JRP7-D3.4. Bacterial adhesion and Biofilm formation for 200 *Listeria monocytogenes* strains

WP3

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Introduction

The ability of strains to adhere and to form biofilm was evaluated for 200 strains.

Methods

We used two complementary approaches: the BioFilm Ring Test™ (BRT) and crystal violet (CV) methods which allow to characterize early and late/mature states of biofilm development, respectively. The BRT device (Chavant et al., J. Microbiol. Meth., 2007) makes it possible to evaluate the capacity of a bacterial strain to adhere to an abiotic support and start forming cellular aggregates. For each strain, the BRT were carried out after 6, 24 and 48 h of culture in BHI medium, in microplate wells incubated at 20°C, with three replicates for each time. The CV method is directly related to the biomass formed by bacterial cells in biofilm. In this case, the biomass of the biofilms formed by the different strains growing in BHI medium at 20°C in microplate wells was evaluated after 24 and 48 h of incubation. Six replicates were carried out for each of the two times.

Results

Beyond the interest that these results represent in determining these phenotypic characteristics for each strain, an overall biostatistical analysis of all the results obtained also aims to highlight possible correlations between (i) either the origin of the strains (classified into 6 different origins), (ii) or the clonal complex to which the strains belong (31 in total), and the capacity to adhere and form biofilms. The objective is to determine whether the origin of a strain or its clonal complex significantly impacts its ability to adhere and form biofilms or whether these phenotypic traits are totally independent of it. Statistical analyses are in progress and the first results are shown in Figures 1-4.

Figure 1. BRT results after the three different times of incubation according to the origin of the strains.

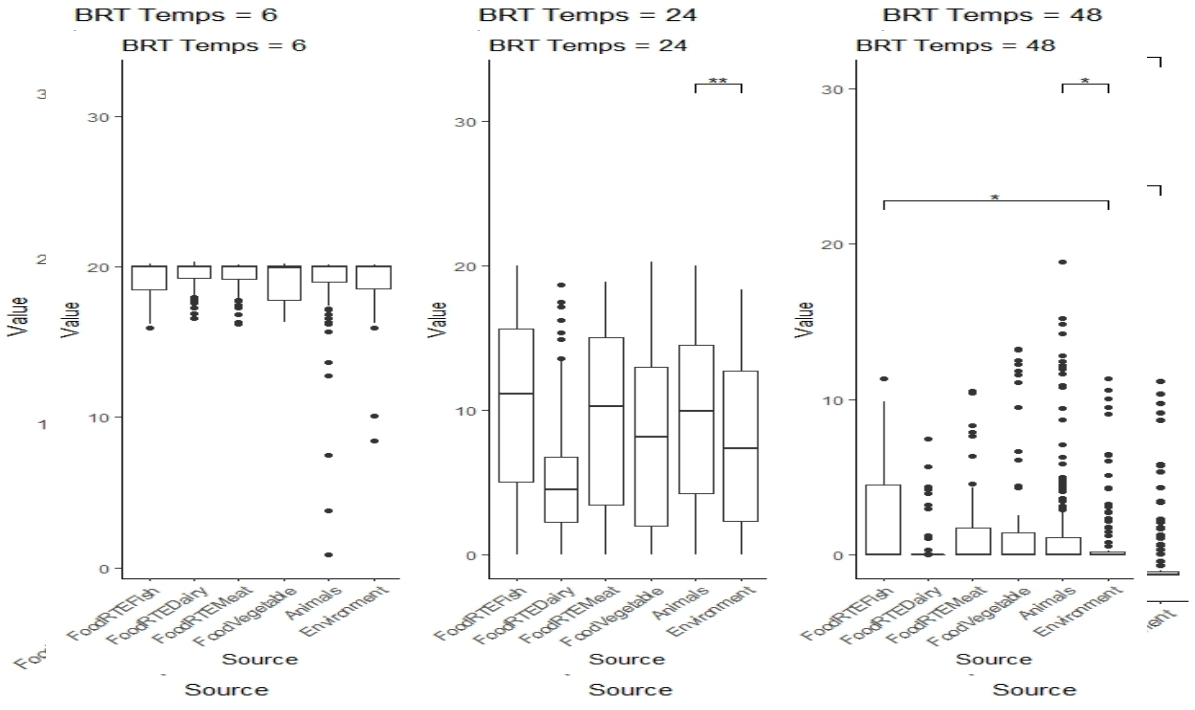


Figure 2. CV results after the two different times of incubation according to the origin of the strains.

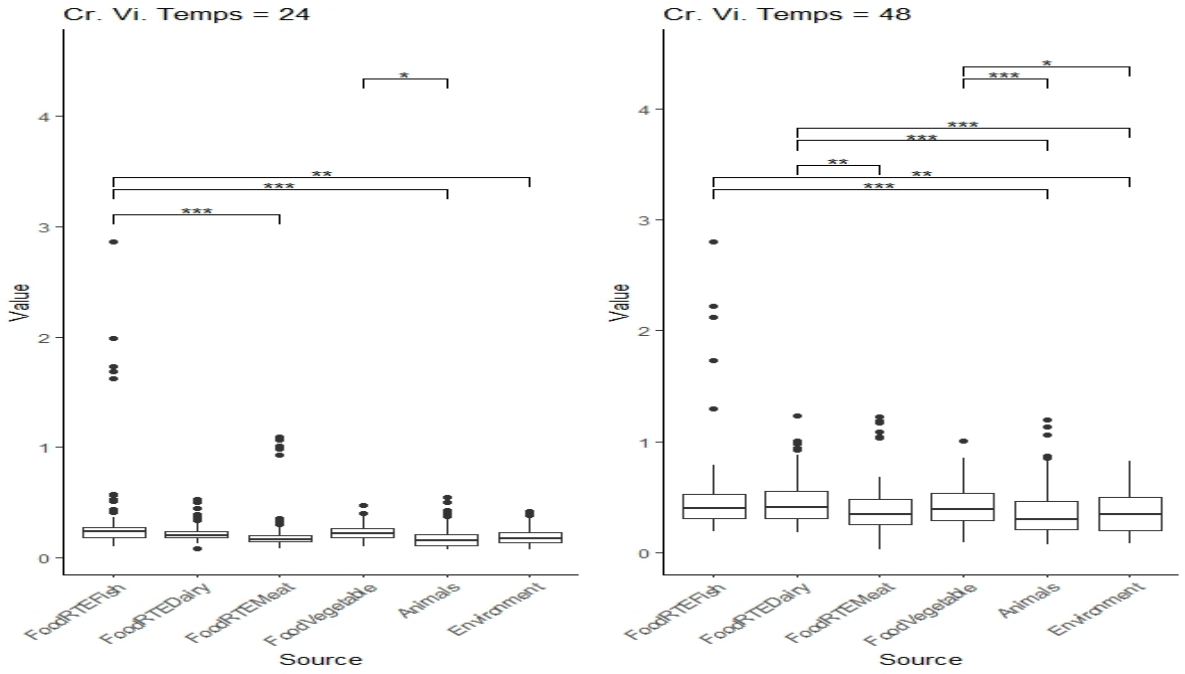
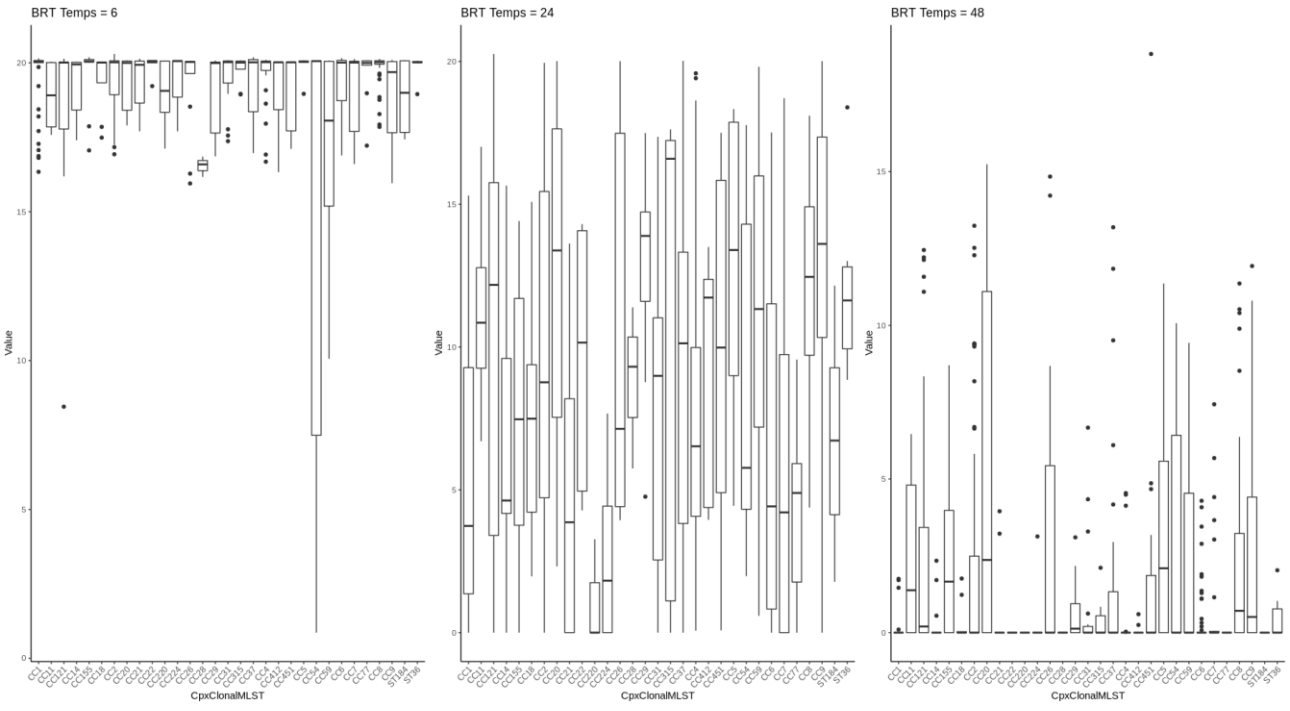


Figure 3. BRT results after the three different times of incubation according to the clonal complex of the strains.



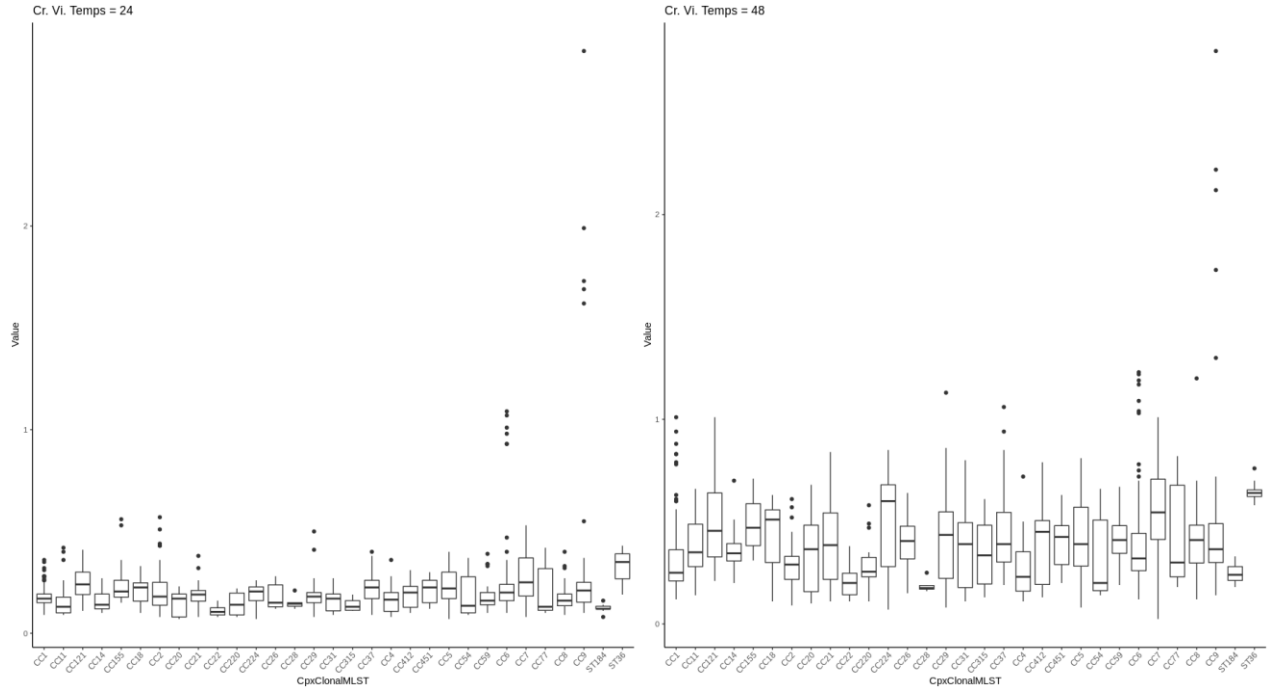


Figure 4. CV results after the two different times of incubation according to clonal complex of the strains.