EFFECT OF DIFFERENT MARINADE TREATMENTS ON SURVIVAL AND MORPHOLOGY OF PATHOGENS IN BEEF JERKY

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ABSTRACT

In the early fall of 2003, the Food Safety and Inspection Service (FSIS 2004) found that producers of meat and poultry jerky were not adequately processing the meat to achieve the lethality required to kill or reduce the number of microorganisms. In this project, ground beef jerky was prepared with four different treatments i.e. traditional marinade (TM), modified marinade (MM), acetic acid-traditional marinade (AATM), Tween 20-traditional marinade (TWTM), along with a control.

The jerky strips were individually inoculated with four different bacterial strains i.e. *E. coli* O157:H7, *S.* Typhimurium, *L. monocytogenes* and *S. aureus* and stored at ambient temperature under vacuum packaging for analysis at 7 day intervals up to 28 days. The parameters studied were pH, water activity and enumeration of microbial count.

Every marinade used in this study was effective in reducing pathogen survival on inoculated beef jerky when compared to the control, which was evident by low microbial count in treated jerky samples compared to control. In order to reduce the survival of pathogens that are introduced to the surface of beef jerky post-processing, a combination of marinade reformulation, effective thermal processing, and avoidance of cross - contamination is considered ideal for ensuring the safety of beef jerky for consumers.