BEST PRACTICES

Tenderizing/Enhamcing of Whole Muscle Cuts

Pathogen Control During Tenderizing/ Enhancing of Whole Muscle Cuts

Full report at http://www.bifsco.org/uDocs/03_29_06%20Non-Intact%20Best%20Practices.pdf

Prepared by: National Cattlemen's Beef Association, American Meat Institute, National Meat Association, Southwest Meat Association

Why Best Practices?

Best Practices for tenderizing or enhancing operation reduce the likelihood that contamination with potential pathogens (specifically *E. coli* O157:H7) will occur.

What is the Issue?

Tenderized and enhanced products may pose a risk if potential pathogens are moved from the meat surface to the interior portions of the meat products and the product is not cooked adequately to destroy the pathogens inside the meat product. If equipment used in the operation is contaminated somehow, and not cleaned and sanitized, the tenderizing or enhancing equipment, and perhaps the solution to be injected, may become the vehicle of the contamination.

Although the likelihood that subprimals or other intact cuts of meat are contaminated with *E. coli* O157:H7 is very low, because tenderizing and enhancing operations are raw meat processing operations, consideration should be given to *E. coli* O157:H7 as a potential, sporadic contaminate that could find its way into the processing environment and specific tenderizing or enhancing processing systems. Additionally, FSIS gave notice that all processors must reassess their HACCP systems to consider *E. coli* O157:H7 in their hazard analysis.

Analysis of outbreaks has suggested that insufficient sanitation of equipment was the biggest issue in the three *E. coli* O157:H7 outbreaks possibly linked to enhanced/tenderized beef steaks. The agency believes proper sanitation to be the single most important control measure available to processors of mechanically tenderized and enhanced products to prevent foodborne outbreaks.

As the tenderizers/injectors pass through the product they may introduce biological hazards to the interior or the product. Inadequate injection needle sanitation poses the greatest risk to spread any microbial contaminants present on the incoming raw materials, thus needle sanitation is critical. All needles must be removed at least daily and soaked in a sanitation solution before inspection and reassembly of the needle injector. Ideally, two sets of needles could be rotated to allow for maximum soaking time and potentially greater sanitation efficacy.

Validation and verification of sanitation practices are always challenging, however the nature of small diameter hollow injection needles further compounds this issue. To validate the efficacy of the sanitation system needles can be sacrificed (broken) to determine if the cleaning and sanitizing procedures are adequate. Likewise, routine verification of sanitation practices for needles can be determined by sacrificing and sampling needles at some frequency.

For more information contact:

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- Reassess the HACCP plans for production of tenderized and enhanced products.
- Meet all Federal regulations (9 CFR 307, 310, 313, 314, 317, 318, 320, and 416).
- Optimize raw material (i.e., whole muscle cuts) quality and safety by purchasing from suppliers with E. coli O157:H7 control steps, and obtain letters of guarantee and certificates of analysis for raw materials and other ingredients.
- Criteria to select raw material suppliers should include that suppliers have process interventions in place to reduce or eliminate potential enteric pathogens.
- Achieve and maintain temperatures at 40°F or less for raw materials, water, brines and finished products.
- Do needle integrity checks for injecting operations.
- Needle product from the side opposite of the external surface to minimize any bacterial translocation.
- Rotate the use two sets of needles to allow for maximum soaking time and potentially greater sanitation efficacy.
- Injection systems should be cleaned in place using a validated sanitation process of cleaning followed by sanitizing. SOPs should include the chemical concentration, frequency of cleaning, responsible party and how it will be verified.
- Use chilled water to prepare brines and meat protein suspensions.
- Limit age for brine solutions (e.g., 24 hours) and sanitize after each break.
- Limit age for suspension solutions (e.g., 8 hours) and sanitize after each break.
- Remove and sanitize needles each day.
- Use an antimicrobial intervention (e.g., filtration, UV) for re-circulating pickle solution.
- Use a bacterostatic ingredient in the brine solution (e.g. lactate, diacetate).
- Use voluntary labeling of enhanced and mechanically tenderized products to identify them as non-intact and to include cooking instructions.
- Use microbiological testing to verify cleaning and sanitation and to ensure that E. coli O157: H7 is not being harbored in the processing equipment or environment.
- Use lotting and traceability systems to record raw material use, processing dates and times, and other in-process data such as temperatures of brines, rooms and products.
- Have a stock recovery program.
- Ensure all products are held if and when pathogen tests are conducted.

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