Greetings from the EMT

As hopefully all of you know by now, we were successful in obtaining a year 7 no cost time extension to continue work on the project. This will allow all collaborators to have time to complete projects in progress. Because of financial processing timings, all funds must be spent by a very firm date of October 31, 2018. Monies not spent before October 31, 2018 will be unavailable to

Consumer Knowledge and Beliefs of Mechanically Tenderized Beef Products

In May 2015, USDA-FSIS mandated the inclusion of the descriptive designation and validated cooking instruction labeling of most raw or partially cooked mechanically tenderized beef (MTB). Evidence from recent studies and outbreaks have demonstrated that MTBs, if not fully cooked, can pose a significant health risk; additionally, often mechanically tenderized products are not distinguishable from non-tenderized products, requiring labeling for safety (FSIS, 2015).

The meat and poultry industries are the largest part of U.S. agriculture. Combined, they produce over 93B pounds of meat (AMI, 2012). The U.S. beef cattle industry is the largest in the world, producing 25.8B pounds of beef in 2013 while also importing and exporting heavily to meet...continued on page 2
Mechanically Tenderized Beef can introduce and translocate potential pathogenic contamination on the surface of a cut into the inside of the beef. The recommended internal cooking temperature for a fully intact cut of meat is 145°F, internally, but a MTB product must be cooked to an internal temperature of 160°F (or 145°F and allowed to rest for three minutes) to ensure the safety of the product for the consumer.

Once processed, many mechanically tenderized products appear feel, and act the same as their intact counterparts. With the exception of cubed steak which visually appears tenderized, most beef products that have undergone a mechanical process often appear like a whole muscle cut. Therefore the consumer may be unaware that the product needs to be handled differently. Outbreaks and foodborne illnesses have occurred at restaurants and even in consumer homes associated with the consumption of under-cooked products that were assumed to be intact cuts. With the implementation of the new labeling law requiring that all products are labeled comes not only the question about how best to label the product so that consumers follow recommended cooking instructions, but also, how consumers will react when they learn that meat cuts they perceive as intact go through a processing step. To our knowledge, there have been no studies conducted on consumer knowledge and awareness of mechanically tenderized beef products. Therefore, a study was designed to gain insight into consumer awareness of these types of meat products. Specifically, this research project sought to (a) define consumer knowledge and awareness related to the safe handling of enhanced and mechanically tenderized beef products; (b) identify risky behaviors associated with MTB handling and consumption and how it related back to consumer food safety behaviors; and (c) explore intervention methods with the intent to influence change in consumer handling of MTBs based upon socioeconomic designations.

To accomplish this project, we developed an exploratory mixed-methods study in which the results of a qualitative component (focus groups) would guide the development and implementation of a quantitative national survey to assess consumer knowledge and awareness of MTB products. In late-2014 through early-2015, 32 focus groups were conducted in rural and urban counties throughout Virginia and North Carolina to identify differences in beliefs, behaviors, and awareness of consumers related to MTB handling. 400+ individuals were recruited from across eight counties. Over 200 participants participated in focus group discussions. Participants shared information on their beef purchasing, handling, and preparation beliefs and behaviors. Participants were asked to share their experiences with purchasing beef – how they selected the beef products that they purchased, if they were familiar with “Safe Handling Labels”, as well as how they transport, store, and prepare beef products (including what methods were used to determine doneness). A discussion then ensued regarding knowledge, awareness, and experiences of MTB products and the risks associated with non-intact products. Finally, participants were asked to identify modes of interventions that would appeal to their specific socioeconomic demographics to raise awareness or bring attention to products that may be mechanically tenderized. Consumers also discussed the importance of label design on raising knowledge and awareness of an MTB product as well as an influencing preparation behaviors.

The preliminary results of this qualitative study demonstrated that there were indeed differences in attitudes, beliefs, and behaviors between urban and rural settings as well as between states. The themes were developed around the Theory of Planned Behavior and the Theory of Reasoned Action (both theories are used to frame participant’s behaviors, attitudes, and beliefs as a measure of one’s willingness to instill behavior change confounded by many inter- and intra-personal relations (on a personal level and within a community scale). For many, the process and concept of MTB products were foreign and new; most were unaware of the necessity to prepare such a product differently. Most participants assumed that products that may have been mechanically tenderized were safe to consume partially cooked (including marinated products). However, participants did recognize cubed steaks as a tenderized product and had been treating cubed products differently; it was associated with ground beef and the dangers inherent to it. On the other hand, participants oftentimes did not prepare their ground products properly. Most participants used visual indicators during beef preparation. Only a handful of participants used a thermometer when preparing meats. Despite learning about the MTB process and risks involved, participants were hesitant to spend extra money on purchasing a thermometer, opting instead to wishing that thermometers could be automated for easy access. Upon learning about the MTB process and the risks involved, most were adamant that labeling was necessary; participants expressed split opinions on whether they would continue to purchase MTB due to the convenience of the cut, the price point of the cuts, and the perceived risks. Similarly, most participants felt that the proposed labeling guidelines were insufficient in raising awareness that products that have been mechanically tenderized or needed different cooking methodologies than expected. Participants commented that the proposed labeling regulations did not seem any different from the majority of labels on packages and as a result, could be easily ignored. A separate labeling system – separate from the USDA-mandated labeling – with noticeably larger sizes, fonts, and colorful indications, along with explanations of the MTB process and on the packaging – was suggested. Additionally, alternative interventions were suggested ranging from public outreach programs to social media campaigns to traditional educational components. Focus groups provided insight into various populations in urban and rural Virginia and North Carolina; to ascertain that beliefs and experiences are reflected on a larger scale, a national survey will be conducted. This survey will be implemented in the upcoming months and will not only seek to identify differences in knowledge, beliefs, and behaviors between rural and urban areas of the United States, but it will also explore the awareness of MTB products post-labeling implementation. The types of interventions regarding raising awareness will also be explored; while the effectiveness of the mandatory labeling in changing behavior will also be questioned.

This research offers perspective into consumer behaviors and attitudes regarding food safety, mechanically tenderized beef, and labeling. Outcomes can better guide the development of knowledge dissemination and interventions in various communities.

Written by Renee Bayer and Lily Wang
Student Perspective from Jennifer Acuff

Thanksgiving has been an excellent reminder, once again, of the many things I can and should be thankful for each day. This year, however, my humanity got the better of me. Airport food poisoning left me huddled on the couch for the majority of my holiday with the in-laws. While I pined my own Saltine cracker Thanksgiving spread, I was struck with gratefulness for so many things as I think about how the STEC CAP brought my education full-circle. So much of my early food safety knowledge was applied and generally limited to what I could learn and convey at a dinner table. For many individuals, this is the case; they are gathered around tables that my family and friends, at least, are not permitted to eat a hamburger cooked outside my own home until I was of a certain age. Even once my immune system had been deemed developed enough to handle the inherent risks of ground beef, I was schooled on checking each patty for the telltale pink interior of an undercooked burger (yes, I know, color is not a sure indicator). Needing to justify at such a young age to other children, as well as parents, why I would not be eating a hamburger put me on the fast-track for learning about E. coli and beef safety. Studying and explaining these concepts became a way of life and passion for me. My undergraduate education further directed my interests in food safety, and when the opportunity arose for me to work as a Kansas State University graduate student for the STEC CAP, I excitedly accepted.

During the two years I attended KS State, the STEC CAP presented more prospects for a graduate student than most projects can. The “farm to fork” aspect of the CAP not only heightened each project’s relevancy, but it also exposed me to so many concepts I would have never known how to approach, otherwise. My thesis work laid in the heart of Objective 3, but the Kansas State collaborators stretched across several different objectives, giving me the opportunity to learn about work by other graduate students in areas outside my skillset. These experiences were only enhanced at the STEC CAP annual conferences. We received crash courses in the work of other objectives through presentations and meetings, giving us the ability to think in interdisciplinary terms, as well as effectively communicate the work of the CAP to the general public. The conferences provided opportunities for poster presentations and conversations with other collaborators in an accepting and positive environment, allowing me to further develop professionalism and skills to carry throughout my career.

I recently moved to Blacksburg, VA to work on a Ph.D. at Virginia Tech, and now being a few months removed from the stresses of a thesis defense, I have had the opportunity to work under the STEC CAP. The colleagues I was fortunate to meet and the mentorship I received from my advisor, as well as other STEC CAP collaborators, opened doors to such unique and valuable ideas and experiences. Despite my ailments this Thanksgiving, it’s easy to be grateful for so many things as I think about how the STEC CAP brought my education full-circle. So much of my early food safety knowledge was applied and generally limited to what I could learn and convey at a dinner table. Adding to the practical value of those initial skills, the STEC CAP provided tools and resources to learn how to research and delve deeper into the concepts that actually make our farms and food safer. When I think about my family communing over a meal, trusting in the safety of how it was harvested and prepared, I’m thankful for grants like the STEC CAP that enable professionals to truly make a difference in food safety.

The EMT was very pleased to receive the 2017 NIFA Partnership Award for Mission Integration of Research, Education, and Extension. Awards recognize those projects “supporting NIFA’s mission to advance agricultural research, education, and extension to solve significant societal challenges.” The award was presented by Dr. Sonny Ramaswamy, the NIFA Director, at the NIFA office in Washington D.C. on October 12th.

While the EMT received the award, we recognize and are appreciative all of the hard work and effort of each and every STEC collaborator, including industry representatives, governmental officials, faculty, students, managers and administrative staff. The team effort to achieve the goals established at the beginning of our $25 million project represents an enormous success to improve food safety for the American public.

Related links: NIFA Mission Integration of Research, Education, and Extension award
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http://www.foodsafetynews.com/2017/10/fsn-briefly/#.WeDPPjBraQ
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Temporary food production settings such as festivals, community gatherings and tailgates often have little infrastructure for safe food handling practices. Many outdoor temporary events have been linked to foodborne illness outbreaks, but little is known about safe food handling practices specifically in tailgate settings. This research was designed to evaluate current food thermometer usage at university football tailgates, using a mixed-methods approach of observation and interview. Additional aims were to engage with participants around safe food handling and distribute food safety materials and evaluate this approach as an intervention. Trained data collectors from five U.S. universities collected baseline thermometer usage data, engaged participants with safe food handling messages, and returned to collect thermometer usage data. Just 33% of tailgaters reported using a food thermometer (n = 523). Follow-up observations revealed 56% of participants exhibited a change in behavior following the intervention (n = 39). The three most reported foods likely to be assessed with a thermometer were beef, pork, and chicken. Results provide insight on the need for food safety training and specific education for tailgaters. Targeting education efforts to this group can aid in reducing the risk of foodborne illness at temporary food settings.