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The Microbiological Effects of Various Post-Chill Precure™ Treatment[1] Applications for Broiler Carcasses

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Abstract: The objective of the following study was to determine the microbial efficacy of two methods of application for a post-chill Precure™ (Safe Foods Corporation, N. Little Rock, AR) treatment for broiler carcasses. Precure™ is listed as a solution of GRAS acids for use by FDA and is listed as a safe and suitable ingredient by USDA for use on poultry. Two separate studies were conducted. In the first study, a dip application was evaluated. In the second study, Precure™ was applied as a spray. For both studies, post-chill carcasses were obtained from a local USDA-inspected broiler processing facility and were transported on ice to MCA Services (Rogers, AR). In the first study in which a Precure™ dip treatment was evaluated, 30 carcasses were randomly divided into three groups of ten carcasses each. In this dip study there was a control group (n=10) and two replicate treatment groups (n=10 per group). The 30-second Precure™ dip was at room temperature and the pH was 2.5. Carcasses were allowed to drain for 5 seconds after the dip. In the second study where a Precure™ spray application was evaluated, there were 10 control carcasses and 10 sprayed carcasses. The Precure™ spray was targeted at four areas of the carcass including the front, the back, the neck and the body cavity. Each targeted area received approximately 25 mL of Precure™ spray resulting in the use of 100 mL of Precure™ per carcass. In the spray study, the pH of the Precure™ solution was 1.5 and carcasses were allowed to drain for 5 seconds after spraying. In both studies, all control and treated carcasses were individually bagged in sterile poultry rinse bags and were held at 40° F until microbiological testing was initiated (< 4 hours). All carcasses were evaluated as per USDA/FSIS standard laboratory procedures for Aerobic Plate Count, coliform count and *Escherichia coli* using Petrifilm™[3] with Butterfield's Phosphate Diluent as the rinse solution. The lower detection level for all groups of organisms was 1 colony forming unit per mL. The results from the post-chill Precure™ (pH = 2.5) dip application revealed a 2.2 to 2.3 log reduction in Aerobic Plate Count, a 0.8 to 1.0 log reduction in coliforms and a 0.7 to 0.8 log reduction in *E. coli*. The results from the post-chill Precure™ (pH = 1.5) spray application indicated a 1.2 log reduction in Aerobic Plate Count, a 1.4 log reduction in coliforms, and a 1.2 log reduction in *E. coli*. In the Precure™ dip study, the Aerobic Plate Count was reduced from 3.4 to 1.1 logs, coliforms from 1.0 to < 0.2 logs and *E. coli* from 0.8 to < 0.2 logs. In the Precure™ spray study, the Aerobic Plate Count was reduced from 3.8 to 2.6 logs, coliform from 1.5 to 0.5 logs and *E. coli* from 1.3 to 0.05 logs. In conclusion, the post-chill application of Precure™ as a 30-second whole carcass dip (pH = 2.5) or as a 100 mL whole carcass spray (pH = 1.5) offers the manufacturer an FDA- and USDA-approved as well as a very cost effective means of controlling microorganisms on processed poultry.

Key words: Precure™, post-chill dip, post-chill spray, broilers

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