

VIABILITY OF *ESCHERICHIA COLI* O157:H7 DURING FERMENTATION AND STORAGE OF PLAIN AND SPICED AYRAN

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Abstract

Ayran is a traditional fermented liquid milk product that contains high content of vitamins and minerals and it can be industrially or homemade prepared, therefore, the potential risk of bacterial contamination is high. The objective of the current study was to study the behavior of *Escherichia coli* O157:H7 during processing and storage of Ayran manufactured with different spices.

Pasteurized milk was inoculated with a 5.7 log₁₀ CFU/mL of a 4 strains *E. coli* O157:H7 cocktail and thermophilic yogurt lactic starter culture. Spices powders including ginger, green tea and fenugreek were separately added to inoculated milk at a concentration of 1% (wt/v). The inoculated milk was fermented at 42 °C for 5 h, and then the samples were cooled and subsequently stored at 4 °C for 5 days. A 20µl aliquot of milk or Ayran samples and their appropriate serial dilutions (0.1% peptone water) were plated in triplicate on eosin methylene blue (EMB) agar for *E. coli* O157:H7 or De Man, Rogosa and Sharpe agar (MRS) for lactic acid bacteria (LAB). Differences among treatments were analyzed by t-test using the Minitab for Windows software (release 12, Minitab, Inc., State College, PA). Significant differences between treatments were concluded when p was < 0.05.

Results showed that *E. coli* O157:H7 numbers in spiced or control Ayran (without spices) increased by 0.8 to 1.5 log₁₀ CFU/mL during the fermentation process and significantly decreased by 2.0 to 2.8 log₁₀ CFU/mL during storage period. In general, green tea and ginger slightly reduced the viability of *E. coli* O157:H7 in Ayran compared to control.

Ability of *E. coli* O157:H7 to survive in spiced or non-spiced Ayran may increase the risk of foodborne illness; therefore, prevent of contamination and sanitation practices should be applied to minimize the potential risk of *E. coli* O157:H7 in Ayran.

Key words: Ayran, *E. coli* O157:H7, Spices, Fermented milk, Lactic acid bacteria.