TITLE: MALDI–TOF MASS SPECTROMETRY IDENTIFICATION OF *ENTEROBACTERIACEAE* ISOLATED FROM MINIMALLY PROCESSED PARSLEY

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ABSTRACT:
For decades, microorganisms have been routinely identified in laboratories using traditional methods which are time-consuming and labor-intensive. Matrix Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry (MALDI-TOF MS) has emerged in recent years as a promising tool for the rapid and accurate identification of microorganisms at genus and species levels, including food spoilers and food-borne pathogens. The present study aimed to evaluate the MALDI-TOF MS technique for the identification of bacteria belonging to the *Enterobacteriaceae* family isolated from samples of minimally processed parsley. A total of 19 samples were obtained from supermarkets located in the city of Sao Paulo (Brazil) and submitted to microbiological assays by plating on violet red bile glucose agar, for the isolation of putative *Enterobacteriacea* colonies. A total of 124 isolated colonies were randomly selected and submitted to identification on a MALDI-TOF MS Biotyper™. Of those, 82 (66.1%) were identified, of which 51 (62.2%) as belonging to the *Enterobacteriaceae* family. The most frequent identified microorganisms were *Enterobacter asburiae* (31.6%), *Klebsiella oxytoca* (21.0%), *Pantoea agglomerans* (21.0%), *Enterobacter cloacae* (15.8%), *Enterobacter ludwigii* (15.8%), *Escherichia coli* (10.5%), *Hafnia alvei* (10.5%) and *Lelliottia amnigena* (10.5%). Other *Enterobacteriacea* species were also found in a smaller proportion (<6%), including *Citrobacter freundii*, *Enterobacter cancerogenus*, *Kluyvera intermedia*, *Leclercia adecarboxylata*, *Pantoea ananatis*, *Pseudomonas putida*, *Rahnella aquatilis*, *Raoultella ornithinolytica*, *Raoultella planticola*, *Serratia marcescens* and *Serratia ureilytica*. MALDI-TOF MS technique has proven to be a rapid and reliable assay for distinguishing different microorganisms isolated from minimally processed parsley samples.

Keywords: MALDI–TOF, mass spectrometry, *Enterobacteriaceae*, minimally processed parsley.

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