

Rapid Identification of Thermophilic *Campylobacter* Species from Retail Poultry Meat Using Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry

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Abstract : In Europe, North America and Japan, campylobacteriosis is one of the leading food-borne bacterial illnesses, often related to the consumption of poultry meats and/or by-products. The aim of this study was the evaluation of *Campylobacter* contamination of poultry meats marketed in Sicily (Italy) using both traditional methods and Matrix-Assisted Laser Desorption Ionization-Time of Flight Mass Spectrometry (MALDI-TOF MS). MALDI-TOF MS is considered a promising rapid (less than 1 hour) identification method for food borne pathogens bacteria. One hundred chicken and turkey meat preparations (no. 68 hamburgers, no. 21 raw sausages, no. 4 meatballs and no. 7 meat rolls) were taken from different butcher's shops and large scale retailers and submitted to detection/enumeration of *Campylobacter* spp. according to EN ISO 10272-1:2006 and EN ISO 10272-2:2006. *Campylobacter* spp. was detected with general low counts in 44 samples (44%), of which 30 from large scale retailers and 14 from butcher's shops. Chicken meats were significantly more contaminated than turkey meats. Among the preparations, *Campylobacter* spp. was found in 85.71% of meat rolls, 50% of meatballs, 44.12% of hamburgers and 28.57% of raw sausages. A total of 100 strains, 2-3 from each positive samples, were isolated for the identification by phenotypic, biomolecular and MALDI-TOF MS methods. *C. jejuni* was the predominant strains (63%), followed by *C. coli* (33%) and *C. lari* (4%). MALDI-TOF MS correctly identified 98% of the strains at the species level, only 1% of the tested strains were not identified. In the last 1%, a mixture of two different species was mixed in the same sample and MALDI-TOF MS correctly identified at least one of the strains. Considering the importance of rapid identification of pathogens in the food matrix, this method is highly recommended for the identification of suspected colonies of *Campylobacter*.

Keywords : campylobacter spp., Food Microbiology, matrix-assisted laser desorption ionization-time of flight mass spectrometry, rapid microbial identification

Conference Title : ICFPTFP 2017 : International Conference on Food Preservation Techniques and Food Protection

Conference Location : Prague, Czechia

Conference Dates : July 09-10, 2017