

Title Fate of *Escherichia coli* O157:H7 and *Salmonella* spp. on fresh and frozen cut mangoes and papayas

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Abstract

Escherichia coli O157:H7 and *Salmonella* infections have been associated with consumption of a number of fruits and vegetables. Although the fate of *E. coli* O157:H7 and *Salmonella* on many of these products is well studied, little is known about their behavior on cut mango and papaya. Mangoes and papayas have been associated with four and two documented outbreaks of salmonellosis, respectively. The objective of this study was to evaluate the fate of *E. coli* O157:H7 and *Salmonella* on fresh (4 °C, 12 °C and 23 °C) and frozen (− 20 °C) cut mangoes and papayas. Cut mangoes and papayas were spot inoculated with either a four-strain or five-strain cocktail of *E. coli* O157:H7 or *Salmonella*, respectively. Inoculated samples were air dried, placed in containers and stored at 4 ± 2, 12 ± 2, 23 ± 2 and − 20 ± 2 °C. Samples were enumerated following stomaching on nonselective and selective media at days 0, 1, 3, 5, 7, 10, 14, 21 and 28 (4 ± 2 and 12 ± 2 °C); 0, 1, 3, 5 and 7 (23 ± 2 °C); and 0, 7, 14, 21, 28, 60, 90, 120, 150 and 180 (− 20 ± 2 °C). Population levels (log CFU/g) of fruit were calculated. *E. coli* O157:H7 and *Salmonella* have the potential to grow on temperature-abused fresh cut mangoes and papayas held at 23 °C. At 12 °C, *Salmonella* populations can grow on cut mangoes and papayas, however *E. coli* O157:H7 populations only grew on papayas. *E. coli* O157:H7 and *Salmonella* survived for 28 days, at 4 °C, on refrigerated mangoes and papayas. *E. coli* O157:H7 and *Salmonella* can survive on frozen cut mangoes and papayas for at least 180 days. Fresh and frozen cut mangoes and papayas are potential vectors for *E. coli* O157:H7 and *Salmonella* transmission.