

Project Title: **Development of a Palatability Assurance “Critical Control Points” (PACCP) Model to Reduce the Incidence of Beef Palatability Problems**

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Layman’s Summary:

The overall objective of the project was to develop a “Total Quality Management” (TQM) system (PACCP model) for use in improving retail beef palatability. To accomplish this objective, the project was conducted in two stages: First, an audit was conducted to obtain a profile of various characteristics of top loin (TL) and top sirloin steaks (TS) available at retail markets in eight major U.S. cities. Secondly, a designed study was conducted using cattle of three biological types, to quantify the effects of high voltage electrical stimulation, calcium activated tenderization, aging effects and finally to develop a TQM system.

The findings revealed, 90% of the steaks were produced by cattle processed in Kansas, Texas, Nebraska, Colorado and Washington. The average post-fabrication aging period was 20.8 days for top sirloin (TS) and 19.2 days for top loin (TL) steaks with the range from 2–87 days and 2–91 days, respectively. The quality grade mix was similar for both cuts 60% select, 31% commercial choice, 6-7% certified choice and 2-3% prime. The shear force average was 3.46 for TS and 3.05 for TL steaks, while the mean tenderness score was 5.58 on a scale of 1-8. In turn, the greatest concern is the variability that exists.

The TQM model developed in 2nd segment of the study was effective for improving the quality and consistence of beef loin steaks with respect to tenderness, reducing the expected rate of non-conformance to 1 in 20 for top sirloin steaks (TS) and 1 in 100 for top loin steaks (TL). Achieving this level of conformance required the combined use of genetic and postmortem interventions, facilitated by a tenderness-based classification system.

