



## RESEARCH BRIEF

### BEEF SAFETY

## BEEF

### RESEARCH

### Evaluation of Decontamination Efficacy of Commonly Used Antimicrobial Interventions for Beef Carcasses Against Shiga Toxin-producing *Escherichia coli*

Signorini M<sup>1</sup>, Costa M<sup>2</sup>, Teitelbaum D<sup>3</sup>, Restovich V<sup>3</sup>, Brasesco H<sup>3</sup>, García D<sup>3</sup>, Superno V<sup>3</sup>, Petroli S<sup>3</sup>, Bruzzone M<sup>3</sup>, Arduini V<sup>3</sup>, Vanzini M<sup>3</sup>, Sucari A<sup>4</sup>, Suberbie G<sup>5</sup>, Maricel T<sup>3</sup>, Rodríguez R<sup>6</sup>, Leotta GA<sup>2</sup>

<sup>1</sup>CONICET - EEA Rafaela, Instituto Nacional de Tecnología Agropecuaria (INTA), Santa Fe, Argentina.

<sup>2</sup>IGEVET - Instituto de Genética Veterinaria "Ing. Fernando N. Dulout" (UNLP-CONICET LA PLATA), Facultad de Ciencias Veterinarias UNLP, La Plata, Argentina.

<sup>3</sup>IPCVA - Instituto de Promoción de la Carne Vacuna Argentina, Ciudad Autónoma de Buenos Aires, Argentina.

<sup>4</sup>Centro Estudios Infectológicos "Dr. Daniel Stambouljan", División Alimentos, Ciudad Autónoma de Buenos Aires, Argentina.

<sup>5</sup>SENASA - Servicio Nacional de Sanidad y Calidad Agroalimentaria, Ciudad Autónoma de Buenos Aires, Argentina.

<sup>6</sup>Instituto de Economía (CICPES, INTA), Ciudad Autónoma de Buenos Aires, Argentina.

#### Abstract

In Argentina, Shiga toxin producing *Escherichia coli* (STEC) serogroups O157, O26, O103, O111, O145 and O121 are adulterant in ground beef. In other countries, the zero-tolerance approach to all STEC is implemented for chilled beef. Argentinean abattoirs are interested in implementing effective interventions against STEC on carcasses. Pre-rigor beef carcasses were used to determine whether nine antimicrobial strategies effectively reduced aerobic plate, coliform and *E. coli* counts and *stx* and *eae* gene prevalence. These strategies were: citric acid (2%; automated), acetic acid (2%; manual and automated), lactic acid (LA 2%; manual and automated), LA (3%; automated), electrolytically-generated hypochlorous acid (400 ppm; manual), hot water (82 °C; automated) and INSPEXX (0.2%; automated). Automated application of 2% LA after 30-60-min aeration and 3% LA at 55 °C were the most effective interventions. Automated application was more effective than manual application. Decontamination of beef carcasses through automated application of lactic acid and hot water would reduce public health risks associated with STEC contamination.

[doi: 10.1016/j.meatsci.2018.04.009](https://doi.org/10.1016/j.meatsci.2018.04.009)

*The study reported here in this Research Brief was not funded by the beef checkoff, but is made available to expand the usefulness of this checkoff-funded website for those interested in beef safety research. Internal links within this document are funded and maintained by the Beef Checkoff. All other outgoing links are to websites maintained by third parties.*



BeefResearch.org



303.694.0305

For more information, contact:

Science and Product Solutions

National Cattlemen's Beef Association • Contractor to the Beef Checkoff Program

9110 East Nichols Avenue • Centennial, CO 80112 • 303.694.0305



Funded by the Beef Checkoff.