

## Typing and detection of the CRISPR-CAS system in *Salmonella* strains

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**INTRODUCTION:** *Salmonella* is a genus of pathogenic bacteria that represents a significant threat to public health, the leading causes of gastrointestinal infections in humans and animals. These bacteria are responsible for diseases such as Salmonellosis, which can manifest like diarrhea, fever, abdominal pain, and even more serious conditions as septicemia in immunocompromised patients. The CRISPR-Cas system functions as an adaptive immune system in bacteria against invading genetic elements such as phages and plasmids. This system has become a tool for studying genes related to virulence, antimicrobial resistance, and typing. The objective of this study was to identify, molecularly type, and detect the CRISPR-Cas system in *Salmonella* strains isolated from food samples.

**METHODOLOGY:** 2 strains were sequenced with ILLUMINA technology. The genome was obtained, showing that it belonged to *Salmonella*. To confirm and classify the same, they were compared with 30 already identified sequences by extracting the *16S* gene. Typing was performed using Multilocus Sequence Typing (MLST) and the allelic profile was obtained describing the different variables and similarities. The CRISPR-Cas system in *Salmonella* was analyzed using CRISPR-Cas finder and the study of phages was carried out using the phastest program.

**RESULTS:** The *Salmonella* strains were identified as a serovar Typhimurium; according to the MLST analysis, the sequence type (ST) of both *Salmonella* strains was 19. On the other hand, the CRISPR-Cas system detected in *Salmonella* was 1E type, they possess Cas proteins 1, 2, 3, 5, 6, 7, and Cse proteins 1 and 2. Finally, in the study of phages shown that *Salmonella* strains were infected by Enterobacteriaceae phages.

**CONCLUSION:** Using bioinformatics tools, the identity of *Salmonella* strains isolated in the laboratory was confirmed, and they were also typed using the MLST system. The CRISPR-Cas system was detected in both *Salmonella* strains, and they were typed using this system.

### References

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