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Post mortem Management and Microbiological Presence as Quality Factors along the Beef Value Chain in Colombia

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Abstract

The production of high quality food for formal national and international markets is among the principal goals for the development of the Colombian agricultural sector. In such markets, the final consumer expects to buy products of high quality in terms of both taste and food safety. For being able to access those markets, it is fundamental that the value chain actors follow strict food safety protocols and that effective and efficient control mechanisms are in place. Yet little is known in that aspect in most of Colombia's beef value chains.

With the goal of determining the food safety along the beef value chain in Colombia, this study assesses the beef management practices and contamination levels with microorganisms at post-mortem value chain stages in the Colombian Cauca Department (Popayán, Patía and Mercaderes municipalities). The assessment follows the Good Manufacturing Practices concept (GMP), including an evaluation of contamination levels with *Escherichia coli*, Coliform bacteria and Pseudomonas.

Data was obtained in a two-stage process between 2016 and 2017: The first stage was the application of a checklist for different types of meat sellers (n=63), which is based on the current Colombian food safety regulations. In the second stage, microbiological tests (3M® protocol; n=27) were carried out to determine and quantify the presence of *E. coli*, Coliform bacteria and Pseudomonas in the final product.

The results of the checklist show low levels of compliance with current food safety regulations (<60 %) among the meat sellers. Microbiological tests reveal high Coliform bacteria contamination (100 %) for all meat selling establishments in Popayán and also contamination with *E. coli* and Pseudomonas (>90 %) in small and larger establishments. Microbiological tests were negative for the Mercaderes municipality showing the positive effects of applying GMP and a cold chain for quality assurance. The results helped to identify critical points in terms of food safety along the value chain and will facilitate the development of adequate food safety measures, protocols and control mechanisms by the value chain actors and the corresponding authorities, as first step towards the development of a safer beef value chain and compliance with national and international standards.

Keywords: Coliform bacteria, *Escherichia coli*, food safety, Pseudomonas, value chain

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