

Authors: Angela Laury, Kathleen Fermin, Don Stull, Andreas Neuber, Chance Brooks, Christine Alvarado, Todd Brashears, and Mindy Brashears

Reduction of *Salmonella* on jalapeño peppers, peanuts, and dry dog food utilizing targeted directional microwave technology

Presenter Name and Title — Angela M Laury, Post Doctoral Research Associate

Presenter Address — Department of Animal and Food Sciences, Texas Tech University, PO Box 42141, Lubbock, TX 79409-2141

Phone Number — 806-742-5073 ext 274

Fax Number — 806-742-3788

E-mail — angela.laury@gmail.com

Purpose: The objective of this experiment was to assess the microbial reduction of *Salmonella* on jalapeño peppers, dry dog food and shelled raw peanuts by various doses of targeted directional microwaves (TDM).

Methods: Fresh jalapeño peppers, dried commercial dog food, and shelled peanuts were inoculated with a three strain *Salmonella* inoculum to achieve 10^5 CFU/gram. Separately, twenty-five gram samples of each product in duplicate were treated with directional microwave treatments for 0, 10, 20, 30 or 40 seconds for jalapeño peppers and 1, 2, 3, and 4 minutes for the dog food and peanuts. Serial dilutions, plating on XLD agar with TSA overlay, and incubation at 37 C occurred after treatment. Typical colonies were counted and total surviving *Salmonella* was determined. Experiment was replicated five times.

Results: Jalapeño peppers treated with TDM while tumbling can significantly reduce *Salmonella* by as much as 1.1 log CFU/g after 40 seconds ($P=0.0028$). After 10 seconds 0.68 log CFU/g reduction occurred, after 20 seconds 1.08 log CFU/g, and after 30 seconds 0.92 log CFU/g reduction occurred ($P<0.05$). *Salmonella* on the dog food was reduced by 1.49 log CFU/g after 1 minute, 1.75 log CFU/g after 2 minutes 1.08 log CFU/g, 2.12 log CFU/g after 3 minutes and 2.6 log CFU/g after 4 minutes ($P<0.05$). *Salmonella* on the shelled peanuts was reduced by 0.50 log CFU/g after 1 minute, 1.15 log CFU/g after 2 minutes, 1.56 log CFU/g after 3 minutes and 2.2 log CFU/g after 4 minutes ($P<0.05$).

Significance: *Salmonella* contamination of jalapeño peppers, shelled peanuts, and dog food continues to be a concern and provides evidence of the need for post harvest interventions. TDM technology has been shown through this experiment to provide 1-2 log CFU/g reduction in *Salmonella* in a short amount of time.