

TITLE: *ESCHERICHIA COLI* AND OTHER *ENTEROBACTERIACEAE* AS INDICATORS OF THE HYGIENIC-SANITARY QUALITY OF READY-TO-EAT MINIMALLY PROCESSED VEGETABLES

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ABSTRACT:

Ready-to-eat minimally processed vegetables (RTE MPV) are fresh vegetables subjected to several steps that modify their natural structure, while maintaining the same freshness and nutritional quality as the fresh produce. One of these steps is washing-disinfection, which aims to reduce the microbial load and eliminate pathogenic microorganisms that may be present. However, failures during this step can render it inefficient and enable the occurrence of cross-contamination, posing health risks to consumers. This study aimed to assess the occurrence of generic *Escherichia coli* and other *Enterobacteriaceae* as indicators of the hygienic-sanitary quality of RTE MPV samples sold in the city of Piracicaba, SP – Brazil. While generic *E. coli* is widely accepted as a fecal contamination indicator, populations of *Enterobacteriaceae* have been often used as an indicator of hygiene practices, since they are easily inactivated by sanitizers. A total of 100 samples of RTE MPV were collected in supermarkets and grocery stores located in the city and submitted to detection and enumeration of generic *E. coli* using standard MPN method and enumeration of *Enterobacteriaceae* by plating on MacConkey Agar. In addition, 168 colonies of bacteria belonging to the *Enterobacteriaceae* family isolated from 61 samples of RTE MPV were randomly selected and submitted to identification at genus and species levels on a MALDI-TOF MS Biotyper™. Generic *E. coli* was detected in 16 samples (average 1.4 ± 0.9 log MPN/g). The average count of *Enterobacteriaceae* was 7.1 ± 1.2 log CFU/g and the most frequent bacteria identified by MALDI-TOF were *Rahnella aquatilis* (13.1%), *Lelliottia amnigena* (11.9%) and *Enterobacter cloacae* (10.7%). Overall, the occurrence of *E. coli* and high counts of *Enterobacteriaceae* found in this study indicate a poor hygienic-sanitary quality and pose health risks to consumers, since these products have already been sanitized and are marketed as RTE.

Keywords: food safety, fresh-cut vegetables, *Enterobacteriaceae*, MALDI-TOF.

Development Agency: Programa Unificado de Bolsas de Estudos para Apoio e Formação de Estudantes de Graduação (PUB-USP) and FAPESP (#2013/07914-8).