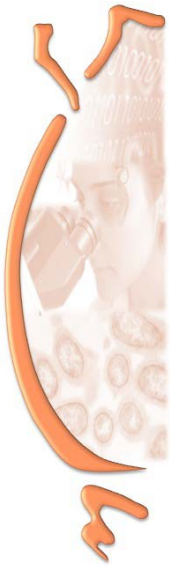

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Effect of starvation on architecture and production of *Listeria monocytogenes* biofilm studied in dynamic conditions

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Listeria monocytogenes is a foodborne pathogen that causes listeriosis. Because of its ability to form biofilm in food processing plant, contamination of food product by this bacterium could be detected even after application of sanitation procedures. The aim of this work was to study the effect of nutrient limitation on the biofilm architecture and on the viability of *L. monocytogenes*. Two strains Lm76 and Lm132 isolated from floor and conveyor respectively in a pork slaughterhouse were used in this study. Biofilm formation was performed in a rich medium (BHI) and in a tenfold diluted BHI (BHI/10) at 30°C for 24h by using the microfluidic system Bioflux. Three-dimensional biofilms produced were stained with Cristal violet for structural analyses and with live/dead dye to differentiate biovolume of dead and live populations in the produced biomasses. Results of biofilm grown in a rich and poor medium showed differences in structure and biomass produced. In BHI/10, biofilm was organised in a knitted network where cells formed long chains whereas in a rich medium the

structure was observed as homogeneous cellular multilayers. Biofilm production in BHI/10 is significantly higher than in BHI. Interestingly, biovolume of dead cells in biofilms formed in starved conditions (BHI/10) was significantly higher than in biofilms formed in BHI medium. We demonstrated that nutrient concentration affect biofilm structure and the dead cells proportion in biofilms. We propose that by enhancing liberation of extracellular DNA, starvation could play an important role in structural stability of *L. monocytogenes* biofilm. This hypothesis will be tested and results will be shown during the presentation.