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Efficacy of a Commercial Post-Chill Whole Carcass Cecure® Antimicrobial[1] Application for Extending the Shelf-Life of Various Broiler Products

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Abstract: The objective of the following study was to determine if a post-chill whole carcass Cecure® (Safe Foods Corporation, N. Little Rock, AR) treatment (0.3% @ 0.5 gallon/carcass) would extend the shelf-life of various further processed broiler products which were produced from Cecure®-treated whole carcasses. Cecure® is an FDA and USDA/FSIS approved, patented formulation containing the active ingredient cetylpyridinium chloride. Cecure® is approved by FDA and USDA/FSIS for application to pre-immersion chilled, post-immersion chilled and air-chilled whole carcasses and to skin-on carcass parts. For this study, a commercially available, fully automated, post-chill Cecure® rinse cabinet was installed and operated in a USDA-inspected broiler processing facility several months prior to initiation of the study. On the day the shelf-life study was to be conducted, a single flock of birds was utilized. Control samples were collected during a 2-hour period prior to turning on the Cecure® post-chill whole carcass system. Six different types of broiler products were collected for evaluation including boneless skinless breast meat, thighs, wings, split breasts, leg quarters and whole carcasses. After all control samples were collected (n=70 per product type) the Cecure® system was turned on and allowed to run for 2 hours after which similar product samples were collected for products produced from Cecure®-treated whole carcasses. All broiler parts were tray-packed and whole carcasses were bagged individually. On Day 0, all samples were held at 28° F for approximately 6 hours after which they were held at 32°F for 3 days. For the remainder of the study, all samples were held at 34°F. On Days 0, 5 and 10 and Days 14 through 22, each of the six product types was microbiologically evaluated using Aerobic Plate Count Petrifilm™[3] until the products were considered spoiled (7 logs colony forming units per mL). Regardless of product type, the Cecure® whole carcass post-chill treatment (0.3%) resulted in initial reductions in Aerobic Plate Count on Day 0 from 0.5 to > 1 log. These initial Day 0 microbial reductions led to increases in product shelf-life as follows: boneless skinless breast meat and whole carcasses (1.5-day extension), thighs, split breasts and wings (2-day extension) and leg quarters (1-day extension). It should be noted that the slope and the shape of the bacterial growth curves for all Cecure®-treated products were almost identical to those for the control products with the exception of a lower initial (Day 0) level of bacteria; hence, increasing the days to spoilage without a delayed technical effect. The results from this study demonstrate that the use of a post-chill Cecure® whole carcass rinse treatment (0.3%) will significantly improve the shelf-life of whole carcasses and corresponding cut-up broiler parts including boneless skinless breast meat, thighs, wings, split breasts and leg quarters.

Key words: Cecure®, post-chill rinse, shelf-life extension, broilers, cut-up parts

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