

Validation of dog treats for the Presence of *Salmonella* in plant analysis and an inoculation challenge study

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Introduction

- *Salmonella* is a continual problem within the pet food industry including the pet treat sector of the industry.
- Human salmonellosis occurs mainly as a result of handling or consuming contaminated food products, with a small percentage of cases being related to other, less well-defined exposures, such as contact with companion animals and natural pet treats (Finley et al., 2006)
- White et. al., (2003) found that animal-derived dog treats, on the United States market, was commonly contaminated with *Salmonella*.

Objective

- The objective for this experiment was to determine the presence and prevalence of *Salmonella* in various dog treats (lamb lung cubes, taffy's, flossies, and liver tripe steaks) processed at a plant.
- This was accomplished through an in plant analysis and an inoculation challenge study.

Methods

- For the in plant analysis study, thirty raw and cooked samples of lamb lung cubes, taffy's (weasands), flossies (steer pizzles), and jumbo flossies were delivered to the Texas Tech University Food Microbiology Laboratory on ice and analyzed by the FDA approved BAX® system method for detection of *Salmonella*.
- For the inoculation challenge study, two different lots of raw samples of liver tripe steaks, lamb lung cubes, taffy's, and flossies were delivered on ice. Fifteen samples from each lot of products were inoculated with a four strain *Salmonella* cocktail at 10^{2-5} cfu/g. After a 30 minutes attachment period, five control samples were sampled for initial concentration, while the rest were cooked in accordance with the standard cooking procedure established by the company. Before and after cooking samples were serially diluted and plated onto xylose lysine deoxycholate agar (XLD) with a tryptic soy agar overlay for injured cells. If no colonies were present on XLD plates, detection was performed by the BAX® system and immunomagnetic separation (IMS) with Remel® *Salmonella* agglutination kit for confirmation.
- Statistical analysis was performed on the SAS program with a 0.05 alpha level for significance.



Results

- For the in plant analysis
Raw Products were as follows: 7_ of 30 taffys, 0 of 30 lamb lung cubes, 26 of 30 flossies, and 29 of 30 -jumbo flossies were positive.
Cooked products only contained 1 lamb lung testing positive for *Salmonella*.
- For the inoculation challenge study:
Lamb lung cubes were significantly reduced by 2.85 logs with one positive sample after cooking (<10 cfu/g present) ($P<0.001$).
Liver tripe steaks were significantly reduced by 3.11 logs with no positive samples after cooking ($P<0.001$).
Taffy's were significantly reduced by 2.85 logs with no positive samples after cooking ($P<0.001$)
Flossies were significantly reduced by 5.47 logs with no positive samples after cooking ($P<0.001$).



Conclusions

Based on both studies it was recommended that the taffy's processing/cooking procedure should be modified to ensure safeness in case of high contamination. Although no positive raw samples were found in the in plant analysis study, the inoculation challenge study suggests that the processing and cooking procedure was effective in case a high level of contamination with *Salmonella* occurred.

References

- Finley, R., Reid-Smith, R., Scott Weese, J.. (2006). Human health implications of *Salmonella*-contaminated natural pet treats and raw pet food. *Clinical Infectious Diseases*, (2006) 42, 686-691.
- White D.G., Datta A., McDermott P., Friedman S., Qaiyumi S., Ayers S., English L., McDermott S., Wagner D.D., Zhao S.. (2003). Antimicrobial susceptibility and genetic relatedness of *Salmonella* serovars isolated from animal-derived dog treats in the USA. *Journal of Antimicrobial Chemotherapy* (2003) 52, 860–863

