Strategies to reduce post-slaughter beef loss through evaluation of quality and application of Hazard Analysis and Critical Control Points (HACCP) in slaughter centre in Ethiopia

Project on Improving the Livelihoods of Poor Livestock-keepers in Africa through Community-Based Management of Indigenous Farm Animal Genetic Resources

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Food shortage can result from failure of appropriate pre and post slaughter handling and processing.

In view of livestock resource of Ethiopia, beef is among the major food source and export item (FAO, 2004). Beef accounts for 40% of the meat off-take.

The beef off-take is partly from Horro beef which is originated in Horro district of Oromia (Mason, 1996).

The present overall beef export amounts only to 75,900 MT (FAO, 2004) indicating under utilization of the potential.
Presumed reasons and analysis of scarcely available data reveal that it may be related to quality and safety:
- at the level of production and transportation of the beef animal
- post slaughter handling and processing of the beef

Hence, beef quality is multidimensional (Brunsø, 2005)
- product-oriented, process oriented and user-oriented

Safety can be addressed by plant specific application of HACCP
Prologue (cont...)

- Inappropriate post slaughter activities can lead to post slaughter beef loss and/or endangering of the public health (FAO, 2003)

- Regarding state of the art and knowledge gap?
  - feeding trials and thus comparative carcass studies were extensively conducted
No reported efforts to understand the physiological and structural components of beef muscle which are essential to comprehend effects they have on beef quality, safety and associated post slaughter loss.

It was also noted that regulatory authorities are moving towards production of safe and quality beef for export market and domestic use (EHNRI, 2004).
Objectives

- To investigate the effects of production systems on beef quality and safety
- To assess hazards and identify sites of contamination
- To examine muscle colour stability and tenderness
- To evaluate the rate and extent of proteolysis
Hypothesis

- The following null hypotheses will be tested
  - $H_0$: Horro beef muscles have no difference in colour stability
  - $H_0$: Horro beef muscles do not have difference in WBSF
  - $H_0$: Horro beef muscles do not have difference in consumer preference
  - $H_0$: There is no hazard in Horro beef processing centre
  - $H_0$: Sarcomere length do not affect tenderness of Horro beef muscles
  - $H_0$: Aging of Horro beef muscles have no effect of proteolysis
2 Materials and Methods

2.1. The study area
• Oromia (Dano-Bako districts)
• Addis Ababa abattoir

2.2 Methodologies and data collection
• Husbandry data designed to evaluate quality and safety (survey conducted)
  – data collection completed
• Consumer panel evaluation of muscle quality (AMSA, 1995 and Meilgaard, 1991)
  – data collection completed
Materials and Methods (cont …)

- Analytical evaluation of muscle color pigment (Mendenhall, 1989)
- Application of principles of HACCP in abattoir (Savell, 1995)
- WBSF evaluation of muscles (Wheeler, 1997)
- Examination of muscles sarcomere (Locker, 1960)
  - Partly completed
- Quantification of CAF (Koohmaraie, 1995)
3 Expected output

- Measures toward quality and safe beef production will be notified
- Consumer preference for retail beef will be identified
- Shelf life of sub primal cuts (muscles) will be determined
- WBSF evaluation will be used for value added retail
- CAF based proteolysis in aging beef will be indicated
- Beef quality improvement alternatives will be suggested
END

THANK YOU!