Clear Plaque Mutants of Lactococcal Phage TP901-1

We report a method for obtaining turbid plaques of the lactococcal bacteriophage TP901-1 and its derivative TP901-BC1034. We have further used the method to isolate clear plaque mutants of this phage. Analysis of 8 such mutants that were unable to lysogenize the host included whole genome resequencing. Four of the mutants had different mutations in structural genes with no relation to the genetic switch. However all 8 mutants had a mutation in the cl repressor gene region. Three of these were located in the promoter and Shine-Dalgarno sequences and five in the N-terminal part of the encoded Cl protein involved in the DNA binding. The conclusion is that cl is the only gene involved in clear plaque formation i.e. the Cl protein is the determining factor for the lysogenic pathway and its maintenance in the lactococcal phage TP901-1.

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