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Efficacy of the FreshLight® 210 Ultraviolet Light System¹ for Control and Elimination of *Salmonella typhimurium* and *Listeria innocua* in a Commercial Poultry Marinade (Flow Rate = 20 GPM and Turnover Time = 1 minute)

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Abstract: The injection of marinade into fresh poultry products can result in a buildup of pathogens in the marinade solution due to recirculation of the marinade through the pump and holding tank. Therefore, poultry processors are constantly searching for new ways to sanitize the recirculated marinade to eliminate the possibility of pathogens being injected into fresh poultry products. In an effort to solve this potential hazard, a fresh sample (20 gallons) of a typical poultry injection marinade was collected from a USDA-inspected commercial poultry processing facility and was shipped overnight, under refrigerated conditions, to MCA Services (Rogers, AR). Upon arrival at the laboratory, the marinade was inoculated with an overnight cocktail of *Salmonella typhimurium* and *Listeria innocua* to a level of 6.3 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 56 minutes (flow rate = 20 gallons per minute and turnover time = 1 minute). Samples were collected after 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 28, 32, 40, 48 and 56 passes through the ultraviolet light system. Marinade samples were plated on Aerobic Plate Count Petrifilm™³ to determine microbial reductions by time and number of passes. Typical linear reductions were as follows: 2.5 logs at 2 passes (2 minutes), 3.5 logs at 16 passes (16 minutes), 4.7 logs at 40 passes (40 minutes) and 6.3 logs at 56 passes (56 minutes). Thus, in less than 60 minutes, the ultraviolet light system completely eliminated (> 99.9999%) all *Salmonella* and *Listeria* from the marinade. In conclusion, the commercially available FreshLight® 210 ultraviolet light system (FDA regulated under 21 CFR 179.39) offers the poultry industry a very effective, reliable and inexpensive means for controlling or eliminating spoilage organisms and pathogens of concern in poultry marinades.

Key words: Poultry, marinades, *Salmonella*, *Listeria*, FreshLight®

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