Background: Jerky processors have traditionally assured stability of their product by achieving a Moisture to Protein ratio (MPR) of 0.75 to 1.0, or lower, in the final product. Recent guidance from USDA directs that shelf-stability of jerky products be evaluated in terms of water activity (aw), not MPR. The USDA guidance suggests a maximum aw for jerky products of 0.80.

Two pathogens of potential concern in a shelf-stable jerky product are Staphylococcus aureus (Staph) and Listeria monocytogenes. This study examined the survival of Staph and Listeria on vacuum-packaged beef jerky in order to validate a maximum aw for jerky processing.

Methods: Vacuum-packaged beef jerky products (15 samples) with aw ranging from 0.47 to 0.87 were tested for their ability to support pathogen growth. Pathogen numbers were determined before storage and after 1 week and 4 weeks at room temperature (70°F).

Results: None of the 15 jerky products supported growth of either pathogen. Numbers of each pathogen fell during storage of up to 4 weeks at room temperature.

Conclusions: These results clearly support drying beef jerky to a water activity (aw) of 0.87 or less as a way to ensure that bacterial pathogens cannot grow on vacuum-packaged product stored at room temperature.

- Steps to Safe Red-Meat Jerky
- Jerky Water Activity Guideline

This research has been published: S.C.Ingham, G. Searls, S. Mohanan, and D.R. Buege. 2006. Survival of Staphylococcus aureus and Listeria monocytogenes on Vacuum-Packaged Beef Jerky and Related Products Stored at 21°C. Journal of Food Protection. To obtain a copy of this research paper, contact Dr. Steve Ingham.

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The University of Wisconsin-Madison Center for Meat Process Validation provides science-based HACCP support to small meat processors in meeting state and federal mandates for safe food processing and handling.

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