How Resilient are Different Strains of *Listeria monocytogenes* in Cooking Salt at 20 ºC Over Time?

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Introduction

Listeria monocytogenes is a gram-positive pathogenic bacterium responsible for listeriosis in humans and other animals [1,2]. Human listeriosis is primarily caused by the consumption of foods contaminated with *L. monocytogenes*. Although rare, this severe foodborne infection leads to high rates of hospitalization and mortality, particularly among vulnerable groups such as the elderly, immunocompromised individuals, and pregnant women [3,4]. *L. monocytogenes* is known for its widespread distribution in hostile environments and its remarkable resilience in high-salinity conditions, surviving and even growing in up to 10% NaCl. This resilience facilitates its persistence in food processing environments and allows it to multiply in various food products. [5]

Purpose

The aim of this study was to evaluate the survival dynamics of different *Listeria monocytogenes* strains in cooking salt at 20 ºC over time. By comprehensively analyzing the resilience of these bacterial strains, we aim to generate valuable insights into microbial persistence. This knowledge is crucial for developing enhanced food safety strategies, particularly in understanding and mitigating the survival of pathogens in high-salinity environments.

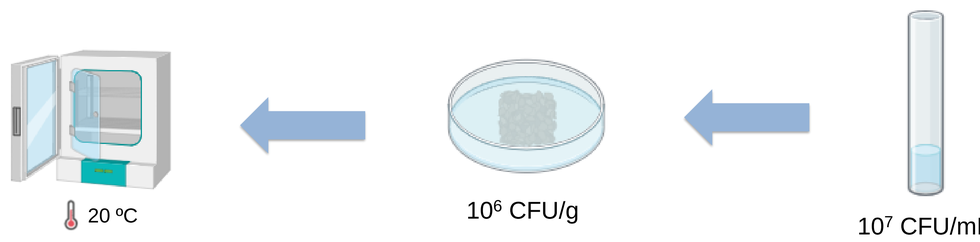
Methods

Bacterial strains

The selected strains are part of the *GenoPheno4Trait* project culture collection and are representative of the top five clonal complexes in Portugal, including strains previously classified as persistent and non-persistent in food processing environmments.

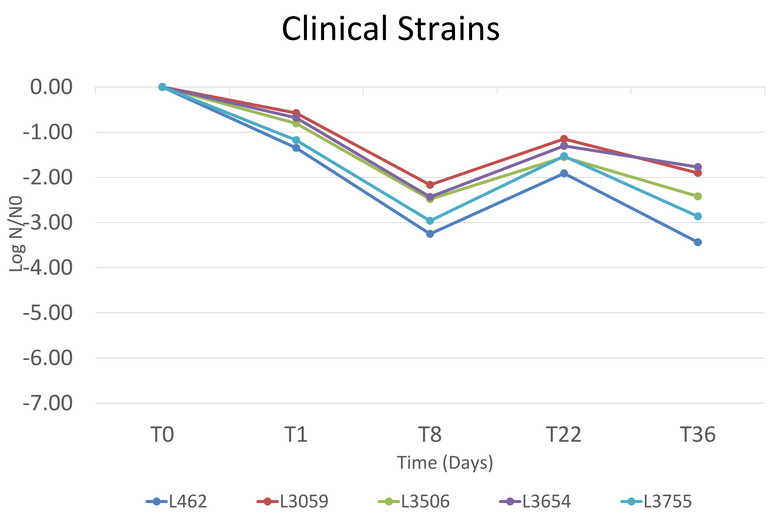
Inoculum

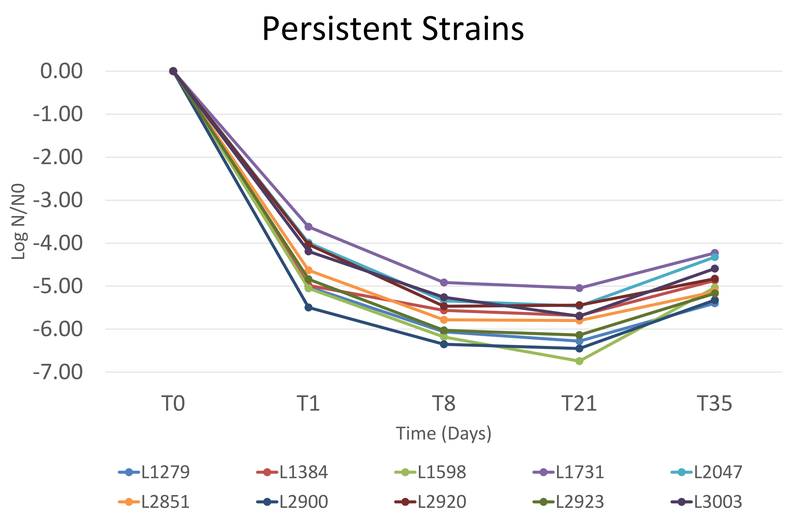
Salt inoculation

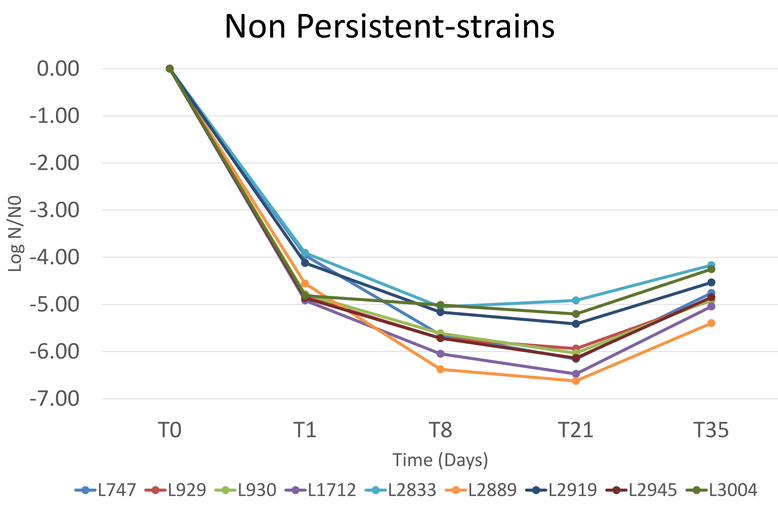


Analyses of results

Results







Conclusion

- Under controlled conditions, *L. monocytogenes* strains have demonstrated the ability to survive under osmotic stress.
- Compared to the persistent and non-persistent strains of food origin, the clinical strains showed higher viability rate over time, highlighting the interest for a genetic study of these strains.
- Understanding these dynamics is essential for developing effective food safety strategies, given the ongoing challenge of *L. monocytogenes* contamination in the food industry.
- The variation observed between strains suggests the need for a more controlled and specific assessment in the food industry.

References

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