The efficacy of short and repeated high-pressure processing treatments on the reduction of non-O157:H7 Shiga-toxin producing *Escherichia coli* in ground beef patties

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**Abstract**

High pressure processing (HPP) has previously been shown to be effective at reducing *Escherichia coli* O157:H7 in meat products. However, few studies have determined whether HPP may be effective at reducing non-O157:H7 Shiga toxin-producing *E. coli* (STEC) in ground beef. This study investigated the efficacy of short and repeated HPP treatments to reduce non-O157:H7 STEC inoculated into ground beef. Irradiated ground beef patties (80:20, 90:10 [lean:fat]) were inoculated with pairs of *E. coli* serogroups O103, O111, O26, O145, O121, O45, O157:H7, and DH5α, vacuum-packaged and high-pressure processed (four, 60 s cycles, 400 MPa, 17 °C). Surviving *E. coli* populations were enumerated on Rainbow Agar O157 and Tryptic Soy Agar. HPP treatments produced > 2.0 log10 CFU/g reductions of each *E. coli* serogroup, and reductions ranged from 2.35–3.88 and 2.26–4.31 log10 CFU/g in 80:20 and 90:10 samples, respectively. These results suggest that HPP could be an effective, post-processing intervention to reduce the risk of non-O157:H7 STEC contamination in ground beef.


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