

47 Evaluation of sample preparation methods for determination of water activity levels in whole muscle beef jerky. N. M. Harper, K. J. K. Getty, and E. A. E. Boyle*, *Kansas State University, Manhattan.*

For product to be labeled as jerky, it must have a moisture-protein-ratio (MPR) of 0.75:1 or less. The jerky compliance guideline from the United States Department of Agriculture (USDA)/Food Safety and Inspection Service (FSIS) recommends that water activity ($a_w > 0.80$) be used for the determination of drying and safety, not MPR since this is a standard of identity. However, the guideline did not provide a standardized sample preparation method for determining jerky water activity level. Preliminary research conducted by our lab indicated that sample preparation method affected water activity of whole muscle beef jerky. The objective of this study was to determine the effect of two sample preparation methods on water activity values of whole muscle beef jerky. One commercial brand of original style whole muscle beef jerky was purchased from retail stores. Six different lots were obtained, with a lot consisting of two packages, for a total of 12 packages that were sampled. Paired samples were obtained from three strips for each package. Jerky was kept intact or diced to load into the water activity sample cup. For intact sample preparation, one portion of a whole muscle beef jerky strip was cut into a hexagonal shape with a diameter of approximately 3.2 cm using a sharp knife. The other portion of the same strip was diced into 0.4 cm diameter square shaped pieces. One intact or eight to nine diced pieces were placed into a water activity sample cup to cover the entire bottom surface. Water activity was measured using a water activity meter (Model CX2, Aqualab, Pullman, WA). For each sample, a duplicate reading was obtained and averaged for statistical analysis using the proc mixed procedure. A significant difference ($P < 0.001$) was observed between the two preparation treatments with the intact and diced pieces having a mean water activity of 0.767 ± 0.006 and 0.756 ± 0.006 , respectively. Due to the ability of *Staphylococcus aureus* to produce toxin at a water activity as low as 0.85, *Salmonella* spp. outbreaks linked to jerky, and current FSIS recommendations, using water activity testing has become more routine for monitoring critical control points in HACCP programs. Our results indicate that the intact sample preparation method be used for water activity measurement to obtain a more conservative value, especially if the water activity value is near the margin of safety.