

**Title** Antimicrobial action and effects on beef quality attributes of a gaseous ozone treatment at refrigeration temperatures

**Author** F. Coll Cárdenas, S. Andrés, L. Giannuzzi and N. Zaritzky

**Citation** Food Control, Volume 22, Issue 8, August 2011, Pages 1442-1447

**Keywords** Gaseous ozone; Meat; Refrigeration; *Escherichia coli*; Quality properties

#### **Abstract**

The effects of gaseous ozone treatment at refrigeration temperatures, on microbial counts (total aerobic mesophilic heterotrophic microorganisms and inoculated *Escherichia coli*) in culture media and in beef samples were analyzed. The influence of ozone on beef quality properties such as surface color and rancidity was measured.

The effect of gaseous ozone ( $154 \times 10^{-6} \text{ kg m}^{-3}$ ) in culture media inoculated with *E. coli* after 3- or 24-h treatment at 0° and 4 °C caused a total inactivation of this microorganism.

For beef samples treated with the same gaseous ozone concentration, the highest microbial inhibition was observed at 0 °C and after 24-h exposure, producing a decrease of 0.7 and 2.0 log<sub>10</sub> cycles in *E. coli* and total aerobic mesophilic heterotrophic microorganism counts respectively; however, both the surface color and lipid oxidation of these beef samples were unacceptable. Shorter exposure times (3 h) to the tested ozone concentration at both temperatures (0–4 °C), reduced 0.5 log<sub>10</sub> cycles the counts of total aerobic mesophilic heterotrophic microorganisms and 0.6–1.0 log<sub>10</sub> cycles the counts of *E. coli*, without changing the color or producing rancidity in beef.