly calculate log reductions, requiring the user to use knowledge they would not necessarily have.

To improve the document, the investigators used 58 poultry and 28 beef data sets to define parameters and were then integrated directly into the AMI-PLS. The data sets included all first-order, second-order and two-term interaction terms. Temperature, fat content and moisture content acted as independent variables. After the user adds information about product characteristics, the AMI-PLS calculates and utilizes product specific information.

The modified AMI-PLS includes the development of a user-friendly front-end for input of product attributes, integration of the new generalized model and direct calculation and confidence interval for log reduction and calculations. Researchers believe that the updated version of the AMI-PLS should be available for distribution within the next two years. However, before that is possible additional data sets or advanced statistical simulations, or both, are needed to narrow confidence intervals, improve model accuracy and validate the model with independent data.

AMIF/AMSA 2005 Meat Industry Research Conference

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determining energy needs and then setting nutrient goals to meet those needs.

The planning committee for this event included: Jason Apple, Bruce Frankland, Bucky Gwartney, Ron Jenkins, Jerry Leising, Xingchu Li, Carol Lorenzen, Ed Mills, Gerry Weiss, Dwain Pilkington, Randy Huffman and Thomas Powell.

To view presentations from the event, visit www.meatami.com, navigate to the Events/ Education menu, select AMI Educational Conference Presentations and Meat Industry Research Conference (MIRC).

FSIS Funds More Than $2.5 Million in Cooperative Agreements

The Food Safety and Inspection Service (FSIS) announced in November that it has awarded more than $2.5 million in cooperative agreement projects during the 2005 fiscal year. Recipients include academic institutions, non-profit organizations and federal and state government agencies.

FSIS believes the cooperative agreements will support efforts to seek new ideas and strategies to reduce foodborne illnesses associated with meat, poultry and egg products and by protecting the food supply from intentional acts of contamination. Work developed through these agreements, once completed, will be available for public use.

Recipients of the agreements include projects proposed by the Hawaii Department of Health, Texas Tech University and the Association of Food and Drug Officials. The agreements support five areas of study including:

- 18 projects to support integration of data at the federal, state and local level to augment the food defense capability of the Food Emergency Response Network;
- 10 projects to support applications of new technologies to allow small and very small establishments produce safer products;
- Eight projects to support improvements in food animal production, transportation and marketing;
- Eight projects to support retail stores and food establishments under state, local or tribal regulations process and handle meat, poultry and egg products; and
- Five projects to support small and very small federally and state-inspected establishments to improve food safety training and education.

A list of all cooperative research agreements is available online at the FSIS website. The address is www.fsis.usda.gov/About_FSIS/Cooperative_Agreements/index.asp.

Animal Handling Conference 2006

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associations. In an effort to satisfy the needs of the diverse crowd attending the event, the conference is divided in various tracks:

The Management and Policy Track: Ideal for those responsible for "big picture" management of animal handling and welfare. This track addresses key strategies for managing change, and sometimes controversy, as well as issues associated with animal auditing to ensure welfare and plant security.

The Applied Pig Handling and Cattle Handling Track: Offers attendees an in-depth instruction on a wide variety of issues that are species specific. Leading experts will offer advice and strategies on a range of issues including stunning, animal transportation and issues related to religious slaughter.

For a copy of the agenda, visit www.meatami.com/Education/AnimalHandling/AHAgendaDEC5.pdf

Science Soundbites

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higher among conventional herds than with ABF herds. Also found on both types of farms was a resistance to ciprofloxacin and multi-drug-resistant strains (7 percent for conventional farms and 4 percent for ABF farms).

According to the study, the findings have considerable implications for the persistence of antimicrobial-resistant *Campylobacter* in pig production systems, regardless of the levels of antimicrobial use.

Improvements to E. coli Recovery Methods Studied

Methods developed by scientists in the Meats Research Unit (MRU) of USDA's Meat Animal Research Center, housed within the Agricultural Research Service, to detect *E. coli* O157:H7 in samples from cattle carcasses, hides, and feces have been widely cited in the published literature and are often used in research projects aimed at evaluating this pathogen in cattle and beef. MRU scientists conducted additional studies that were published in the November 2005 *Journal of Food Protection* to further evaluate and refine these techniques.

The sensitivity of the MRU methods for recovering cells from inoculated and uninoculated samples was determined and potential improvements were evaluated. The data presented in the study indicates that the MRU methods are highly effective at recovering injured *E. coli* O157:H7 from fecal, hide and beef carcass samples. In addition, the researchers found that modifications can be added to increase the sensitivity.

New Predictive Models Should Improve Pathogen Control

Researchers used organic acid salts, including sodium lactate, sodium diacetate, potassium benzoate, potassium sorbate and their combinations, as potential inhibitors for *Listeria monocytogenes* growth on frankfurters to determine how typical predictive models of *L. monocytogenes* compare to bacteria growth under these conditions.

Sigmoidal equations, including logistic and Gompertz equations, are widely used to describe bacterial growth. For this study, the researchers found that the reparameterized Gompertz model fit better to *L. monocytogenes* growth data compared to other models included in the study. The reparameterized model allows for a quantity to be estimated from data to determine any effect treatment will have on maximum population density rather than a fixed value for the maximum number of organisms.

The authors of the study, published in the November 2005 issue of the *Journal of Food Protection*, suggest that the study will provide practical methodology for hazard characterization of microbial pathogens on ready-to-eat meat.

Pre-Harvest *E. coli* 0157:H7 Treatments

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cattle also decreased during the same timeframe. To study this unanticipated observation, researchers tested the use of chitosan microparticles in control animals and observed a reduced amount of shedding and led to a crossover study to address the impact of chitosan feeding. Chitosan had a statistically significant effect on shedding, however, additional research is needed to evaluate the optimal level of chitosan in feed, the impact of preparation method and form, the effectiveness in field environments and the influence of chitosan feeding on animal production.

Calendar of Events

For additional information on any of these events or to register, please visit our website, www.meatami.com and navigate to the Events/ Education link.

International Meat Animal Welfare Conference

When: **February 22, 2006**
Where: Sheraton Overland Park Overland Park, Kansas
What: The new, educational opportunity for animal scientists, veterinarians and academicians to hear about the latest research in animal handling and welfare; there will also be a poster session.
Contact: To register, contact Katie Brannan at 202-587-4223 or kbrannan@meatami.com

Animal Care and Handling Conference

When: **February 23 – 24, 2006**
Where: Sheraton Overland Park Overland Park, Kansas
What: A mix of trend information and ideas for implementing change and improvement at the plant level. Conference attendees will break into concurrent sessions for in-depth instruction by species. Leading academic experts in the field will offer instruction.
Contact: To register, contact Katie Brannan at 202-587-4223 or kbrannan@meatami.com

Annual Meat Conference

When: **March 12 – 14, 2006**
Where: Gaylord Texan Resort and Convention Center, Dallas, TX
What: Receive practical information on topics such as diet strategies, meat marketing and marketing and labeling. Participate in motivational and interactive general sessions by industry experts designed to improve your business. Choose from store tours and popular events such as the Product Tasting Reception and the Tech Fair Luncheon.
Contact: For information, contact Marie DeLucia at 202-587-4228 or mdelucia@meatami.com

Worker Safety, Health and Human Resources Conference

When: **April 9 – 11, 2006**
Where: Hyatt Regency Denver at Colorado Convention Center
What: Leading experts in worker safety will provide authoritative, practical instruction. Conference also features the AMI/National Safety Council Worker Safety Awards Program dinner.
Contact: For information, contact Marie DeLucia at 202-587-4228 or mdelucia@meatami.com

2006 Innovation Showcase & Convention

When: **October 4 – 5, 2006**
Where: Westin Diplomat Resort, Hollywood, FL
What: The AMI Annual Convention and Innovation Showcase is your only opportunity in 2006 to gain the latest insights and perspectives on the meat and poultry industry. You will have a chance to visit with some of the most creative companies in the industry at the Innovation Showcase. This convention is the perfect place to discuss the future of the industry with those that will help to create it!
Contact: For more information, contact Laura Quartuccio at 202-587-4242 or lquartuccio@meatami.com

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