



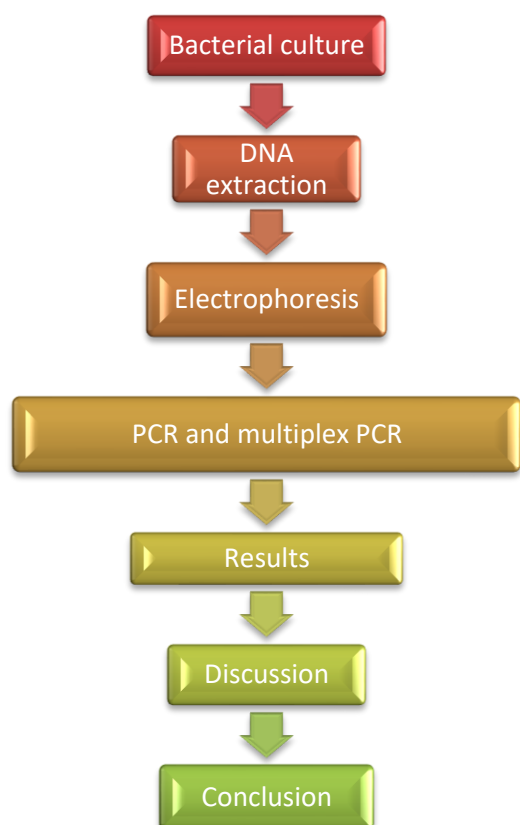
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Molecular detection of virulence genes in *Staphylococcus aureus* associated with bovine mastitis

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Graphical Abstract



Abstract.

Biofilm formation is considered a defense mechanism against environmental, chemical or biological factors. Some of the main bacteria with greater capacity for the formation of these structures are gram positive, in which *Staphylococcus aureus* stands out. This bacterium is implicated in a large number of diseases of a livestock nature, such as bovine mastitis, in which the ability to form a biofilm gives the bacteria a high resistance to chemical and antibiotic treatments, causing economic losses to increase. Therefore, the work seeks to identify in a molecular way the genes that are involved in the formation of biofilms, and to know if the bacteria possess one or more of said genes. The bacteria were isolated in the municipalities of Venustiano Carranza (AVC) and Marcos Castellanos (AMC), 39 and 15 respectively, for a total of 55 samples. Total DNA was extracted from all samples, its quality was verified by electrophoresis, to finally perform the genetic detection using endpoint PCR. A total of 10 genes were tested, of which their presence in bacteria with the ability to form biofilms was already proven. The ATCC isolate was used as a positive control. Only the *icaD* and *icaA* genes amplified, for a percentage of 27% and 24% respectively for the AMC isolates. In the case

of AVC, the data was 41% for icaD and 37% for icaA. Comparing the data obtained with a work carried out by Toro Castillo in 2018, in which he sought the best biofilm formers with the same group of bacteria, it was found that bacteria with such capacity also had said ica genes, directly relating them to the formation of biofilms.

Introduction

Bacterial biofilms are microbial communities made up of an extracellular matrix of polysaccharides, where groups of bacteria mainly take refuge from environmental factors or antibiotic, increasing their pathogenesis. Such biofilms constitute a serious problem in milk production, causing bovine mastitis, which causes considerable economic losses and decreases the quality of milk. In the present work, we analyzed which genes are involved in the formation of biofilms and if these are related to the isolates that best form said matrix.

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