Differences in Inactivation of *Escherichia Coli* O157:H7 Strains in Ground Beef following Repeated High-Pressure Processing Treatments and Cold Storage

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Abstract

High pressure processing (HPP) is a safe non-thermal processing method to effectively improve food safety. In this study, HPP treatment followed by cold storage was investigated to reduce *Escherichia coli* O157:H7 in ground beef. Experiments were conducted using ground beef contaminated with six *E. coli* O157:H7 strains one at a time or as a cocktail. Control and inoculated ground beef samples were HPP at 25 °C, 35 °C, and 45 °C, at 400 MPa and pre-determined number of pressure cycles totaling a holding time of 15 min. Optimum HPP parameters were 25 °C, 400 MPa at five pressure cycles of 3 min each which achieved a 5-log reduction of *E. coli* O157:H7 in ground beef. Storing HPP processed ground beef at 4 °C or −20 °C further decreased (P < 0.05) the *E. coli* O157:H7 population. An effective HPP treatment (5-log reduction) was developed that could be used post-processing to reduce the risk associated with *E. coli* O157:H7 contamination in ground beef.

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