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Efficacy of the FreshLight[®] 210 Ultraviolet Light System¹ for Control and Elimination of *Listeria innocua* in a Commercial Poultry Marinade-Part A (Flow Rate = 10.6 GPM and Turnover Time = 2.4 minutes)

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Abstract: The possibility of the presence of *Listeria* in marinade solutions poses a threat to the safety of injected poultry products. Thus, a sample (25 gallons) of a fresh poultry marinade was collected from a USDA-inspected poultry processing facility and was shipped overnight to MCA Services (Rogers, AR) under refrigerated conditions. Upon arrival at the laboratory, the marinade was inoculated with an overnight culture of *Listeria innocua* to a level of 3.4 logs per mL (colony forming units). The inoculated marinade was then passed through a FreshLight[®] 210 ultraviolet light system (Safe Foods Corporation, N. Little Rock, AR) for 10 minutes (flow rate = 10.6 gallons per minute and turnover time = 2.4 minutes). Samples were collected after 0, 2, 4, 6, 8 and 10 minutes of ultraviolet light exposure which corresponded to 0, 0.9, 1.7, 2.6, 3.4 and 4.3 calculated passes through the system. Samples of the marinade were plated on Aerobic Plate Count Petrifilm^{™3} to determine reductions in the inoculum over time. After 2 minutes of ultraviolet light exposure (approximately 1 pass through the ultraviolet light system), the level of *Listeria innocua* was reduced by 2 logs, at 8 minutes of exposure (3.4 passes) the level was reduced by 2.9 logs and at 10 minutes (4.3 passes) *Listeria innocua* could not be recovered from the poultry marinade solution. Thus, in 10 minutes of ultraviolet light exposure, levels of *Listeria innocua* in poultry marinade decreased from an initial level of 3.4 logs per mL to < 1.0 log (the lower detection level) per mL resulting in a > 99.5% reduction in the original level of inoculum. In conclusion, the commercially available FreshLight[®] 210 ultraviolet light system (FDA regulated under 21 CFR 179.39) is an extremely effective and low cost tool for controlling and eliminating *Listeria innocua* in commercial poultry marinades.

Key words: Poultry, marinades, *Listeria innocua*, FreshLight[®]

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