The Microbiological Effects of Various Post-Chill Precure™ Treatment 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 resultng 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™ 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