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Characterization and Genetic Relationship of Shiga Toxin-Producing Escherichia coli Strains Isolated From Food in Argentina, 1999-2013

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Resumo

Introduction: Shiga toxin-producing Escherichia coli (STEC) are an important cause of diarrhea and the major cause of post-enteric hemolytic uremic syndrome (HUS). In Argentina, O157:H7 is the most frequent serotype in human disease. However, other serotypes have being recognized with greater frequency, since non-O157 diagnostic methods were implemented. The transmission of this food-borne pathogen occurs mainly through consumption of contaminated food. The aim of this study was to characterize STEC strains isolated from food in different regions of the country, in the 1999-2013 period. Materials and Methods: Two hundred and eighty six food-associated STEC strains, sent to the National Reference Laboratory for pheno-genotypic characterization and subtyping by stx-genotyping and pulsed-field gel electrophoresis (PFGE) according to the 24-h CDC-PulseNet protocol, were included. For comparison purposes, the patterns included in the PFGE National Database (NDB) were used. Results: The most common serotypes identified were O157:H7 (n=83, 29%), O8:H19 (n=12, 4.2%), O178:H19 (n=10, 3.5%), O113:H21 (n= 9, 3.1%), O113:H7 and O20:H19 (n= 8; 2.8%; each), O91:H21 and O174:H28 (n=7, 2.4% each). The prevalent virulence profiles were stx2c (n=66, 23%) and stx_{2a} / stx_{2c} / eae / ehxA (n=55, 19%). By XbaI-PFGE, 206 patterns were identified. The strains of the same serotype showed high

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diversity, however some clusters were detected (O157: AREXHX01.0011/ 0022/ 0043/ 0139/ 0932; O113: AREXPX01.0008; and O22: AREZJX01.0001). From eight food samples, more than one STEC strain with different serotype, virulence profile and/or PFGE pattern were isolated. Some patterns matched with those of strains of human and animal origin, when they were compared with the whole NDB. Conclusion: In Argentina, a diversity of STEC O157 and non-O157 strains were isolated from food, mainly meat products. By PFGE, some strains were identical to those of other origins, showing the wide spreading of STEC in our country. It is important to improve the O157 and non-O157 STEC surveillance to contribute to food safety and other prevention efforts.

Palavras-Chave: STEC, FOOD, Foodborne disease

Agência de Fomento: