

FORMATION OF BIOFILM BY *C. difficile* ON STAINLESS STEEL SURFACES IN DIFFERENT SUBSTRATES

TSUCHIYA, A. C.¹; KUAYE, A. Y.¹; KABUKI, D. Y.²

INSTITUTION: ¹ Department of Food Technology, ² Department of Food Science, School of Food Engineering, University of Campinas, UNICAMP, Rua Monteiro Lobato, 80, Campinas, SP, CEP 13083-862, Brazil. Telephone (+55) (19) 3521 4011.

Clostridium difficile is responsible for intestinal disease and is able to adhere and form biofilms on surfaces of equipment and utensils used in meat processing, increasing the risk of food contamination. The aim of this study was to evaluate the influence of substrate and temperature on the adhesion and biofilm formation capacity of *C. difficile* on stainless steel surface. Two strains (VPI10463 and LHCD809 isolated from chicken meat) and three matrices, Brain Heart Infusion broth (BHI), BHI modified to pH 5.6-5.8 (BHIpH) and cysteine-modified BHI (BHIC) were evaluated. The assays were performed at 15 °C and 25 °C ±1 °C for up to 10 days in anaerobiosis. The counts of vegetative cells and spores were carried out onto Reinforced *Clostridium* agar. The strain VPI10463 and strain LHCD809 were able to adhere and form multiform biofilms on stainless steel surfaces. The strain VPI10463, from clinical material, presented higher adhesion with counts of 3.57 log CFU/cm² of vegetative cells and 3.16 log spores/cm² when compared to strain LHCD809, isolated food (2.45 log CFU/cm² of vegetative cells and 2.43 log spores/cm²). Biofilm formation was higher in BHIC than in BHI and BHIpH. The higher adhesion was observed at 25 °C. The formation of *C. difficile* biofilms on stainless steel depends on the substrate conditions and temperature. Thus, the food contact surfaces can become a source of *C. difficile* in foods during processing, therefore, adequate strategies to reduce food contamination in the industries are recommended.

Keywords: *Clostridium difficile*, biofilm, spores.

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