

Title: Persistence of *Salmonella* Heidelberg in a poultry slaughterhouse environment.

Authors: Dantas, S.T.A.¹; Rossi, B.F.¹; Bonsaglia, E.C.R.¹; Fernandes Júnior, A.¹; Castilho, I.G.¹; Vivian, R.C.²; Pinto, J.P.A.N.²; Rall, V.L.M.¹

Institution:¹Department of Microbiology and Immunology, Institute of Biosciences, São Paulo State University, Botucatu, SP, Brazil; and ²Departament of Veterinary Hygiene and Public Health, Faculty of Veterinary Medicine, São Paulo State University, Botucatu, SP, Brazil.

Abstract

Salmonellosis is the most common foodborne disease in the world, and *Salmonella* contamination occurs primarily through chicken meat and contaminated egg consumption, causing mild intestinal disorders or more severe symptoms, such as dysentery. Molecular characterization of bacterial isolates is essential for clones' identification and outbreak investigations. Pulsed-Field Gel Electrophoresis (PFGE) is one of the most widely used molecular methods for this purpose and consists of DNA fragments separation obtained by bacterial chromosome digestion with restriction endonucleases, and then electrophoresis in a pulsating field, discriminating fragments of different sizes. We evaluate *Salmonella* Heidelberg persistence in two different types of mats (canvas and polystyrene) in a poultry slaughterhouse during 20 consecutive weeks. In each collection, 6 samples from each type of mat were analyzed by swabs moistened with peptone water, and preincubated in this medium for 35°C/24h, followed by enrichment in the Tetrathionate and Rappaport broths, and plated on to XLD, and SS agar. After characterization, strains were serotyped by the Oswaldo Cruz Foundation, RJ (Fiocruz) and the biofilm production assay was performed in polystyrene microplate. PFGE was performed with 11 *Salmonella* Heidelberg isolates according to PulseNet's standard protocol, using XbaI as a restriction enzyme, and ran at the CHEF Mapper lasting 18 hours. Isolates were subdivided into 6 profiles and grouped into 3 dominant groups. Pattern comparisons were made on Bionumerics software (5.0), with tolerance and optimization at 1.5%. Our results revealed 4 strains with 100% similarity, belonging to the same clone (A) that were isolated between second and 17th collection week, showing clone's persistence and dispersion, once those strains were biofilm producers and they were obtained from both mat materials studied. Other clone (95.7%), unrelated to the clone A, and also biofilm producer was observed between the sixth and eighth week, demonstrating inappropriate hygiene, increasing the risk of carcass contamination, compromising the entire production line.

Keywords: slaughterhouse, PFGE, *Salmonella* Heidelberg

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