AMI Foundation News
A quarterly update on research, education and information

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Inaugural Beef Baccalaureate Wins High Praises

Media Given Invaluable Insight into Meat Industry

A group of 12 broadcast and print reporters received a hands-on education and an "insider's" look at the beef industry at the inaugural Beef Baccalaureate program held in Lubbock, Texas. The program, which was sponsored by AMI and National Cattlemen's Beef Association and hosted by Texas Tech University, featured an interactive lecture series by several Texas Tech professors as well as industry experts in meat science.

The AMI Foundation's Dr. Randall Huffman gave reporters a broad overview of the beef industry on the first day, laying out the size and scope of the industry. "Since there is nearly one cow in the U.S. for every three people, and myriad beef and beef derived products in the marketplace, issues that impact the beef industry can have a significant impact on the U.S. economy," said Huffman.

Dr. Mindy Brashears, professor at Texas Tech, followed with a discussion of advancements in research on pathogen interventions aimed at enhancing meat safety.

Dr. Brashears noted that many of the reporters assumed that good management practices in the feedlots had an impact on food safety. The facts, however, show that feedlot management practices have not been

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Combinations of Antimicrobials to Control Growth of *Listeria monocytogenes* in RTE Meat and Poultry

University of Wisconsin Food Research Institute Study Yields Encouraging Results

In an ongoing AMIF-funded study, University of Wisconsin researchers have reported that certain combinations of antimycotic agents, specifically sorbate, propionate and benzoate, may provide ready-to-eat meat and poultry processors with new and viable options to control *Listeria monocytogenes (Lm)*.

The project was divided into two phases. In the initial phase, 65 combinations of food-approved antimicrobials were screened for anti-*Listerial* activity in slurries prepared with uncured turkey or cured wiener batter. Antimicrobials evaluated, alone or in combination, included diacetate, lactate, nisin, monolaurin, polyphosphates, sorbate, benzoate, propionate, ascorbic acid, several plant extracts, organic acid blends, and lysozyme. Of all the classes of antimicrobials tested, the antimycotic agents, sorbate,

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Science Soundbites: A review of recent research

Little Difference Found in Micro Profile of Ground Beef from Conventional Cattle Versus Cattle 'Raised Without Antibiotics'

Little difference was found in the microbiological profiles of ground beef derived from conventionally-raised cattle and those claimed to be raised without antibiotic agents in a study conducted by Ohio State University's Food Animal Health Research Program. The only significant variation was resistance to the antibiotics ceftiofur and chloramphenicol. Antibiotic level in beef from conventionally raised cattle was at 18 and 30 percent, respectively; the level in beef with no antimicrobial agents was at 5 and 12 percent, respectively.

This research was conducted by Jeffrey T. LeJuene and Nicholas Christie of Ohio State University. According to the researchers, without an effort to reduce the dissemination of antimicrobial-resistant bacteria among live animals and to limit bacterial cross-contamination during slaughter and processing, cessation of antimicrobial use during final stages of beef production will have little impact on the prevalence of antimicrobial-resistant bacteria contaminating ground beef.

This study was published in the *Journal of Food Protection*, July 2004.

Lm Control Procedures are Key in Retail Operations, New Research Finds

Researchers from Cornell University and New York State agencies have teamed up to study the ecology and transmission of *Listeria monocytogenes (Lm)* in retail establishments.

The study concludes that the implementation of *Listeria* control procedures in retail operations, which process and handle products that permit the growth of *Lm*, are critical.

Martin Wiedmann, et al, Department of Food Science, Cornell University, worked with members of the New York State Department of Agriculture and Markets (NYSDAM), New York State Department of Health, New York City Department of Health and Mental Hygiene to gain further understanding of *Lm* contamination and transmission in retail operations.

The goal of this study was: 1) to use molecular subtyping of *Lm* isolated from food and retail establishments to investigate the ecology and transmission of *Lm* in retail environments; and 2) to compare *Lm* subtypes isolated from foods with those from human cases over the same time period and in the same region.

The food and environmental isolates were divided into 29 and 10 ribotypes, respectively. Evidence for the persistence of one or more strains of *Lm* was found in 16 of the retail isolates. Human isolates were divided into 48 ribotypes. Analysis found that two ribotypes from the food isolates were more common when compared with those of the human isolates. Of the human isolates, 17 ribotypes were also found in the food and environmental isolates.

This full article, 'Distribution of *Listeria monocytogenes* Molecular Subtypes Among Human and Food Isolates from NY State Shows Persistence of Human Disease-Associated *Listeria monocytogenes* Strains in Retail Environments' can be found in the *Journal of Food Protection*, July 2004.

Literature Review of *Clostridium perfringens* Growth During Cooling of Cooked Meat Products

A recent review paper written by scientists Peter Taormina and Warren Dorsa points out that the critical factors in experimental design must be considered when determining the growth level of *Clostridium perfringens (C. perfringens)*. The review analyzes published research on the growth of the pathogen during the cooling of cooked meat products.

The issue of *C. perfringens* growth during cooling is an ongoing operational and regulatory challenge for ready-to-eat meat and poultry processors. Variation in experimental design can have a dramatic impact on the interpretation and conclusions, which may lead to unrealistic assumptions about *C. perfringens* growth. Regulations based on these unrealistic assumptions have lead to the inappropriate destruction of wholesome meat and poultry products, the study concluded.

This study reviewed research that varied in approach, methodology and meat product each producing different outcomes.

The full report is published in The *Journal of Food Protection*, July 2004.

Ongoing *E. coli* O157:H7 Research Projects

Investigator	Institution	Project Title	Timeline
Alison O'Brien	Uniformed Services University of the Health Sciences	*E. coli* O157:H7 Intimin Expressed by Transgenic Plant Cells as a Candidate Oral Vaccine for Cattle	Three years
Michael Doyle	University of Georgia	Methods to Control *E. coli* O157:H7 in Drinking Water for Cattle	Two years
Chobi DebRoy	Pennsylvania State University	Competitive Exclusion of *Escherichia coli* O157 using Non Pathogenic Colicin Producing *Escherichia coli* Strains	One year
Charles Kaspar	University of Wisconsin	The Use of Egg Yolk Anti-O157:H7 Immunoglobulin to Clear *E. coli* O157:H7 from the Intestinal Tracts of Cattle	Two years
Mohammed Koohmaraie	USDA-ARS – Meat Animal Research Center	Beef Carcass Surface Irradiation *	Two years
Ann Marie McNamara	Silliker Laboratories	Comparison of Rapid Test Methods and Validation of Composite Sampling for Detection of *Escherichia coli* O157:H7 in Raw Beef Trims and Raw Ground Beef *	Five months
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
Kumar Venkitanarayanan	University of Connecticut	Inactivation of *Escherichia coli* O157:H7 in Drinking Water of Cattle by Sodium Caprylate	One year

Ongoing *Listeria monocytogenes* Research Projects

Investigator	Institution	Project Title	Timeline
Michael Doyle	University of Georgia	Recovery, Development and Validation of Appropriate Surrogate Microorganisms in Meat and Poultry Emulsions for In-plant Critical Control Point Validation Studies	Two years
Michael Doyle	University of Georgia	The Role of Aerosols in Transmission of Microorganisms (including *Listeria*) to Ready-to-Eat Meat/Poultry Products	Two years
ILSI Steering Committee	International Life Sciences Institute	Expert Scientific Review Panel on *Listeria monocytogenes* In Foods	18 months
Eric Johnson and Kathleen Glass	University of Wisconsin – Madison	Intervention Strategies: Control of *Listeria monocytogenes* in Processed Meat and Poultry by Combinations of Antimicrobials	Two years
Bradley Marks, Alden Booren and Elliot Ryser	Michigan State University	Verifying and Improving the Utilization of Microbial Pathogen Computer Models for Validating Thermal Processes in the Meat Industry	Two years
John Sofos, Ioanna Barmpalia, Patricia Kendall, Keith Belk, John Scanga, Gary Smith	Colorado State University	Comparison of Use of Activated Lactoferrin with Use of a 'Gold Standard' Combination/ Concentration of Antimicrobials for Post-Processing Control of *Listeria monocytogenes* in Ready-to-Eat Meat Products	One year
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
Barbara Petersen, Leila Barraj	Exponent, Inc.	FSIS Risk Assessment for *Listeria monocytogenes* in Deli Meats	One year

* Funded jointly by the Cattlemen's Beef Board and the AMI Foundation.

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proven to have an impact on the spread of *E. coli* O157:H7, she noted. "Feedlots may be able to implement interventions such as direct fed microbials that have been shown to reduce the number of cattle shedding *E. coli* O157:H7 in research trials," she said.

Eddie Griffis, agricultural director for Lubbock's KFRE radio, said that the lectures left him convinced that "we have the safest food source and the most humane treatment of animals in the world."

The afternoon session was a hands-on event at Texas Tech's meat lab, where reporters participated in and learned about new methods of fabrication aimed at enhancing the value of the beef carcass. Reporters participated in a sensory evaluation of various cuts of beef and discussed and examined the newest technologies in retail meat packaging.

The second day kicked off with a plant tour of Excel's beef processing plant in Plainview, Texas, headed by the plant manager, Jim Rathke. Reporters were treated to a complete tour of the plant, which processes as many as 4,800 head of cattle per day. At that pace, the plant fabricates more than 32,000 boxes or 60 to 70 truckloads of beef every day. For food safety reasons, the tour started at the back of the plant, where beef is boxed, to the front of the plant, where live cattle walk into the facility. "The respectful and humane treatment of the cattle was outstanding," noted Larry Dreiling, a senior field editor with the *High Plains Journal*.

The state of the art facility contains some of the newest technologies in the industry such as video image analysis for assessing quality and yield grade, hide cleansing technologies, advanced fecal detection methods and the latest in carcass decontamination techniques.

Milford Prewitt, national affairs editor of the *Nation's Restaurant News*, a leading publication serving the restaurant industry, left the packing plant assured that beef being delivered to restaurants is not only safe and healthy, but of the highest quality available anywhere on the globe.

"I think every restaurateur whose menu features beef, even if it's just an occasional item in a seafood restaurant, would be comforted to know the extent to which conscientious manufacturers are using dollars, science and training to assure that the American dining public gets the safest, highest-quality beef products ever," Prewitt said.

That afternoon was spent at Caprock Feed Yard in Lockney, Texas. Reporters toured the facility with the feed yard manager and discussed methods for feed formulations, cattle purchasing specifications, environmentally-friendly waste management and health and welfare monitoring of the resident cattle.

The event allowed both animal science professors and industry professionals to explore and explode many of the myths harbored by members of the press about the meat industry.

Our New Address

We're moving October 8!

1150 Connecticut Ave, NW
12th floor
Washington, DC 20036
P: (202) 587-4200 • F: (202) 587-4300

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AMERICAN MEAT INSTITUTE

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BSE Update: Expanded Surveillance Program Running Smoothly

Not a single cow has tested positive for BSE since USDA's Food Safety and Inspection Service (FSIS) began its expanded BSE surveillance program on June 1, 2004. Since that date, more than 60,000 cattle have been tested. Under the enhanced program up to 268,000 animals will be tested over an 18-month period, allowing the detection of BSE at a rate of One positive in 10 million adult cattle with a 99 percent confidence level. In other words, the enhanced testing program could detect BSE even if there were only five positive animals in the entire country.

The expanded surveillance program, announced by Agriculture Secretary Ann M. Veneman in March, comes on the heels of recommendations made by an international scientific review panel.

"We are committed to ensuring that a robust U.S. surveillance program continues in this country," said Veneman when the expanded surveillance program was announced.

Twice within the first five weeks of the expanded testing program, the USDA publicly announced that a cow had tested "inconclusive" for BSE after one rapid screening test. In both instances, the animal confirmed negative for BSE after undergoing confirmatory testing using immunohistochemistry (IHC), which is recognized internationally as the gold-standard for BSE testing. The media coverage that quickly enveloped the announcement caused an uproar and high anxiety throughout the industry, leading many to protest the announcement of preliminary test results, charging it would depress cattle prices and cause undue public concern.

AMIF President Jim Hodges noted that the public release of preliminary test results was "unprecedented" at USDA, and urged the department to stop releasing test results before the findings were confirmed. "We're again calling on USDA to reconsider its unprecedented decision to announce inconclusive test results," he said. "While we appreciate the USDA's transparency in the disclosure process, we believe that dribbling out this kind of information before it can be authenticated is simply not good public policy and not good science," Hodges added.

On Aug. 4, APHIS Chief Veterinarian John Clifford rescinded the policy of announcing inconclusive results after only conducting one rapid screening test. The agency now will not announce a result as inconclusive until after "the duplicate or second-run tests are conducted." The new policy states that if either of the tests in the second run is reactive, the agency would announce this result as an inconclusive and then conduct confirmatory testing at National Veterinary Services Laboratories (NVSL) in Ames, Iowa. Since that policy change, no further inconclusive results have been announced.

Strengthening of the Feed Ban

In mid August, the FDA issued a preliminary decision, known as an Advance Notice of Proposed Rulemaking (ANPR), to ban specified risk materials (SRM) from all animal feed. In a letter sent to the FDA, AMIF President Jim Hodges called the decision "unwarranted" and criticized the changes as not being "scientifically justified."

"BSE prevention strategies must be both scientifically based and economically prudent," said Hodges. "And in the case of this recent ANPR, the proposed rule change to ban SRM in animal feed fail both criteria." AMI Foundation recommends that FDA revisit the issue by conducting a comprehensive cost/benefit analysis to use in conjunction with a risk/benefit analysis.

Hodges noted that recent FDA data show a 99 percent compliance rate with the existing feed ban. "The FDA's reports show that our strategies for preventing the spread of BSE through feed are working and compliance is extraordinary," noted Hodges. Hodges urged the FDA to evaluate other alternatives instead of requiring the complete removal of SRM from feed, noting, "A thorough analysis could reveal a combination of alternative preventive measures that will strengthen animal health protection and minimize the cost burden imposed on the industry," he said.

Japanese to Possibly Rethink Position on Universal Testing

A top government food safety panel announced that Japan should "stop testing cattle younger than 20 months for BSE." This change, many hope, will begin to clear the way for the end of a lengthy ban on U.S. beef imports.

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Altered Food Products Composition Should Be Basis for Federal Safety Assessment *New Report Released by the National Academy of Sciences*

According to a report by the National Academy of Sciences' (NAS) Institute of Medicine, federal agencies should assess the safety of genetically altered foods — whether produced by genetic engineering or by other techniques — on a case-by-case basis to determine whether unintended changes in their composition could adversely affect human health.

Adverse health effects from genetic engineering have not been documented in the human population, but the technique is new and concerns about its safety remain. The U.S. Department of Agriculture, the Food and Drug Administration, and the U.S. Environmental Protection Agency commissioned the NAS to:

1. Assess the potential for adverse health effects from genetically engineered foods compared with foods altered in other ways;
2. Provide guidance on how to identify and evaluate the likelihood of those effects.

"All evidence to date indicates that any breeding technique that alters a plant or animal — whether by genetic engineering or other methods — has the potential to create unintended changes in the quality or amounts of food components that could harm health," said committee chair Bettie Sue Masters, Robert A. Welch Foundation Distinguished Professor in Chemistry, University of Texas Health Science Center, San Antonio. "The possible impact of such compositional changes should be examined on a case-by-case basis to determine whether and how much further evaluation is needed."

According to the report, "genetic modification" is defined as the broad array of breeding techniques — ranging from traditional cross-breeding to genetic engineering to the use of chemicals or radiation — used to alter plant and animal traits that can be inherited from one generation to the next; "Genetic engineering" refers to a specific type of alteration that uses molecular biology techniques to delete genes or to transfer genes for particular qualities from one species to another.

Genetic engineering is not an inherently hazardous process, the report says, but the resulting food should be examined to determine if the inserted genes produce toxins or allergens.

The report offers a framework to guide federal agencies in selecting the route of safety assessment. A new genetically modified food whose composition is very similar to a commonly used conventional version may warrant little or no additional safety evaluation. But if an unknown substance has been detected in a food, a more detailed analysis should be conducted to determine whether an allergen or toxin might be present. The committee cautioned that more research is needed in the ability to predict whether such changes will cause adverse health effects.

To review the report in its entirety, go to the National Academies Web site, www.national-academies.org.

Listeria Intervention & Control Workshop *To be held Nov. 3 - 4 in Chicago*

Ensuring the safety of ready-to-eat (RTE) meat and poultry products is vital to maintaining consumer health and confidence and in turn, the success of your business. While the incidence of *Listeria monocytogenes* on RTE meat and poultry products has decreased significantly over the last decade, the meat and poultry industry and the government are committed to reducing its incidence further.

This workshop is designed to help industry examine the issues surrounding methods to control *Listeria* in the post-lethality processing environment. The workshop covers sanitation, sampling and testing programs, problem solving, intervention technologies and regulatory compliance.

The Food Safety and Inspection Service's (FSIS) new interim final rule establishes three risk-based alternatives that each manufacturing process must meet. The workshop will help employees understand the best practices for meeting the alternatives and enhancing the safety of RTE products.

Attendance is limited to 60 participants. To view the working agenda, go to MeatAMI.com, click on AMI Meetings & Conferences.

The workshop will be held at the Hyatt Regency O'Hare at 9300 W. Bryn Mawr Ave., Rosemont, IL. For hotel arrangements, contact the hotel directly at 847-696-1234.

(Antimicrobials to Control Growth of *Lm*) cont'd. from page 1

propionate and benzoate demonstrated the most consistent inhibitory activity. All three agents appreciably delayed growth of *Lm* in both weiner and turkey slurries stored at 4 degrees C.

Data indicated that *Lm* did not grow in wiener or turkey slurries supplemented with 0.25 percent potassium sorbate, propionic acid, or benzoic acid and stored at 4 or 10 degrees C. Data also suggest that when used in combination with each other, the total concentration of antimycotic agents can be reduced to less than 0.15 percent.

The second phase of the study evaluated whether two types of ready-to-eat product would maintain their antilisterial activity when used in cooked turkey and wiener products manufactured under commercial conditions. Preliminary data suggest that 0.1 percent combined benzoate/propionate or benzoate/sorbate can prevent growth of *Lm* on cured bologna stored at 4^0C for 63 days compared with a 3-log cfu/pkg increase in the control bologna. Conversely, turkey with 0.1 percent combined antimycotics supported a 2-log cfu/pkg increase in listerial populations at 2 weeks storage compared with a 4-log cfu/pkg increase in the turkey control during the same time period. These data validate the ability of combinations of low levels of antimycotic agents to prevent listerial growth in cured and uncured ready-to-eat meat products.

Recently released U.S. Department of Agriculture (USDA) data show that industry efforts to reduce the prevalence of *Lm* in ready-to-eat products have enjoyed notable success. Data revealed a one-year, 25 percent drop in the incidence of *Lm* on ready-to-eat meat and poultry products and a 70 percent decline over the last five years, demonstrating that the decrease in illnesses caused by *Lm*, as seen over the past decade, is likely to continue.

Further work is underway on this study and the AMI Foundation will make these data available upon completion. Dr. Kathleen Glass, project lead for this study is a speaker during the session, *Food Safety: Issues and Updates* at the 2004 AMI Annual Convention and Innovation Showcase. Dr. Glass is presenting this research during the *Lm* update at the Meat Industry Research Conference on Sept. 30 - Oct. 2 in Nashville, Tenn.

Safe Food Is Good Business, Says New Site: Meatsafety.org

Meat safety questions? Go to AMI's new Web site, www.meatsafety.org that offers comprehensive information about meat and poultry safety. The site has detailed safe handling information for specific products as well as cooking and storage information.

Meatsafety.org was reviewed by USDA's Meat and Poultry Hotline staff and designed in-house by AMI staff. Find links to nutrition guidelines, food safety publications and articles, 'Frequently Asked Questions' and a "Hot Topics" section for the most up-to-date news on food safety. This Web site is a great resource to which you can refer your customers, employees and media.

Take five minutes to see how you score in the kitchen on the "Food Safety Quiz" or download quick sheets for safe handling instructions and cooking temperature recommendations.

Meatsafety.org is a one-stop resource for meat and poultry safety information.

AMIF - Calendar of Events

Listeria Intervention and Control Workshop

When: Nov. 3-4, 2004
Where: Hyatt Regency O'Hare
9300 W. Bryn Mawr Ave.
Rosemont, IL • (847) 696-1234
What: This workshop is designed to help industry members examine the issues surrounding testing and to provide experience in developing appropriate standards and procedures for processing RTE products under USDA's finalized rule.
Contact: To register, contact Katie Brannan at 703-841-3621 or kbrannan@meatami.com.

Animal Care & Handling

When: Feb 9-10, 2005
Where: Kansas City Marriott Downtown
200 West 12th Street
Kansas City, Mo.• (816) 421-6800
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 703-841-3621 or kbrannan@meatami.com.

Annual Meat Conference

When: March 6-8, 2005
Where: Caribe Royal All Suites Resort
8101 World Center Drive
Convention Center
Orlando, FL 32821 • (800) 823-8300
What: Learn about today's trends, techniques and tactics. Using practical information from case studies and industry research, speakers will cover such topics as diet strategies and meat marketing and marketing and labeling. Attend sessions such as Understanding the Natural and Organic Niche; Food, Wine and the Joys of Marketing Your Product; and Satisfying and Growing the Heavy Meat User.
Contact: To register, contact Marie DeLucia at 703-841-3620 or mdelucia@meatami.com.

Worker Safety, Health and Human Resources Conference

When: April 3-5, 2005
Where: Hyatt Regency Atlanta
265 Peachtree St, NE
Atlanta, GA • (404) 577-1234
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: To register, contact Anne Nuttall at 703-841-3630 or anuttall@meatami.com. For speakers, awards contact Marie DeLucia at 703-841-3620 or mdelucia@meatami.com.

AMI International Meat, Poultry & Seafood Industry Convention and Exposition - Worldwide Food Expo

When: Oct. 26-29, 2005
Where: McCormick Place
Chicago, IL
What: There's no better place to see what is upcoming than the AMI Exposition. Stay ahead of your competition, anticipate upcoming market trends and move quickly to implement business strategies. Discover emerging trends in the meat, poultry and seafood industries. Experience a global showcase where more than 100 participating countries see the latest machinery, products and technologies in action and remain abreast of critical topics and issues.
Contact: For more information, contact CMG at wwfe@cmgexpo.com

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Excluding young and newborn cattle from testing "won't increase the risk" of transmission to human, the Cabinet Food Safety Commission wrote in its mid-term report.

In several interviews with the media, AMIF President Jim Hodges noted that the removal of SRM, not testing, ensures the safety of the meat supply. "Testing is really only a surveillance tool to calibrate our effectiveness at combating BSE," he said.

"The continued Japanese fixation on testing is really their response to a massive public relations problem," noted Hodges. "Scientists across the globe agree that testing can not detect BSE in cattle until about six months prior to onset of the illness. Therefore, removal of the SRM is the only credible way to ensure the safety of the meat supply, both for domestic and international consumption," he added.