Title	Inactivation of *Escherichia coli* 0157:H7 in Apple Cider with Elevated Temperature Storage and Dimethyl Dicarbonate
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Citation	Program and Abstract Book, IAFP 2005 (International Association for Food Protection) - 92nd Annul Meeting, 14-17 August 2005, Baltimore, Maryland, USA. 256 pages.
Keyword	apple; dimethyl dicarbonate; *E. coli*

Abstract

Elevated temperature storage and dimethyl dicarbonate (DMDC) were evaluated for reducing *Escherichia coli* 0157:H7 and natural microflora populations in unpasteurized apple cider. *E. coli* 0157:H7 (4-strain mixture) was inoculated into apple cider (7 log CFU/ml) containing 0 (control) or 250 ppm DMDC. Cider was held at 4 (control), 45, 50, or 55°C for up to 72 h, then moved to 4°C when microflora were no longer detected. Apple cider was plated in duplicate on media and incubated as follows: tryptic soy agar + 25 ppm natamycin (TSAN; 37°C, 48 h); yeast and mold agar + 10 ppm chloramphenicol (MC; 25°C, 48 h); and modified eosin methylene blue agar (MEMB; 37°C, 48 h) for enumeration of aerobic bacteria, yeasts, and *E. coli* 0157:H7, respectively. Holding cider (0 and 250 ppm DMDC) at 50 and 55°C reduced bacterial, yeast, and *E. coli* 0157:H7 populations non-detectable levels after 2 h; these populations were not detectable in cider held for 4 h at 45^0C. Bacteria in cider containing DMDC held at 4°C had a > 3-log decrease after 72 h, while control samples had populations of > 6 CFU/ml. At 4°C, yeasts were reduced to non-detectable levels in cider containing DMDC after 4 h, but were recovered at > 4-log CFU/ml after 72 h in control cider. At 4°C, yeasts were reduced to non-detectable levels in cider containing DMDC after 4 h, but were recovered at > 4-log CFU/ml after 72 h in control cider. *E. coli* 0157:H7 populations were reduced to non-detectable levels after 4 h in cider containing DMDC at 4°C, but persisted at > 6 log CFU/ml in control cider. Holding cider at 45 to 55°C provides greater than a 5-log reduction of *E. coli* 0157:H7 within 4 h. Since indigenous bacteria and yeasts are also inactivated, use of preservatives such as DMDC may not be necessary to ensure subsequent stability during refrigerated storage.