

**TITLE:** IDENTIFICATION OF CRISPR-CAS IN SAMPLES OF *Enterobacter aerogenes*: STRATEGY ABLE TO IMMUNIZE BACTERIA AGAINST BACTERIOPHAGE INFECTIONS.

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**ABSTRACT:**

*Enterobacter aerogenes* represents a facultative, non-spore forming anaerobic gram negative bacterium. It is presented as a multi-resistant microorganism that is directly linked to one of the data in a hospital. This bacterium has several mechanisms to keep active, we can highlight among these, the use of the CRISPR-Cas system to immunize them from bacteriophage infection. The CRISPR system (short palindromic repeats with regular clustered intervals) it is a genetic tool responsible for cleaving the double strand of DNA at specific loci through Cas endonucleases. In view of the above, the present study aims to characterize the identification of CRISPR-Cas in the isolate from infection by *Enterobacter aerogenes*. The genomes that were used in the present study were obtained from *E. aerogenes* isolates from infection (Ea7A) of the Intensive Care Unit of a public hospital in Recife-PE. A total of 5844 chromosomal genes and 438 *E. aerogenes* plasmid genes were analyzed and 31 chromosomal genes related to the CRISPR and no gene that was related to CRISPR in plasmid DNA, a similar result found in other studies. Among the genes observed, four have a direct association with Cas (Cas1, Cas2 and Cas3, two copies), five with a certain Cas *Escherichia* (Cse) subtype, 10 with CRISPR spacer and the others had a relation with CRISPR with regions of repetition. Although the Cas2 type is more used in the reactive cascades, facilitating the DNA cleavage in the chromosomal DNA of *E. aerogenes* analyzed, only 1 sequence was found to correlate with the Cas2 protein. The presence of spacers confers greater microbial resistance, in the isolate there was a significant presence of CRISPR-spacer, approximately 33%. Considering the above, the resistance presented by *E. aerogenes* isolate can be justified due to the number of spacers found in the sample.

**KEYWORDS:** BACTERIOPHAGES; CRISPR; *ENTEROBACTER AEROGENES*.

**DEVELOPMENT AGENCY:** CONSELHO NACIONAL DE DESENVOLVIMENTO CIENTÍFICO E TECNOLÓGICO – CNPq