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PROCESSING TIP . . .

A METHOD FOR VERIFYING THAT AN INTERVENTION STEP IS WORKING AS PART OF A HACCP PLAN

Poultry processors should periodically conduct studies to verify that their intervention strategies for eliminating indicator and pathogenic bacteria are working properly. We conducted a study using a statistically derived experimental design to evaluate if an online reprocessing system used in a large poultry processing operation was adequate to address the hazards listed in the HACCP program and to verify that the plant could reduce bacterial populations using this intervention. The USDA-FSIS will be requiring that more processing facilities conduct verifications on their intervention strategies in the future. This poultry tip has been prepared to serve as a guideline for processors that are facing the prospect of having to prove that their interventions are working. This is an actual case study from a processing facility. The methods used, results achieved and a full discussion of their meaning has been presented. This report from which this article was constructed was considered satisfactory by USDA-FSIS for verifying the efficacy of the intervention strategies in this processing plant.

Online Reprocessing (automated reprocessing): Most USDA-FSIS approved online reprocessing (OLR) chemicals have been shown to significantly impact indicator bacterial levels and *Salmonella* prevalence on ready-to-cook carcasses. Thus, tests were conducted to verify the efficacy of this system.

The USDA-FSIS requires that all process parameters be described: The online reprocessing chemical used in this plant was Cecure®. The Cecure® system introduced from 0.14 to 0.30 grams of cetyl-pyridinium chloride per pound of pre-chilled carcass weight. The mention of the use of this chemical and its efficacy, is in no way to be considered an endorsement by Dr. Russell or the University of Georgia. It is simply being reported that it was used in this study.

The USDA-FSIS requires that all experimental procedures be defined: Four carcasses from two separate flocks processed each day (the third flock on 1st shift and the third flock on 2nd shift-to allow

PUTTING KNOWLEDGE TO WORK

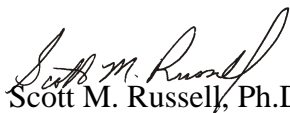
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the plant to reach equilibration with regard to organic loading) were removed from the processing line just prior to the Cecure® system and four carcasses were collected from the line just after the Cecure® system using the following technique to ensure that no bias was introduced. A carcass was selected visually on the line, then the next five carcasses were counted aloud and the sixth carcass was selected for testing. The individual selecting the carcasses was wearing sterile examination gloves. In this way, no visual cues were used to introduce bias. The carcasses were then individually bagged in sterile polyethylene bags and rinsed using 400 ml of sterile Buffered Peptone solution. The whole carcass rinse method as employed by the USDA inspectors in processing facilities were used and the samples were neutralized as recommended by SafeFoods. The rinsate was encoded using a 3 digit number (to prevent identification by laboratory employees and the introduction of bias) and sent to a registered laboratory for evaluation for aerobic plate counts (APC), *E. coli* counts, and *Salmonella* prevalence. A total of 192 carcasses were evaluated over 12 days and 24 flocks. This allowed the plant to determine the level of APC, *E. coli* and *Salmonella* on carcasses pre Cecure® and post Cecure®. The numbers of carcasses to be tested were based on statistical models to ensure a representative sampling of the growout process. Results for the microbiological comparison of broiler carcasses entering the Cecure® online reprocessing system versus those exiting the Cecure® system are presented in Table 1.

Table 1: Microbiological Comparison of Pre-OLR Carcasses versus Post-OLR Carcasses

Location	Aerobic Plate Count	<i>Escherichia coli</i> Count	<i>Salmonella</i> Prevalence
Average Pre-Cecure®	4.60 ± 0.29	4.50 ± 0.27	84.6%
Average Post-Cecure®	2.20 ± 0.54	1.96 ± 0.51	17.3%
P-Value	<0.0001	<0.0001	<0.0001
n	96	96	96

These results indicate that the Cecure® online reprocessing system was very effective in terms of reducing APC, *E. coli* and *Salmonella* on carcasses. Numerical reductions (2.4 log for APC, 2.5 log for *E. coli*, and a 67.3% reduction in *Salmonella* prevalence) were very high. Statistical analysis revealed that there was greater than a 99.999% probability that the three types of bacteria were being reduced. This study clearly demonstrated that the plant was able to verify the efficacy of its OLR system using this approach.


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